

Taxon: <i>Pouzolzia zeylanica</i> (L.) Benn.	Family: Urticaceae
Common Name(s): graceful Pouzolz's-bush wu shui ge	Synonym(s): Boehmeria alienata Willd. Boehmeria cochinchinensis Spreng. Boehmeria glochidiata Hassk. Boehmeria nana D.Don Parietaria indica L. Parietaria zeylanica L. Pouzolzia indica Gaudich. Urtica glomerata Klein ex Willd.

Assessor: Chuck Chimera	Status: Assessor Approved	End Date: 11 Sep 2018
WRA Score: 8.0	Designation: H(HPWRA)	Rating: High Risk

Keywords: Perennial Herb, Agricultural Weed, Unarmed, Edible, Wind-Dispersed

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		
303	Agricultural/forestry/horticultural weed	n=0, y = 2*multiplier (see Appendix 2)	y
304	Environmental weed	n=0, y = 2*multiplier (see Appendix 2)	n
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

Qsn #	Question	Answer Option	Answer
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		
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)		
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	y
601	Evidence of substantial reproductive failure in native habitat	y=1, n=0	n
602	Produces viable seed	y=1, n=-1	y
603	Hybridizes naturally		
604	Self-compatible or apomictic		
605	Requires specialist pollinators	y=-1, n=0	n
606	Reproduction by vegetative fragmentation	y=1, n=-1	n
607	Minimum generative time (years)		
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)		
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		
706	Propagules bird dispersed	y=1, n=-1	n
707	Propagules dispersed by other animals (externally)	y=1, n=-1	n
708	Propagules survive passage through the gut		
801	Prolific seed production (>1000/m2)	y=1, n=-1	n
802	Evidence that a persistent propagule bank is formed (>1 yr)		
803	Well controlled by herbicides	y=-1, n=1	y
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y=1, n=-1	y
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)		

Supporting Data:

Qsn #	Question	Answer
101	Is the species highly domesticated?	n
	Source(s)	Notes
	Hanelt, P. (ed.). 2001. Mansfeld's Encyclopedia of Agricultural and Horticultural Crops (except Ornamentals), Volume 1. Springer-Verlag, Berlin, Heidelberg, New York	[Cultivated, but no evidence of domestication] "India, SE Asia, and Australia. Cultivated as a leaf vegetable in Cambodia. Also used as a medicinal plant."

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

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
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2003. Flora of China. Vol. 5 (Ulmaceae through Basellaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"S Anhui, Fujian, S Gansu, Guangdong, Guangxi, Hubei, Hunan, Jiangxi, Sichuan, Taiwan, E and S Yunnan, W Zhejiang [India, Indonesia, Japan, Kashmir, Malaysia, Myanmar, Nepal, Papua New Guinea, Pakistan, Philippines, Sri Lanka, Thailand, Vietnam; Australia, Maldives, Polynesia, Yemen (Socotra); introduced in Africa and the New World]"

202	Quality of climate match data	High
	Source(s)	Notes
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2003. Flora of China. Vol. 5 (Ulmaceae through Basellaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	

203	Broad climate suitability (environmental versatility)	y
	Source(s)	Notes
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2003. Flora of China. Vol. 5 (Ulmaceae through Basellaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"100-800(-1300) m." [Elevation range may exceed 1000 m in native range, demonstrating environmental versatility]

204	Native or naturalized in regions with tropical or subtropical climates	y
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Qsn #	Question	Answer
	Source(s)	Notes
	Zhenghao Xu & Meihua Deng. (2017). Identification and Control of Common Weeds: Volume 2. Zhejiang University Press, Hangzhou and Springer Nature, Singapore	"Distribution - Native to Asia and Australia and introduced in Africa."
	Wilmot-Dear, C. M., & Friis, I. (2011). New world <i>Pouzolzia</i> and <i>Boehmeria</i> (Urticaceae): a new species and new generic record for Paraguay, <i>Pouzolzia amambaiensis</i> , and additional observations on already described species of both genera. <i>Nordic Journal of Botany</i> , 29(6), 691-695	" <i>Pouzolzia zeylanica</i> ... Habitat: Ruderal; 400 m alt. Once introduced in El Salvador (map: Fig. 53); native to the warm temperate and tropical parts of SE Asia and northern Australia."
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2003. Flora of China. Vol. 5 (Ulmaceae through Basellaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"S Anhui, Fujian, S Gansu, Guangdong, Guangxi, Hubei, Hunan, Jiangxi, Sichuan, Taiwan, E and S Yunnan, W Zhejiang [India, Indonesia, Japan, Kashmir, Malaysia, Myanmar, Nepal, Papua New Guinea, Pakistan, Philippines, Sri Lanka, Thailand, Vietnam; Australia, Maldives, Polynesia, Yemen (Socotra); introduced in Africa and the New World]"

205	Does the species have a history of repeated introductions outside its natural range?	y
	Source(s)	Notes
	Zhenghao Xu & Meihua Deng. (2017). Identification and Control of Common Weeds: Volume 2. Zhejiang University Press, Hangzhou and Springer Nature, Singapore	"Native to Asia and Australia and introduced in Africa."
	Wilmot-Dear, C. M., & Friis, I. (2011). New world <i>Pouzolzia</i> and <i>Boehmeria</i> (Urticaceae): a new species and new generic record for Paraguay, <i>Pouzolzia amambaiensis</i> , and additional observations on already described species of both genera. <i>Nordic Journal of Botany</i> , 29(6), 691-695	"Once introduced in El Salvador"
	Flora of North America Editorial Committee, eds. 1997. Flora of North America: Volume 3: Magnoliophyta: Magnoliidae and Hamamelidae. Oxford University Press, Oxford, UK	"Roadsides, old fields, waste places, disturbed areas; 0-20 m; introduced; Fla."

301	Naturalized beyond native range	y
	Source(s)	Notes
	Wilmot-Dear, C. M., & Friis, I. (2011). New world <i>Pouzolzia</i> and <i>Boehmeria</i> (Urticaceae): a new species and new generic record for Paraguay, <i>Pouzolzia amambaiensis</i> , and additional observations on already described species of both genera. <i>Nordic Journal of Botany</i> , 29(6), 691-695	" <i>Pouzolzia zeylanica</i> ... Habitat: Ruderal; 400 m alt. Once introduced in El Salvador (map: Fig. 53); native to the warm temperate and tropical parts of SE Asia and northern Australia."
	Flora of North America Editorial Committee, eds. 1997. Flora of North America: Volume 3: Magnoliophyta: Magnoliidae and Hamamelidae. Oxford University Press, Oxford, UK	"Roadsides, old fields, waste places, disturbed areas; 0-20 m; introduced; Fla.; Asia."

302	Garden/amenity/disturbance weed	
	Source(s)	Notes

Qsn #	Question	Answer
	Rogers, G .K. (2016). Landscape Plants for South Florida - Pouzolzia Bush - Pouzolzia zeylanica. Palm Beach State College, Palm Beach Gardens, Florida. http://www.plantbook.org/ . [Accessed 10 Sep 2018]	"Florida abundance and distribution: roadside, old fields, waste places and disturbed areas in the Peninsula." ... "Other: Highly invasive. Spreads by seed and has an extensive root system. When attempting to rid area of <i>P. zeylanica</i> , tuber-like root systems will continue to spread and send up new stems.
	WRA Specialist. 2018. Personal Communication	A plant that thrives in disturbance & impacts agriculture. See 3.03

303	Agricultural/forestry/horticultural weed	y
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	" <i>Pouzolzia zeylanica</i> ... Weed of: Bananas, Cereals, Orchards & Plantations"
	Zhenghao Xu & Meihua Deng. (2017). Identification and Control of Common Weeds: Volume 2. Zhejiang University Press, Hangzhou and Springer Nature, Singapore	[Controlled as a weed] "Grasslands, thickets by streams and wet, sunny, and somewhat moist places by rice fields." ... "The species prefers moist and fertile situations and often forms clumps or predominant populations in suitable surroundings." ... "A common weed." ... "Cleaning up the weed at the margins of the field can reduce the intrusion of <i>Pouzolzia zeylanica</i> . Pulling and other mechanical methods can effectively mitigate the infestation of the weed. Chemical control can choose 2,4-D butyl ester in fields and paraquat or glyphosate at margins of fields."
	Moody, K. 1989. Weeds Reported in Rice in South and Southeast Asia. International Rice Research Institute, Manila, Philippines	<i>Pouzolzia zeylanica</i> reported as a weed of rice in India [Impacts unspecified]

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

305	Congeneric weed	y
	Source(s)	Notes
	Bosch, C.H. 2004. <i>Pouzolzia guineensis</i> Benth. [Internet] Record from PROTA4U. Grubben, G.J.H. & Denton, O.A. (Editors). PROTA (Plant Resources of Tropical Africa), Wageningen, Netherlands. http://www.prota4u.org/search.asp . [Accessed 10 Sep 2018]	"It is considered a weed of especially tree crops (e.g. cacao, cola) and is a host of the cotton stainer, <i>Dysdercus superstiosus</i> , a pest of cotton, rice and peanuts."
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	" <i>Pouzolzia guineensis</i> ... Weed of: Forestry, Nursery Production, Orchards & Plantations" ... " <i>Pouzolzia hirta</i> ... Weed of: Orchards & Plantations"
	Moody, K. 1989. Weeds Reported in Rice in South and Southeast Asia. International Rice Research Institute, Manila, Philippines	<i>Pouzolzia bennettiana</i> identified as a weed of rice in India [Impacts unspecified]

401	Produces spines, thorns or burrs	n
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Qsn #	Question	Answer
	Source(s)	Notes
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2003. Flora of China. Vol. 5 (Ulmaceae through Basellaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	[No evidence] "Shrubs, subshrubs, or herbs, without stinging hairs." ... "Herbs perennial, erect or ascending, rarely prostrate, almost simple or few branched at base, 1240 cm tall; rootstock often tuberous"

402	Allelopathic	
	Source(s)	Notes
	WRA Specialist. 2018. Personal Communication	Unknown

403	Parasitic	n
	Source(s)	Notes
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2003. Flora of China. Vol. 5 (Ulmaceae through Basellaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Herbs perennial, erect or ascending, rarely prostrate, almost simple or few branched at base, 1240 cm tall; rootstock often tuberous" [Urticaceae. No evidence]

404	Unpalatable to grazing animals	n
	Source(s)	Notes
	Singh, V., Gaur, R. D., & Bohra, B. (2008). A survey of fodder plants in mid-altitude Himalayan rangelands of Uttarakhand, India. Journal of Mountain Science, 5(3): 265-278	"Table 1 Fodder species in the rangeland ecosystems of Uttarakhand Himalaya" [Table includes <i>Pouzolzia zeylanica</i>]
	Nautiyal, M., Tiwari, J. K., & Rawat, D. S. (2017). Exploration of some important fodder plants of Joshimath area of Chamoli district of Garhwal, Uttarakhand. Current Botany 8: 144-149	"Table 1: Diversity, seasonal availability, and mode of use of some fodder plants" [<i>Pouzolzia zeylanica</i> - Mode of use = G: Green]

405	Toxic to animals	n
	Source(s)	Notes
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	[No evidence. Edible & medicinal uses to people] " <i>Pouzolzia zeylanica</i> ... tender shoot tip used for making a dish"
	Singh, V., Gaur, R. D., & Bohra, B. (2008). A survey of fodder plants in mid-altitude Himalayan rangelands of Uttarakhand, India. Journal of Mountain Science, 5(3): 265-278	[No evidence. Used as fodder] "Table 1 Fodder species in the rangeland ecosystems of Uttarakhand Himalaya" [Table includes <i>Pouzolzia zeylanica</i>]
	Useful Tropical Plants Database. (2018). <i>Pouzolzia zeylanica</i> . Ken Fern. http://tropical.theferns.info/viewtropical.php?id=Pouzolzia+zeylanica . [Accessed 11 Sep 2018]	Known Hazards - None known

406	Host for recognized pests and pathogens	

Qsn #	Question	Answer
	Source(s)	Notes
	Howard, F.W., Pemberton, R.W., Hodges, G.S., Steinberg, B., McLean, D. & Liu, H. 2006. Host Plant Range of Lobate Lac Scale, <i>Paratachardina lobata</i> , in Florida. <i>Proceedings of the Florida State Horticultural Society</i> 119: 398-408	[<i>Pouzolzia zeylanica</i> listed among hosts] "Abstract. A list of host plant species of lobate lac scale, <i>Paratachardina lobata</i> (Chamberlin) (Hemiptera: Coccoidea: Kerriidae), in southern Florida was compiled from the authors' observations and records of the Florida State Collection of Arthropods. This scale insect was found on 307 plant species, nearly all of which are dicotyledonous trees, shrubs, or lianas. Hosts included plant species grown for fruits and as ornamentals, several weeds, and eighty-three species native to southern Florida. In addition to tropical plants, which predominate in this region, it was found on many temperate zone plants whose ranges extend to southern Florida. Seventeen plant species were consistently highly infested at different sites, and are thus considered highly susceptible; of these, ten are plants native to Florida."

407	Causes allergies or is otherwise toxic to humans	n
	Source(s)	Notes
	Hanelt, P. (ed.). 2001. <i>Mansfeld's Encyclopedia of Agricultural and Horticultural Crops (except Ornamentals)</i> , Volume 1. Springer-Verlag, Berlin, Heidelberg, New York	"Cultivated as a leaf vegetable in Cambodia. Also used as a medicinal plant."
	Quattrocchi, U. 2012. <i>CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology</i> . CRC Press, Boca Raton, FL	[No evidence. Edible & medicinal uses] " <i>Pouzolzia zeylanica</i> ... tender shoot tip used for making a dish ... Aerial parts for boils, wounds, cuts and cataract. Against worms, plant pounded and applied to the abdomen, and also eaten; plant paste applied on the region of a snakebite. For snakebite, whole plant infusion drunk, also used for cough, sore throat, and as a diuretic and galactagogue; decoction of roots and leaves taken for urinary and spleen disorders. Leaves poultice vermifuge, stomachic, externally applied for sores, boils, wounds, ulcers, syphilis, gonorrhoea; leaves infusion as a gargle for toothache; leaves decoction taken as a vermifuge, or eaten; paste of leaves in honey applied on boils. Fresh leaves juice or a decoction of the dried leaves drunk as a galactagogue. Whole plant used for bone fractures, shoot crushed, paste applied as poultice."
	Useful Tropical Plants Database. (2018). <i>Pouzolzia zeylanica</i> . Ken Fern. http://tropical.theferns.info/viewtropical.php?id=Pouzolzia+zeylanica . [Accessed 11 Sep 2018]	Known Hazards - None known

Qsn #	Question	Answer
408	Creates a fire hazard in natural ecosystems	n
	Source(s)	Notes
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2003. Flora of China. Vol. 5 (Ulmaceae through Basellaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Herbs perennial, erect or ascending ... Grasslands, thickets by streams, wet places, sunny and somewhat moist places by rice fields" [No evidence. Herbaceous plant of wet places. Unlikely to contribute to fire risk]
	Zhenghao Xu & Meihua Deng. (2017). Identification and Control of Common Weeds: Volume 2. Zhejiang University Press, Hangzhou and Springer Nature, Singapore	"The species prefers moist and fertile situations and often forms clumps or predominant populations in suitable surroundings." [Clumps may contribute to fuel load, but not known to occur in fire prone habitats]

409	Is a shade tolerant plant at some stage of its life cycle	
	Source(s)	Notes
	Zhenghao Xu & Meihua Deng. (2017). Identification and Control of Common Weeds: Volume 2. Zhejiang University Press, Hangzhou and Springer Nature, Singapore	"Habitat - Grasslands, thickets by streams and wet, sunny, and somewhat moist places by rice fields." [Possibly shade intolerant. Occurs in high light environments]
	NParks Flora&FaunaWeb. (2018). <i>Pouzolzia zeylanica</i> . https://florafaunaweb.nparks.gov.sg/Special-Pages/plant-detail.aspx?id=6649 . [Accessed 11 Sep 2018]	"Light Preference : Full Sun"
	Wunderlin, R. P., B. F. Hansen, A. R. Franck, and F. B. Essig. 2018. Atlas of Florida Plants. http://florida.plantatlas.usf.edu/ . [Accessed 12 Sep 2018]	[Collected in shady habitats] "Habitat: Sandy soil, semi-shade; edge of sidewalk. ... Collector: A.G. Shuey 2014" ... "Habitat: Disturbed ground with other ruderals in shade of <i>Quercus virginiana</i> ; with <i>Cestrum diurnum</i> , <i>Sida acuta</i> [<i>Sida ulmifolia</i>], <i>Solanum americanum</i> , <i>Urena</i> sp., <i>Momordica</i> sp. ... Collector: T. Hendrickson s.n."

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	
	Source(s)	Notes
	Western Australian Herbarium (1998–2018). FloraBase—the Western Australian Flora. Department of Parks and Wildlife. https://florabase.dpaw.wa.gov.au/ . [Accessed 11 Sep 2018]	" <i>Pouzolzia zeylanica</i> ... Sand over sandstone or limestone, laterite. Rocky outcrops."
	Wunderlin, R. P., B. F. Hansen, A. R. Franck, and F. B. Essig. 2018. Atlas of Florida Plants. http://florida.plantatlas.usf.edu/ . [Accessed 11 Sep 2018]	[Collected in sandy, & sandy loam soils] "Habitat: Sandy soil, semi-shade; edge of sidewalk ... Collector: A.G. Shuey 2014" ... "Habitat: Sandy loam soils along margin of lake and deciduous hardwood swamp ... Collector: C. Slaughter 11641 with S. Meyer"
	Zhenghao Xu & Meihua Deng. (2017). Identification and Control of Common Weeds: Volume 2. Zhejiang University Press, Hangzhou and Springer Nature, Singapore	[Soil type unspecified] "Habitat: Grasslands, thickets by streams and wet, sunny, and somewhat moist places by rice fields."
	WRA Specialist. 2018. Personal Communication	Mostly collected on sandy soils. Unknown if soil type will act as a limiting factor on the further spread of this species

Qsn #	Question	Answer
411	Climbing or smothering growth habit	n
	Source(s)	Notes
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2003. Flora of China. Vol. 5 (Ulmaceae through Basellaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Herbs perennial, erect or ascending, rarely prostrate, almost simple or few branched at base, 1240 cm tall; rootstock often tuberous"

412	Forms dense thickets	
	Source(s)	Notes
	Zhenghao Xu & Meihua Deng. (2017). Identification and Control of Common Weeds: Volume 2. Zhejiang University Press, Hangzhou and Springer Nature, Singapore	[Unknown. Forms clumps. Occurs in & a component of thicket vegetation] "Grasslands, thickets by streams and wet, sunny, and somewhat moist places by rice fields." ... "The species prefers moist and fertile situations and often forms clumps or predominant populations in suitable surroundings."

501	Aquatic	n
	Source(s)	Notes
	Zhenghao Xu & Meihua Deng. (2017). Identification and Control of Common Weeds: Volume 2. Zhejiang University Press, Hangzhou and Springer Nature, Singapore	"Habitat - Grasslands, thickets by streams and wet, sunny, and somewhat moist places by rice fields."

502	Grass	n
	Source(s)	Notes
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2003. Flora of China. Vol. 5 (Ulmaceae through Basellaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Herbs perennial, erect or ascending, rarely prostrate, almost simple or few branched at base, 1240 cm tall; rootstock often tuberous" [Urticaceae]

503	Nitrogen fixing woody plant	n
	Source(s)	Notes
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2003. Flora of China. Vol. 5 (Ulmaceae through Basellaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Herbs perennial, erect or ascending, rarely prostrate, almost simple or few branched at base, 1240 cm tall; rootstock often tuberous" [Urticaceae]

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	y
	Source(s)	Notes
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2003. Flora of China. Vol. 5 (Ulmaceae through Basellaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Herbs perennial, erect or ascending, rarely prostrate, almost simple or few branched at base, 12-40 cm tall; rootstock often tuberous"
	Zhenghao Xu & Meihua Deng. (2017). Identification and Control of Common Weeds: Volume 2. Zhejiang University Press, Hangzhou and Springer Nature, Singapore	"Perennial herbs." ... "Root: Rootstock often tuberous." [May be a functional geophyte]

Qsn #	Question	Answer
	Rogers, G .K. (2016). Landscape Plants for South Florida - Pouzolzia Bush - <i>Pouzolzia zeylanica</i> . Palm Beach State College, Palm Beach Gardens, Florida. http://www.plantbook.org/ . [Accessed 10 Sep 2018]	"When attempting to rid area of <i>P. zeylanica</i> , tuber-like root systems will continue to spread and send up new stems."

601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	Notes
	Western Australian Herbarium (1998–2018). FloraBase—the Western Australian Flora. Department of Parks and Wildlife. https://florabase.dpaw.wa.gov.au/ . [Accessed 11 Sep 2018]	"Conservation Code: Not threatened Naturalised Status: Native to Western Australia"
	W.-L.Chew. (1989) <i>Urticaceae</i> . <i>Flora of Australia</i> 3: 68-93	"Occurs commonly in the Kimberley, W.A., Arnhem Land, N.T., and on Cape York Peninsula, Qld. Widespread in India and SE Asia."
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2003. <i>Flora of China</i> . Vol. 5 (Ulmaceae through Basellaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	[No evidence] "S Anhui, Fujian, S Gansu, Guangdong, Guangxi, Hubei, Hunan, Jiangxi, Sichuan, Taiwan, E and S Yunnan, W Zhejiang [India, Indonesia, Japan, Kashmir, Malaysia, Myanmar, Nepal, Papua New Guinea, Pakistan, Philippines, Sri Lanka, Thailand, Vietnam; Australia, Maldives, Polynesia, Yemen (Socotra); introduced in Africa and the New World]."

602	Produces viable seed	y
	Source(s)	Notes
	Zhenghao Xu & Meihua Deng. (2017). <i>Identification and Control of Common Weeds: Volume 2</i> . Zhejiang University Press, Hangzhou and Springer Nature, Singapore	"Fruit: Achenes dark, ovoid, glabrous, 1–1.2 mm." ... "Diffusion Characteristics Seed reproduction."

603	Hybridizes naturally	
	Source(s)	Notes
	WRA Specialist. 2018. Personal Communication	Unknown. No evidence found

604	Self-compatible or apomictic	
	Source(s)	Notes
	Kubitzki, K., Rohwer, J.G. & Bittrich, V. (eds.). 1993. <i>The Families and Genera of Vascular Plants: Volume II. Flowering Plants. Dicotyledons: Magnoliid, Hamamelid and Caryophyllid Families</i> . Springer-Verlag, Berlin, Heidelberg, New York	"REPRODUCTIVE SYSTEMS. It has been shown that a number of species of <i>Elatostema</i> and <i>Boehmeria</i> are apomictic (Fagerlind 1944; Okabe 1963; Davis 1966), but otherwise very little is known about the reproductive systems in the family."
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2003. <i>Flora of China</i> . Vol. 5 (Ulmaceae through Basellaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	[Unknown. Plants bisexual] "Glomerules often bisexual, 2.55 mm in diam., bisexual ones in nodes of proximal leaves, female in distal axils; bracts triangular, 23 mm, ciliate. Male flowers: perianth lobes 4, narrowly oblong or oblong-oblongate, connate to middle, 1.21.5 mm, puberulent, apex acute or cuspidate. Female perianth tube ellipsoid or rhombic, 0.81 mm, 1.51.8 mm in fruit, puberulent, inconspicuously ca. 9- ribbed or 4-winged, apex 2-toothed."

Qsn #	Question	Answer
605	Requires specialist pollinators	n
	Source(s)	Notes
	Kubitzki, K., Rohwer, J.G. & Bittrich, V. (eds.). 1993. The Families and Genera of Vascular Plants: Volume II. Flowering Plants. Dicotyledons: Magnoliid, Hamamelid and Caryophyllid Families. Springer-Verlag, Berlin, Heidelberg, New York	"The family contains only wind-pollinating species. All species actively eject the pollen by sudden reflexion of the stamens in the male flowers." [Urticaceae]

606	Reproduction by vegetative fragmentation	n
	Source(s)	Notes
	Zhenghao Xu & Meihua Deng. (2017). Identification and Control of Common Weeds: Volume 2. Zhejiang University Press, Hangzhou and Springer Nature, Singapore	"Diffusion - Characteristics Seed reproduction."
	Rogers, G .K. (2016). Landscape Plants for South Florida - Pouzolzia Bush - Pouzolzia zeylanica. Palm Beach State College, Palm Beach Gardens, Florida. http://www.plantbook.org/ . [Accessed 11 Sep 2018]	"When attempting to rid area of <i>P. zeylanica</i> , tuber-like root systems will continue to spread and send up new stems." [Not known to naturally reproduce vegetatively, but may function as a geophyte by resprouting from tuberous roots]

607	Minimum generative time (years)	
	Source(s)	Notes
	Western Australian Herbarium (1998–2018). FloraBase—the Western Australian Flora. Department of Parks and Wildlife. https://florabase.dpaw.wa.gov.au/ . [Accessed 11 Sep 2018]	"Usually flowers and fruits as a herb but occasionally grows into a shrub about 1 m tall." [Unspecified. Probably between <1-2 years]

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	
	Source(s)	Notes
	Kravtsova, T. I., Friis, I., & Wilmot-Dear, C. M. (2003). Morphology and anatomy of fruits in Pouzolzia (Urticaceae) in relation to taxonomy. Kew Bulletin, 58: 297-327	"The winged fruits of <i>P. zeylanica</i> , <i>P. pentandra</i> and <i>P. hirta</i> var. <i>hirta</i> appear to represent successive stages in adaptation to wind dispersal, with a decrease in thickness of the pericarp correlated with increasing complexity of the wing."
	Rogers, G .K. (2016). Landscape Plants for South Florida - Pouzolzia Bush - Pouzolzia zeylanica. Palm Beach State College, Palm Beach Gardens, Florida. http://www.plantbook.org/ . [Accessed 10 Sep 2018]	"Florida abundance and distribution: roadside, old fields, waste places and disturbed areas in the Peninsula." [Adapted for wind dispersal, but distribution along roadsides suggests possibility of accidental dispersal, perhaps in mud attached to footwear, vehicles or other equipment]

702	Propagules dispersed intentionally by people	n
	Source(s)	Notes
	Hanelt, P. (ed.). 2001. Mansfeld's Encyclopedia of Agricultural and Horticultural Crops (except Ornamentals), Volume 1. Springer-Verlag, Berlin, Heidelberg, New York	"India, SE Asia, and Australia. Cultivated as a leaf vegetable in Cambodia. Also used as a medicinal plant." [Cultivate intentionally elsewhere. No evidence of intentional introduction or cultivation in the Hawaiian Islands to date]

Qsn #	Question	Answer
703	Propagules likely to disperse as a produce contaminant	y
	Source(s)	Notes
	Wunderlin, R. P., B. F. Hansen, A. R. Franck, and F. B. Essig. 2018. Atlas of Florida Plants. http://florida.plantatlas.usf.edu/ . [Accessed 10 Sep 2018]	" <i>Pouzolzia zeylanica</i> " ... "Growing as a weed throughout the nursery--in pots, between beds, and on boundary of nursery property ... Collector: G. Bupp B2015-803" [Could be dispersed as a contaminant of nursery materials & plants]

704	Propagules adapted to wind dispersal	y
	Source(s)	Notes
	Kravtsova, T. I., Friis, I., & Wilmot-Dear, C. M. (2003). Morphology and anatomy of fruits in <i>Pouzolzia</i> (Urticaceae) in relation to taxonomy. <i>Kew Bulletin</i> , 58: 297-327	"Winged fruits are adapted to wind dispersal. Wings vary greatly in size and structure. They are either relatively small, of large-celled aerenchyma (<i>P. zeylanica</i>) or fibrous and extremely wide (<i>P. pentandra</i> var. <i>gracilis</i> , <i>P. hirta</i> var. <i>hirta</i>) or with intermediate structure (<i>P. pentandra</i> subsp. <i>pentandra</i> 8c subsp. <i>wightii</i> var. <i>wightii</i>)." ... "The winged fruits of <i>P. zeylanica</i> , <i>P. pentandra</i> and <i>P. hirta</i> var. <i>hirta</i> appear to represent successive stages in adaptation to wind dispersal, with a decrease in thickness of the pericarp correlated with increasing complexity of the wing."

705	Propagules water dispersed	
	Source(s)	Notes
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2003. <i>Flora of China</i> . Vol. 5 (Ulmaceae through Basellaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Grasslands, thickets by streams, wet places, sunny and somewhat moist places by rice fields;" [Adapted for wind dispersal, but proximity to streams & wet places suggests seeds may be secondarily moved by water]
	Kravtsova, T. I., Friis, I., & Wilmot-Dear, C. M. (2003). Morphology and anatomy of fruits in <i>Pouzolzia</i> (Urticaceae) in relation to taxonomy. <i>Kew Bulletin</i> , 58: 297-327	"The winged fruits of <i>P. zeylanica</i> , <i>P. pentandra</i> and <i>P. hirta</i> var. <i>hirta</i> appear to represent successive stages in adaptation to wind dispersal, with a decrease in thickness of the pericarp correlated with increasing complexity of the wing."

706	Propagules bird dispersed	n
	Source(s)	Notes
	Zhenghao Xu & Meihua Deng. (2017). <i>Identification and Control of Common Weeds: Volume 2</i> . Zhejiang University Press, Hangzhou and Springer Nature, Singapore	"Fruit: Achenes dark, ovoid, glabrous, 1–1.2 mm."
	Kravtsova, T. I., Friis, I., & Wilmot-Dear, C. M. (2003). Morphology and anatomy of fruits in <i>Pouzolzia</i> (Urticaceae) in relation to taxonomy. <i>Kew Bulletin</i> , 58: 297-327	"Winged fruits are adapted to wind dispersal. Wings vary greatly in size and structure. They are either relatively small, of large-celled aerenchyma (<i>P. zeylanica</i>) or fibrous and extremely wide (<i>P. pentandra</i> var. <i>gracilis</i> , <i>P. hirta</i> var. <i>hirta</i>) or with intermediate structure (<i>P. pentandra</i> subsp. <i>pentandra</i> 8c subsp. <i>wightii</i> var. <i>wightii</i>)." ... "The winged fruits of <i>P. zeylanica</i> , <i>P. pentandra</i> and <i>P. hirta</i> var. <i>hirta</i> appear to represent successive stages in adaptation to wind dispersal, with a decrease in thickness of the pericarp correlated with increasing complexity of the wing."

707	Propagules dispersed by other animals (externally)	n
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Qsn #	Question	Answer
	Source(s)	Notes
	Kravtsova, T. I., Friis, I., & Wilmot-Deer, C. M. (2003). Morphology and anatomy of fruits in <i>Pouzolzia</i> (Urticaceae) in relation to taxonomy. <i>Kew Bulletin</i> , 58: 297-327	"Winged fruits are adapted to wind dispersal."

708	Propagules survive passage through the gut	
	Source(s)	Notes
	Singh, V., Gaur, R. D., & Bohra, B. (2008). A survey of fodder plants in mid-altitude Himalayan rangelands of Uttarakhand, India. <i>Journal of Mountain Science</i> , 5(3): 265-278	[Not adapted for zoochory, but seeds might be ingested incidentally. Unknown if seeds could survive gut passage if ingested] "Table 1 Fodder species in the rangeland ecosystems of Uttarakhand Himalaya" [Table includes <i>Pouzolzia zeylanica</i>]

801	Prolific seed production (>1000/m2)	n
	Source(s)	Notes
	Ghosh, C. (2006). Biology of tea garden weeds in Darjeeling district of West Bengal India. PhD Dissertation. University of North Bengal, Darjeeling	" <i>Pouzolzia zeylanica</i> (L.) Bennett: The average number of fruits produced by an individual of this species is 425 and 1 seed in one fruit. This brought the average seed-output of the species to 425. In the absence of light, germination started from the 5th day and made a steady progress up to 10th day. On the 10th day, 42% germination was observed. The reproductive capacity, after taking into account the germination percentage and average seed-output of the species, was 178.5 per plant." [Probably will not produce seed densities in excess of 1000/m2]
	Ma, Y., Chen, F., Chen, S., Guan, S., & Chen, C. (2018). Effects of reverse seasonal submersion on the germination and persistence of soil seed banks in hydro-fluctuation belts. <i>Ecohydrology</i> , DOI: 10.1002/eco.2008	"TABLE 1 ... <i>Pouzolzia zeylanica</i> ... Seed density (seeds/m2) = 49.76 ± 25.99"

802	Evidence that a persistent propagule bank is formed (>1 yr)	
	Source(s)	Notes
	Royal Botanic Gardens Kew. (2018) Seed Information Database (SID). Version 7.1. Available from: http://data.kew.org/sid/ . [Accessed 11 Sep 2018]	"Storage Behaviour: No data available for species or genus. Of 35 known taxa of family URTICACEAE, 91.43% Orthodox(p/?), 8.57% Uncertain"
	Ma, Y., Chen, F., Chen, S., Guan, S., & Chen, C. (2018). Effects of reverse seasonal submersion on the germination and persistence of soil seed banks in hydro-fluctuation belts. <i>Ecohydrology</i> , DOI: 10.1002/eco.2008	[Seeds persist for at least 7 months] "After 7 months of submersion, only one out of the four predominant species, namely, <i>P. paspaloides</i> , was germinating, whereas the predominant species of the seed bank had become <i>Pouzolzia zeylanica</i> ."

Qsn #	Question	Answer
803	Well controlled by herbicides	y
	Source(s)	Notes
	Zhenghao Xu & Meihua Deng. (2017). Identification and Control of Common Weeds: Volume 2. Zhejiang University Press, Hangzhou and Springer Nature, Singapore	"Cleaning up the weed at the margins of the field can reduce the intrusion of <i>Pouzolzia zeylanica</i> . Pulling and other mechanical methods can effectively mitigate the infestation of the weed. Chemical control can choose 2,4-D butyl ester in fields and paraquat or glyphosate at margins of fields."

804	Tolerates, or benefits from, mutilation, cultivation, or fire	y
	Source(s)	Notes
	Zhenghao Xu & Meihua Deng. (2017). Identification and Control of Common Weeds: Volume 2. Zhejiang University Press, Hangzhou and Springer Nature, Singapore	"Cleaning up the weed at the margins of the field can reduce the intrusion of <i>Pouzolzia zeylanica</i> . Pulling and other mechanical methods can effectively mitigate the infestation of the weed. Chemical control can choose 2,4-D butyl ester in fields and paraquat or glyphosate at margins of fields."
	Rogers, G .K. (2016). Landscape Plants for South Florida - <i>Pouzolzia</i> Bush - <i>Pouzolzia zeylanica</i> . Palm Beach State College, Palm Beach Gardens, Florida. http://www.plantbook.org/ . [Accessed 10 Sep 2018]	[Indicates that removal of above-ground portion of plant will not result in successful control due to resprouting] "Spreads by seed and has an extensive root system. When attempting to rid area of <i>P. zeylanica</i> , tuber-like root systems will continue to spread and send up new stems. "

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	Source(s)	Notes
	WRA Specialist. 2018. Personal Communication	Unknown

Summary of Risk Traits:

High Risk / Undesirable Traits

- Elevation range exceeds 1000 m, demonstrating environmental versatility
- Grows in tropical climates
- Naturalized in Florida & possibly elsewhere. No evidence in Hawaiian Islands to date
- A disturbance-adapted weed that may impact agriculture
- Other *Pouzolzia* species are weeds
- Reproduces by seeds & resprouts from tuberous roots (functional geophyte)
- Seeds dispersed by wind, as a contaminant, & possibly cultivated by people
- Able to coppice & resprout after cutting

Low Risk Traits

- Despite weediness, also valued for edible & medicinal uses
- Unarmed (no spines, thorns, or burrs)
- Provides fodder for livestock
- Non-toxic
- Not reported to spread vegetatively
- Herbicides may provide effective control