

Taxon: Eragrostis curvula	Family: Poaceae
Common Name(s): African love grass Boer love grass oulandsgras pasto llorón weeping love grass	Synonym(s): Eragrostis chloromelas Steud. Eragrostis jeffreysii Hack. Eragrostis robusta Stent Eragrostis subulata Nees Leptochloa uninervia (Misapplied) Poa curvula Schrad. (basionym)

Assessor: Chuck Chimera	Status: Assessor Approved	End Date: 3 Jun 2015
WRA Score: 26.0	Designation: H(HPWRA)	Rating: High Risk

Keywords: Tropical Grass, Environmental Weed, Monoculture-forming, Apomictic, Fire-adapted

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)	y
305	Congeneric weed	n=0, y = 1*multiplier (see Appendix 2)	y
401	Produces spines, thorns or burrs	y=1, n=0	n
402	Allelopathic		
403	Parasitic	y=1, n=0	n
404	Unpalatable to grazing animals	y=1, n=-1	n
405	Toxic to animals	y=1, n=0	n
406	Host for recognized pests and pathogens	y=1, n=0	n

Qsn #	Question	Answer Option	Answer
407	Causes allergies or is otherwise toxic to humans		
408	Creates a fire hazard in natural ecosystems	y=1, n=0	y
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)	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	y
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	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)	y=1, n=-1	y
708	Propagules survive passage through the gut	y=1, n=-1	y
801	Prolific seed production (>1000/m ²)		
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	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
	Parsons, W.T. & Cuthbertson, E.G. 2001. Noxious Weeds of Australia. Second Edition. CSIRO Publishing, Collingwood, Australia	[Certain cultivars may be less weedy and more palatable] "An Australian selected, readily identifiable, more palatable cultivar of the Conferta type has been registered as <i>Eragrostis curvula</i> cv. Consol for sowing as a pasture plant. It does not appear to have the weedy characteristics of other forms and has been released in New South Wales for use in erosion control and grazing on light soils on the Northern and Southern Slopes and Plains. It is also being used, successfully, as a competing pasture species for the control of spiny burr grass (see page 97) in Urana Shire in the south of the State."

102	Has the species become naturalized where grown?	
	Source(s)	Notes
	WRA Specialist. 2015. Personal Communication	NA

103	Does the species have weedy races?	
	Source(s)	Notes
	WRA Specialist. 2015. 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, ARS, National Genetic Resources Program. 2015. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. URL: http://www.ars-grin.gov/ . [Accessed 2 Jun 2015]	"Native: AFRICA East Tropical Africa: Kenya; Tanzania South Tropical Africa: Mozambique; Zambia; Zimbabwe Southern Africa: Botswana; Lesotho; Namibia; South Africa - Cape Province, Free State, KwaZulu-Natal, Transvaal; Swaziland"

202	Quality of climate match data	High
	Source(s)	Notes
	USDA, ARS, National Genetic Resources Program. 2015. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. URL: http://www.ars-grin.gov/ . [Accessed 2 Jun 2015]	

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

Qsn #	Question	Answer
	<p>FAO. 2015. Grassland Species Profiles - <i>Eragrostis curvula</i>. http://www.fao.org/ag/agp/AGPC/doc/gbase/Safricadata/eragcur.htm. [Accessed 2 Jun 2015]</p>	<p>"Altitude range, Sea-level to 3 500 m (originated near the equator in Tanzania at 1 000-1 600 m)."</p>
	<p>Gucker, C. L. 2009. <i>Eragrostis curvula</i>. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/. [Accessed 2 Jun 2015]</p>	<p>[Broad distribution and elevation range] "Climate: In weeping lovegrass' native African range, average monthly minimum and maximum temperatures are 50 to 64 °F (10-18 °C) and 77 to 86 °F (25-30° C), respectively. Winters are cold and dry, and annual precipitation averages 20 to 47 inches (500-1,200 mm). More than half of annual precipitation falls during the growing season [26]." ... "Elevation: In East and South Africa, weeping lovegrass occupies sites between 2,300 and 5,740 feet (700-1,750 m) [26]. In the United States, weeping lovegrass occurs from sea level in the East to over 7,000 feet (2,100 m) in the Southwest [8,119]. Weeping lovegrass occurs at elevations below 1,600 feet (500 m) in California [49], at less than 4,990 feet (1,520 m) in Utah [123], and at elevations of 2,850 to 3,770 feet (870-1,150 m) in the Grand Canyon region [101]. In western Oklahoma and northern Texas, weeping lovegrass occurs at 1,000 to 3,300 feet (300-1,000 m) [26]."</p>

204	Native or naturalized in regions with tropical or subtropical climates	y
	Source(s)	Notes
	<p>USDA, ARS, National Genetic Resources Program. 2015. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. URL: http://www.ars-grin.gov/. [Accessed 2 Jun 2015]</p>	<p>"Native: AFRICA East Tropical Africa: Kenya; Tanzania South Tropical Africa: Mozambique; Zambia; Zimbabwe Southern Africa: Botswana; Lesotho; Namibia; South Africa - Cape Province, Free State, KwaZulu-Natal, Transvaal; Swaziland"</p>

Qsn #	Question	Answer
205	Does the species have a history of repeated introductions outside its natural range?	y
	Source(s)	Notes
	Gucker, C. L. 2009. <i>Eragrostis curvula</i> . In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ . [Accessed 2 Jun 2015]	"Weeping lovegrass is a nonnative species that occupies a relatively large range in the United States. Weeping lovegrass populations are sporadic along the western US coast, in the southern half of the continental states, along the eastern US coast, and in Hawaii and Puerto Rico. In the continental states, populations occur as far north as Illinois and Ohio [8,28]. Weeping lovegrass is most common in Arizona, New Mexico, Oklahoma, and Texas [37,47] but is "becoming common" in New Jersey and Pennsylvania [44]. Generally, weeping lovegrass is most common in those areas where it was intentionally planted."
	Warren, S. D., & Aschmann, S. G. (1993). Revegetation strategies for Kaho'olawe Island, Hawaii. <i>Journal of Range Management</i> , 4 (5): 462-466	[Planted for erosion control] "Over the past 2 centuries, the island of Kaho'olawe has suffered the ravages of war, slash-and burn agriculture, and overgrazing. Today, much of the island is barren and severely eroded. A research project initiated in 1988 has sought to identify effective, economical techniques to revegetate portions of the island." ... "The planted species with greatest promise for the windy, semiarid conditions on Kaho'olawe were buffelgrass (<i>Cenchrus ciliaris</i> L.), bermudagrass [<i>Cynodon dactylon</i> (L.) Pers.] and weeping lovegrass [<i>Eragrostis curvula</i> (Schrad.) Nees]."

301	Naturalized beyond native range	y
	Source(s)	Notes
	Wagner, W.L., Herbst, D.R.& Lorence, D.H. 2015. Flora of the Hawaiian Islands. Smithsonian Institution, Washington, D.C. http://botany.si.edu/pacificislandbiodiversity/hawaiianflora/index.htm . [Accessed 2 Jun 2015]	" <i>Eragrostis curvula</i> (Schrad.) Nees Status: Naturalized Distribution: O ('Ewa)/ EM (Pukalani)/ Ka Specimens Synonyms: <i>Leptochloa uninervia</i> (Misapplied)"
	Parsons, W.T. & Cuthbertson, E.G. 2001. Noxious Weeds of Australia. Second Edition. CSIRO Publishing, Collingwood, Australia	"It seems to have been introduced to Australia by accident prior to 1900, but has been specifically imported for experimental assessment several times since then. As a result, four of the agronomic forms have become naturalized on acidic light to medium textured soils within the 400 to 700 mm annual rainfall zone in mainland States. Minor colonies are also found in some of the lower rainfall areas."

302	Garden/amenity/disturbance weed	
	Source(s)	Notes
	DiTomaso, J. 2007. Weeds of California and Other Western States, Volume 2. UCANR Publications, Oakland, CA	[A disturbance-adapted grass with negative environmental impacts] "In California, weeping lovegrass inhabits roadsides, ditches and other disturbed places, often near gardens ..."

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

Qsn #	Question	Answer
	<p>Queensland Government. 2011. Weeds of Australia. African lovegrass. <i>Eragrostis curvula</i>. http://keyserver.lucidcentral.org/weeds/data/03030800-0b07-490a-8d04-0605030c0f01/media/Html/Eragrostis_curvula.htm. [Accessed 3 Jun 2015]</p>	<p>"African lovegrass (<i>Eragrostis curvula</i>) readily spreads from roadsides and disturbed sites into neighbouring degraded pastures. It is extremely competitive with other pasture species and quickly overtakes overgrazed or poor quality pastures, particularly in sandy soils. When mature it is not readily eaten by livestock, and this increases the competition on more preferable pasture species. It also has a low nutritional value, resulting in stock performing poorly in infested pastures, thereby significantly decreasing pasture productivity. There is also concern that African lovegrass (<i>Eragrostis curvula</i>) could invade lucerne and summer cropping areas in Queensland, where it may contaminate these commodities. "</p>

Qsn #	Question	Answer
304	Environmental weed	y
	Source(s)	Notes
	<p>Queensland Government. 2011. Weeds of Australia. African lovegrass. <i>Eragrostis curvula</i>. http://keyserver.lucidcentral.org/weeds/data/03030800-0b07-490a-8d04-0605030c0f01/media/Html/Eragrostis_curvula.htm. [Accessed 3 Jun 2015]</p>	<p>"African lovegrass (<i>Eragrostis curvula</i>) has already invaded large parts of Australia and is a major environmental weed in this country. It is currently regarded as a significant environmental weed Victoria, the ACT, New South Wales, Queensland and Western Australia, and is also seen as an emerging environmental weed or "sleeper weed" in Tasmania and South Australia. During a recent survey it was listed as a priority environmental weed in ten Natural Resource Management regions, placing it as one of the most widespread species of concern."</p>
	<p>Matsumoto, J., Muraoka, H., & Washitani, I. (2000). Whole plant carbon gain of an endangered herbaceous species <i>Aster kantoensis</i> and the influence of shading by an alien grass <i>Eragrostis curvula</i> in its gravelly floodplain habitat. <i>Annals of Botany</i>, 86(4), 787-797</p>	<p>"<i>Aster kantoensis</i>, an endangered plant species, is endemic to gravelly floodplains of a few large rivers in central Japan. In recent years, competitive exclusion by alien perennial grasses in its natural habitat has been suspected to be one of the major factors threatening this species. In the River Kinu, increased shading by the perennial alien grass <i>Eragrostis curvula</i> reduces light availability for <i>A. kantoensis</i>." ... "Thus, <i>E. curvula</i> shading is highly responsible for the restriction of growth and hence seedling survival of <i>A. kantoensis</i> in the floodplain."</p>
	<p>Weber, E. 2003. <i>Invasive Plant Species of the World. A Reference Guide to Environmental Weeds</i>. CABI Publishing, Wallingford, UK</p>	<p>"Where invasive, it becomes dominant on low-fertility soils and the dense tussocks displace native vegetation."</p>
	<p>Yoshioka, A., Kadoya, T., Suda, S. I., & Washitani, I. (2010). Impacts of weeping lovegrass (<i>Eragrostis curvula</i>) invasion on native grasshoppers: responses of habitat generalist and specialist species. <i>Biological Invasions</i>, 12(3), 531-539</p>	<p>[Impacts native grasshoppers in Japan] "Abstract We investigated invasion impacts of a grass species (<i>Eragrostis curvula</i>) on native grasshoppers by periodic censuses of these insects on gravelly floodplains of the Kinu River, Japan. Our hypothesis was that there are greater impacts on natives when they are habitat specialists, as opposed to habitat generalists. The study area comprised two main habitat types: gravelly areas and riparian grasslands. Among 12 grasshopper species identified, five were more abundant in one of the habitat types and all of them were significantly negatively affected by coverage of weeping lovegrass, whereas seven occurred at the both habitat types simultaneously and a significantly smaller portion of species (two of the seven) was negatively affected by the alien plants. The results suggest that habitat specificity is related to the grasshopper species' sensitivity to the plant, indicating that habitat specialist herbivores living on open gravelly floodplains are likely highly vulnerable to this plant invasion."</p>

305	Congeneric weed	y
	Source(s)	Notes
	<p>Weber, E. 2003. <i>Invasive Plant Species of the World. A Reference Guide to Environmental Weeds</i>. CABI Publishing, Wallingford, UK</p>	<p>"<i>Eragrostis lehmanniana</i>" ... "It is invasive because it spreads quickly and covers native desert vegetation, displacing native grasses and forbs. Dense stands have a reduces faunal diversity. The grass invades grassland seemingly undisturbed by livestock or humans. Seed production is high, and seeds are dispersed by water and wind. A large seed bank is accumulated in the soil. The grass increases fire frequency due to accumulation of a large amount of litter and dead stems."</p>

Qsn #	Question	Answer
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401	Produces spines, thorns or burrs	n
	Source(s)	Notes
	<p>Parsons, W.T. & Cuthbertson, E.G. 2001. Noxious Weeds of Australia. Second Edition. CSIRO Publishing, Collingwood, Australia</p>	<p>[No evidence] "A vigorous, densely tufted, perennial grass 30 to 120 cm high, reproducing apomictically (without fertilization), by seed. Stems slender or robust, erect or sometimes bent at lower nodes, 30 to 120 cm high. Leaves vary from dark green to blue-green; basal sheaths keeled, strongly striate, usually without hairs but sometimes silky-hairy below; ligule a conspicuous ring of hairs; blades narrow, 35 to 35 cm long, 3 mm wide, arched and rough to touch, margins often inrolled."</p>

402	Allelopathic	
	Source(s)	Notes
	<p>Coelho RW, Schmidt RE (2001) Allelopathic influence of <i>Eragrostis curvula</i> water extract on seed germination and seedling growth of two other species. In: International Grassland Congress 19 (2001), Sao Paulo, Brazil. http://www.internationalgrasslands.org/files/igc/publications/2001/id0106.pdf.. [Accessed]</p>	<p>"Weeping lovegrass (<i>Eragrostis curvula</i> Schrad. Nees) is a very aggressive tropical species and does not grow well with other species. This study was set up to investigate the allelopathic effect of various extract concentrations of weeping lovegrass on seed germination of white clover (<i>Trifolium repens</i> L.) and bentgrass (<i>Agrostis stolonifera</i> L.) and the seedling development of white clover. Laboratory and growth chamber studies were conducted. Extract concentrations of 13.6, 27.2, 40.8, 54.4, and 62.0 g/100mL of water were studied. Treatments were arranged in a completely randomized design with three replications. The allelopathic effect of weeping lovegrass was significant (P<0.01) on white clover and bentgrass. White clover was affected by lower extract concentration than bentgrass. The seedling growth of white clover was reduced when compared with the control (P<0.01) for root growth and (P<0.04) for whole plant. The osmotic potential also affected (P<0.01) seed germination of white clover. For the highest concentrated solution there was a decrease of 20% on the seed germination of white clover due to the water potential."</p>

Qsn #	Question	Answer
	<p>Chou, C. H., & Young, C. C. (1975). Phytotoxic substances in twelve subtropical grasses. <i>Journal of Chemical Ecology</i>, 1(2), 183-193</p>	<p>[Demonstrates allelopathy in lab settings] "Aqueous extracts of 12 subtropical grasses inhibited seed germination and radicle growth of <i>Lactuca sativa</i> var. Great Lakes at osmotic concentrations as low as 10 milliosmol. <i>Acroceras macrum</i>, <i>Chloris gayana</i>, <i>Digitaria decumbens</i>, and <i>Panicum maximum</i> exhibited the highest inhibition, while <i>Cortaderia selloana</i> revealed the least. Toxic spots were found on chromatograms of the ether fraction of aqueous extracts. <i>Cynodon dactylon</i>, <i>Setaria sphacelata</i>, and <i>Tripsacum laxum</i> showed more than six toxic spots, while <i>Andropogon nodosum</i>, <i>Bracharia mutica</i>, and <i>Chloris gayana</i> gave less than three toxic spots. The phytotoxins ferulic, syringic, p-coumaric, vanillic, p-hydroxybenzoic, and o-hydroxyphenylacetic acids were identified. These compounds are differentially distributed in the 12 grasses studied. Additionally, most of these compounds were also found in the associated soils; the control (nonherb-growth) soil provided the toxic compounds in significantly less amount than did the grass soils." ... "In the second type of inhibition seed germination was inhibited, but the seeds were able to germinate after washing and reincubation. <i>Andropogon nodosum</i>, <i>Brachiaria mutica</i>, <i>Cynodon dactylon</i>, <i>Eragrostis curvula</i>, <i>Plicatulum paspalum</i>, <i>Setaria sphacelata</i>, and <i>Tripsacum laxum</i> belonged to this type."</p>

403	Parasitic	n
	Source(s)	Notes
	<p>USDA, ARS, National Genetic Resources Program. 2015. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. URL: http://www.ars-grin.gov/. [Accessed 2 Jun 2015]</p>	<p>[No evidence] "Family: Poaceae (alt. Gramineae) subfamily: Chloridoideae tribe: Eragrostideae"</p>

404	Unpalatable to grazing animals	n
	Source(s)	Notes

Qsn #	Question	Answer
	Gucker, C. L. 2009. <i>Eragrostis curvula</i> . In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ . [Accessed 2 Jun 2015]	"Cattle and deer feed on weeping lovegrass in its nonnative US range." ... "Cattle: Most researchers indicate that cattle graze weeping lovegrass primarily in the spring." ... "Deer: In the winter in the southeastern United States, white-tailed deer feed "considerably" on weeping lovegrass [34]." ... "Palatability and nutritional value: Although the palatability and forage quality of weeping lovegrass typically decrease as plants approach maturity [95], as the growing season progresses, or during drought conditions [27], management activities may improve or maintain palatability and/or nutrition. Some suggest that grazing and fire can be used to maintain weeping lovegrass palatability. Management guidelines for maximum production and livestock weight gains are provided by Dahl and Cotter [30]. At the Texas Tech University Research Farm, cattle utilization and crude protein of weeping lovegrass were greater on winter or spring-burned than on unburned plots [59]. Crude protein content was greater and neutral detergent fiber was lower on spring-burned than unburned sites for nearly all of the first postfire season in Texas [72]. On other sites in Texas, weeping lovegrass crude protein and digestibility were greater on clipped than unclipped vegetation 30 days after clipping [66]. "
	Parsons, W.T. & Cuthbertson, E.G. 2001. Noxious Weeds of Australia. Second Edition. CSIRO Publishing, Collingwood, Australia	[Palatable at early stages of growth] "African lovegrass is, in general, nutritious and acceptable to stock in the younger growth stages before the seed heads appear. It quickly loses palatability, however, after jointing occurs. Nevertheless, it can be maintained in an acceptable stage by topdressing, especially with nitrogen, and heavy rotational grazing. "

405	Toxic to animals	n
	Source(s)	Notes
	FAO. 2015. Grassland Species Profiles - <i>Eragrostis curvula</i> . http://www.fao.org/ag/agp/AGPC/doc/gbase/Safricadata/eragcur.htm . [Accessed 2 Jun 2015]	"Toxicity. Not toxic."
	Gucker, C. L. 2009. <i>Eragrostis curvula</i> . In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ . [Accessed 2 Jun 2015]	[No evidence] "Cattle and deer feed on weeping lovegrass in its nonnative US range."
	Wagstaff, D.J. 2008. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	No evidence

406	Host for recognized pests and pathogens	n
	Source(s)	Notes
	FAO. 2015. Grassland Species Profiles - <i>Eragrostis curvula</i> . http://www.fao.org/ag/agp/AGPC/doc/gbase/Safricadata/eragcur.htm . [Accessed 2 Jun 2015]	"Diseases and pests. None known."

Qsn #	Question	Answer
	Cook, B.G., Pengelly, B.C., Brown, S.D., Donnelly, J.L., Eagles, D.A., Franco, M.A., Hanson, J., Mullen, B.F., Partridge, I.J., Peters, M., & Schultze-Kraft, R. 2005. Tropical Forages: an interactive selection tool., [CD-ROM], SIRO, DPI&F(Qld), CIAT and ILRI. http://www.tropicalforages.info/index.htm . [Accessed 3 Jun 2015]	"Pests and diseases: None known."
	USDA NRCS. 2006. Plant Fact Sheet - Weeping Lovegrass - <i>Eragrostis curvula</i> . http://plants.usda.gov/factsheet/pdf/fs_ercu2.pdf . [Accessed 2 Jun 2015]	"There are no serious pests of weeping lovegrass."

407	Causes allergies or is otherwise toxic to humans	
	Source(s)	Notes
	Prescott, R. A., & Potter, P. C. (2001). Allergenicity and cross reactivity of buffalo grass (<i>Stenotaphrum secundatum</i>). <i>South African Medical Journal</i> 91(3), 237-242	"Buffalo and <i>Eragrostis</i> are important aeroallergens in the Cape, dispersed during the long dry, windy summer. Our data suggest that the local grasses are major sensitisers, and that South African diagnostic panels should include extracts of buffalo and <i>Eragrostis</i> grasses." ... "Also included in the study is a related and common grass, <i>Eragrostis curvula</i> , known as the weeping love grass ... It has been introduced as a pasture grass throughout the tropics and East Africa. It forms large perennial tufts, and has an exceptionally long flowering period, starting to produce pollen in August, peaking after the rainy season, and continuing through the summer into the winter months of June and July."
	Cook, B.G., Pengelly, B.C., Brown, S.D., Donnelly, J.L., Eagles, D.A., Franco, M.A., Hanson, J., Mullen, B.F., Partridge, I.J., Peters, M., & Schultze-Kraft, R. 2005. Tropical Forages: an interactive selection tool., [CD-ROM], SIRO, DPI&F(Qld), CIAT and ILRI. http://www.tropicalforages.info/index.htm . [Accessed 3 Jun 2015]	"Toxicity: Not toxic."
	Potter, P. C. (2010). Common indoor and outdoor aeroallergens in South Africa. <i>CME: Your SA Journal of CPD: Paediatric allergy</i> , 2 (9), 426-428	[Pollen may be allergenic to susceptible individuals] "Table I. Common aero-allergens in South Africa" ... "Grass pollens <i>Eragrostis curvula</i> " ... "Up to 80% of South Africans react to <i>Eragrostis</i> and Buffalo grass pollens."

408	Creates a fire hazard in natural ecosystems	y
	Source(s)	Notes
	Queensland Government. 2011. Weeds of Australia. African lovegrass. <i>Eragrostis curvula</i> . http://keyserver.lucidcentral.org/weeds/data/03030800-0b07-490a-8d04-0605030c0f01/media/Html/Eragrostis_curvula.htm . [Accessed 3 Jun 2015]	"Because it is highly flammable, particularly during the dry season, dense infestations also create an increased fire hazard for people and property."

Qsn #	Question	Answer
	<p>Gucker, C. L. 2009. <i>Eragrostis curvula</i>. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/. [Accessed 2 Jun 2015]</p>	<p>"Fuels: Researchers have noted weeping lovegrass persistence on annually burned sites [42,74,119], suggesting that fine fuel production is sufficient to carry annual fires in weeping lovegrass stands. Litter is "pronounced" in weeping lovegrass monocultures [36] and accumulates in and around the base of weeping lovegrass plants and around weeping lovegrass root crowns the longer stands are undisturbed [27]." ... "Fire regimes: Weeping lovegrass may experience high fire frequency in its native and nonnative habitats." ... "Before European settlement and the introduction of weeping lovegrass in the Great Plains region of the United States, level to rolling grasslands may have burned every 5 to 10 years and areas with rougher topography may have burned every 20 to 30 years. In the Great Plains, where weeping lovegrass has now been widely introduced, "big" fires tend to occur in drought years that follow at least 2 years of above-average precipitation."</p>

409	Is a shade tolerant plant at some stage of its life cycle	
	Source(s)	Notes
	<p>Gucker, C. L. 2009. <i>Eragrostis curvula</i>. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/. [Accessed 2 Jun 2015]</p>	<p>[Partial shade] "Weeping lovegrass is tolerant of partial shade, and in Beltsville, Maryland, weeping lovegrass established and grew in "almost" complete shade [27]. However, within 5 years of a fire near Globe, Arizona, increases in shrub live oak (<i>Q. turbinella</i>) appeared to reduce weeping lovegrass abundance. Basal cover of weeping lovegrass was inversely proportional to shrub live oak crown cover. In experiments where more than 50% of shrub live oak cover was removed, weeping lovegrass cover increased for up to 3 years [87]. Whether or not weeping lovegrass abundance was reduced by shrub live oak shading is unclear. It is possible that competition for root space or other interference was more important"</p>

Qsn #	Question	Answer
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y
	Source(s)	Notes
	FAO. 2015. Grassland Species Profiles - <i>Eragrostis curvula</i> . http://www.fao.org/ag/agp/AGPC/doc/gbase/Safricadata/eragcur.htm . [Accessed 2 Jun 2015]	"It prefers sandy loams and well drained fertile soils, but will grow in a wide range of soils. It prefers a pH of 7.0-8.5 (Miller & Hafenrichter, 1958)."
	Gucker, C. L. 2009. <i>Eragrostis curvula</i> . In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ . [Accessed 2 Jun 2015]	"Soils: Weeping lovegrass grows best in well-drained, relatively fertile, nonsaline, sandy to clay loam soils [27,33]. It does not tolerate standing water [27]. Most often weeping lovegrass occurs in sandy soils [47,88]. In a greenhouse, weeping lovegrass seedling emergence was greatest from sandy loam (54%) when compared to Pima silty clay loam (47%) and Sonoita silty clay loam (22%). The clay of the Pima soils was 60% montmorillonite and for the Sonoita soils was 80% kaolinite [25]. Weeping lovegrass tolerates salinity and a wide pH range. A review reports that weeping lovegrass is very salt tolerant [129], and in a short-term greenhouse study, weeping lovegrass production after 20 days of treatments with 180 mol NaCl/m ³ was 82% of that of nonsaline treatments [93]. In loamy soils in Garza County, Texas, weeping lovegrass grew in areas with a pH of 8.4 [69], and in a controlled study, researchers found that weeping lovegrass seedling growth was not reduced at pH 4 but was reduced at pH 3 [39]."

411	Climbing or smothering growth habit	n
	Source(s)	Notes
	Gucker, C. L. 2009. <i>Eragrostis curvula</i> . In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ . [Accessed 2 Jun 2015]	"Weeping lovegrass is a large bunchgrass that is generally a long-lived perennial [3,8,49] but in northern US habitats may be an annual [58]. Weeping lovegrass may reach 75 inches (190 cm) tall, and the basal crown diameter of isolated plants may reach 15 inches (38 cm) [95,123]. Leaf blades are narrow, stiff, finely pointed, and measure up to 26 inches (65 cm) long and 3 mm wide. Leaf blade margins are often rolled inward [8,28,81]."

412	Forms dense thickets	y
	Source(s)	Notes
	Yoshioka, A., Kadoya, T., Suda, S. I., & Washitani, I. (2010). Impacts of weeping lovegrass (<i>Eragrostis curvula</i>) invasion on native grasshoppers: responses of habitat generalist and specialist species. <i>Biological Invasions</i> , 12(3), 531-539	"Weeping lovegrass forms dense tussocks, mostly in areas of sparse vegetation (Muranaka and Washitani 2001), and occupies habitats suitable for endangered plant species endemic to gravelly floodplains (Muranaka and Washitani 2001; Washitani 2001)."

Qsn #	Question	Answer
	Nakayama, N., Nishihiro, J., Kayaba, Y., Muranaka, T., & Washitani, I. (2007). Seed deposition of <i>Eragrostis curvula</i> , an invasive alien plant on a river floodplain. <i>Ecological Research</i> , 2(4), 696-701	[Forms dense stands in riparian habitats] "In addition, dense vegetation established in riverine habitats can the promote deposition of fine sediments transported by floods (Goodson et al. 2003). Therefore, the dense stands of <i>E. curvula</i> , which are stable against disturbances caused by typhoon flooding (Muranaka and Washitani 2004), may also act as a seed trap that enhances the deposition of fine sediment and seeds on the gravel bars, which were originally characterized by sparse vegetation. Consequently, the invasion and establishment of <i>E. curvula</i> can induce a positive feedback cycle, leading to rapid population growth. Thus, riparian ecosystems with and without dense stands of invasive alien grasses, such as <i>E. curvula</i> , may represent alternative stable states of an ecosystem (Scheffer and Carpenter 2003)."
	Gucker, C. L. 2009. <i>Eragrostis curvula</i> . In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ . [Accessed 2 Jun 2015]	[Monoculture formation after fire and intentional seeding] "Weeping lovegrass seedlings emerged from soils collected on burned sites in Arizona [45,77], and when it was intentionally seeded on a burned site in Arizona's Tonto National Forest, a near monoculture of weeping lovegrass established [78]."

501	Aquatic	n
	Source(s)	Notes
	Gucker, C. L. 2009. <i>Eragrostis curvula</i> . In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ . [Accessed 2 Jun 2015]	[Terrestrial grass] "Soils: Weeping lovegrass grows best in well-drained, relatively fertile, nonsaline, sandy to clay loam soils [27,33]. It does not tolerate standing water [27]."

502	Grass	y
	Source(s)	Notes
	USDA, ARS, National Genetic Resources Program. 2015. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. URL: http://www.ars-grin.gov/ . [Accessed 2 Jun 2015]	"Family: Poaceae (alt. Gramineae) subfamily: Chloridoideae tribe: Eragrostideae"

503	Nitrogen fixing woody plant	n
	Source(s)	Notes
	Quattrocchi, U. 2006. <i>CRC World Dictionary of Grasses: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology</i> . CRC Press, Boca Raton, FL	"Perennial bunchgrass" [Poaceae]

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	Notes

Qsn #	Question	Answer
	Gucker, C. L. 2009. <i>Eragrostis curvula</i> . In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ . [Accessed 2 Jun 2015]	"Weeping lovegrass produces an extensive thick mat of roots, which have made it useful for erosion control [3,58]. Shoop and McIlvain [95] report that vertical roots may reach 15 feet (4.6 m) deep and spread out 3 feet (1 m) on sandy soils. Roots often fill all the surface soil space between plants. The first roots produced by weeping lovegrass seedlings are large and generally grow straight down; these primary roots develop 30 to 60 fine rootlets per inch of primary root length. Seedling roots grow rapidly; in the first month of growth, weeping lovegrass roots averaged of 0.54 inches (1.4 cm) of growth per day. Maximum seedling root growth in a single day was 2 inches (5 cm). In the field, a 2-year-old weeping lovegrass plant produced 600 to 800 main roots that reached a maximum depth of over 6 feet (2 m) and a maximum lateral spread of over 10 feet (3 m) [27]."

601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	Notes
	Quattrocchi, U. 2006. CRC World Dictionary of Grasses: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	No evidence

602	Produces viable seed	y
	Source(s)	Notes
	Gucker, C. L. 2009. <i>Eragrostis curvula</i> . In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ . [Accessed 2 Jun 2015]	"Weeping lovegrass reproduces by seed. Although a type of vegetative regeneration during wet, warm weather is described in a review by Crider [27], this process was not described elsewhere."

603	Hybridizes naturally	
	Source(s)	Notes
	Busey, P. (1976). Breeding and cytogenetics of lovegrasses (<i>Eragrostis</i> spp.). PhD Dissertation. The University of Arizona, Tucson, AZ	"Interspecific hybrids are expected, particularly in the <i>E. curvula</i> complex, due to the large number of intermediate types observed there. Naturally occurring hybrids between species in the <i>E. curvula</i> complex would be difficult to distinguish from occasional mutants and would also be difficult to document."
	Burson, B. L., & Voigt, P. W. (1996). Cytogenetic relationships between the <i>Eragrostis curvula</i> and <i>E. lehmanniana</i> complexes. <i>International Journal of Plant Sciences</i> , 157(5): 632-637	[Artificial hybrids possible between "Weeping lovegrass (<i>Eragrostis curvula</i> [Schrad.] Nees), boer lovegrass (<i>E. curvula</i> var. <i>conferta</i> Nees), and lehmann lovegrass (<i>Eragrostis lehmanniana</i> Nees) are three of the more important species for conservation-forage purposes in the United States. All are indigenous to southern Africa." "Tetraploid sexual boer lovegrass hybridized easily with weeping (Voigt 1984), cold-hardy lehman (Voigt and Burson 1983), and robusta (Voigt and Tischler 1994) forms of <i>E. curvula</i> but did not hybridize with lehmann lovegrass."

Qsn #	Question	Answer
604	Self-compatible or apomictic	y
	Source(s)	Notes
	Gucker, C. L. 2009. <i>Eragrostis curvula</i> . In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ . [Accessed 2 Jun 2015]	"Pollination and breeding system: Weeping lovegrass produces seed through self fertilization of sexual plants or by apomixis [41,113]. Apomixis is considered more common than sexual reproduction by Voight and Bashaw [113], but Fryxell [41] reports that weeping lovegrass only reproduces sexually through self-fertilization."
	Voigt, P. W., & Bashaw, E. C. (1972). Apomixis and sexuality in <i>Eragrostis curvula</i> . <i>Crop Science</i> , 12(6), 843-847	"Weeping lovegrass, <i>Eragrostis curvula</i> (Schrad.) Nees, reproduces by obligate apomixes (diplospory)."

605	Requires specialist pollinators	n
	Source(s)	Notes
	Zomlefer, W.B. 1994. <i>Guide to Flowering Plant Families</i> . The University of North Carolina Press, Chapel Hill & London	Poaceae [anemophilous. Wind-pollinated]

606	Reproduction by vegetative fragmentation	n
	Source(s)	Notes
	Gucker, C. L. 2009. <i>Eragrostis curvula</i> . In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ . [Accessed 2 Jun 2015]	"Weeping lovegrass reproduces by seed. Although a type of vegetative regeneration during wet, warm weather is described in a review by Crider [27], this process was not described elsewhere." ... "Vegetative regeneration: Reproduction of weeping lovegrass by vegetative means has only been described in one reference. Generally weeping lovegrass vegetative regeneration occurs only when stems are damaged or removed by grazing or fire. In a review, Crider [27] describes limited asexual reproduction by weeping lovegrass, but other sources have not. Crider reports that new stems may form at nodes on the stem rather than at the usual basal nodes. During warm wet weather, these new stems may root in the litter surrounding the crown and become detached from the parent plant [27]. Barkworth and others [8] noted that weeping lovegrass forms "innovations at the basal nodes" but that plants are not rhizomatous."

607	Minimum generative time (years)	1
	Source(s)	Notes
	Gucker, C. L. 2009. <i>Eragrostis curvula</i> . In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ . [Accessed 2 Jun 2015]	"Seed production: Prolific and early seed production is common in weeping lovegrass stands. Given favorable climate and site conditions, weeping lovegrass may flower in its first year [95]. During studies conducted in Oklahoma, established and actively managed weeping lovegrass stands occasionally produced 2 seed crops per year: a large crop in late June and a much smaller crop in September or October."

Qsn #	Question	Answer
	Parsons, W.T. & Cuthbertson, E.G. 2001. Noxious Weeds of Australia. Second Edition. CSIRO Publishing, Collingwood, Australia	[Seed to flower in <1 year] "Seeds germinate in autumn or spring if sufficient moisture is available. Seedling grow slowly for the first 6 weeks (to the 5-leaf stage), growth, rate increasing thereafter. Growth of autumn germinated seedlings, however, slows or ceases in winter, the plants resprouting the following spring. Flowering begins in early summer and the plant continues are satisfactory."

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y
	Source(s)	Notes
	Parsons, W.T. & Cuthbertson, E.G. 2001. Noxious Weeds of Australia. Second Edition. CSIRO Publishing, Collingwood, Australia	"The seed is not adapted in any way to aid natural spread but, being very light, moves short distances in the wind. It is also spread in mud sticking to animal hooves and pelts, footwear, machinery, vehicles, and as an impurity in pasture hay. One of the more important means of spread is as a contaminant of soils and gravels used in roadmaking and during road grading."
	Queensland Government. 2011. Weeds of Australia. African lovegrass. <i>Eragrostis curvula</i> . http://keyserver.lucidcentral.org/weeds/data/03030800-0b07-490a-8d04-0605030c0f01/media/Html/Eragrostis_curvula.htm . [Accessed 3 Jun 2015]	"This species reproduces by seed. Seeds can be dispersed in mud, soil and contaminated agricultural produce. They may also be spread by wind, water, animals and vehicles. For example, slashing infested roadsides is a common method of dispersal, as the seed is easily transported to new areas on the machinery."

702	Propagules dispersed intentionally by people	y
	Source(s)	Notes
	Gucker, C. L. 2009. <i>Eragrostis curvula</i> . In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ . [Accessed 2 Jun 2015]	"Throughout the United States, weeping lovegrass was planted most often for erosion control and livestock forage [37,57,103,123,126]. However, it has also been used as an ornamental [49], in pastures [50], in mine reclamation [80,110], along highways [50,61], and on severely disturbed sites [135]. "

Qsn #	Question	Answer
703	Propagules likely to disperse as a produce contaminant	y
	Source(s)	Notes
	Ziegler, A. D., Warren, S. D., Perry, J. L., & Giambelluca, T. W. (2000). Reassessment of revegetation strategies for Kaho'olawe Island, Hawai'i. <i>Journal of Range Management</i> , 53: 106-113	"Weeping lovegrass, accidentally introduced in small quantities during Phase I, but intentionally planted during Phase II, was the second most abundant species (17%)."
	Parsons, W.T. & Cuthbertson, E.G. 2001. <i>Noxious Weeds of Australia</i> . Second Edition. CSIRO Publishing, Collingwood, Australia	[Impurity in hay] "It is also spread in mud sticking to animal hooves and pelts, footwear, machinery, vehicles, and as an impurity in pasture hay. One of the more important means of spread is as a contaminant of soils and gravels used in roadmaking and during road grading."
	Warren, S. D., & Aschmann, S. G. (1993). Revegetation strategies for Kaho'olawe Island, Hawaii. <i>Journal of Range Management</i> , 4 (5): 462-466	[Possibly a contaminant] "Of the remaining species, only weeping lovegrass [<i>Eragrostis curvula</i> (Schrad.) Nees] contributed greater than 1% cover. This species was not included in the seeding mixture, and probably arrived as a contaminant with one of the other grasses. The relative success of weeping lovegrass, despite the extremely low input, indicates that it is a species deserving attention as a candidate for future revegetation efforts on Kaho'olawe."

704	Propagules adapted to wind dispersal	y
	Source(s)	Notes
	Gucker, C. L. 2009. <i>Eragrostis curvula</i> . In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ . [Accessed 2 Jun 2015]	"Seed dispersal: Weeping lovegrass seeds are small but lack appendages that aid burial or long distance wind dispersal [20], so short-distance seed dispersal is primarily the result of gravity and wind. "
	Parsons, W.T. & Cuthbertson, E.G. 2001. <i>Noxious Weeds of Australia</i> . Second Edition. CSIRO Publishing, Collingwood, Australia	"The seed is not adapted in any way to aid natural spread but, being very light, moves short distances in the wind."

705	Propagules water dispersed	y
	Source(s)	Notes
	Nakayama, N., Nishihiro, J., Kayaba, Y., Muranaka, T., & Washitani, I. (2007). Seed deposition of <i>Eragrostis curvula</i> , an invasive alien plant on a river floodplain. <i>Ecological Research</i> , 2(4), 696-701	"Although the seeds of <i>E. curvula</i> are nonbuoyant, they can be suspended and transported in turbulent water when the velocity of the river current is high enough."
	Gucker, C. L. 2009. <i>Eragrostis curvula</i> . In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ . [Accessed 2 Jun 2015]	"Dispersal of weeping lovegrass seed in flood waters was observed on the Jornada Experimental Range [9]."

706	Propagules bird dispersed	n
	Source(s)	Notes

Qsn #	Question	Answer
	Parsons, W.T. & Cuthbertson, E.G. 2001. Noxious Weeds of Australia. Second Edition. CSIRO Publishing, Collingwood, Australia	"The seed is not adapted in any way to aid natural spread but, being very light, moves short distances in the wind."

707	Propagules dispersed by other animals (externally)	y
	Source(s)	Notes
	Gucker, C. L. 2009. <i>Eragrostis curvula</i> . In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ . [Accessed 2 Jun 2015]	"Although seed dispersal by animals was not specifically reported, seed transport in animal fur, feather, or hooves seems possible."
	Parsons, W.T. & Cuthbertson, E.G. 2001. Noxious Weeds of Australia. Second Edition. CSIRO Publishing, Collingwood, Australia	"The seed is not adapted in any way to aid natural spread but, being very light, moves short distances in the wind. It is also spread in mud sticking to animal hooves and pelts, footwear, machinery, vehicles, and as an impurity in pasture hay."

708	Propagules survive passage through the gut	y
	Source(s)	Notes
	Queensland Government. 2011. Weeds of Australia. African lovegrass. <i>Eragrostis curvula</i> . http://keyserver.lucidcentral.org/weeds/data/03030800-0b07-490a-8d04-0605030c0f01/media/Html/Eragrostis_curvula.htm . [Accessed 3 Jun 2015]	"Animals spread the seeds on their fur and hooves, and recent studies have also shown that cattle feeding on African lovegrass (<i>Eragrostis curvula</i>) can excrete viable seed up to 10 days after consuming them."

801	Prolific seed production (>1000/m2)	
	Source(s)	Notes
	Gucker, C. L. 2009. <i>Eragrostis curvula</i> . In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ . [Accessed 2 Jun 2015]	"Weeping lovegrass panicles may produce 300 to 1,000 seeds [27]."
	FAO. 2015. Grassland Species Profiles - <i>Eragrostis curvula</i> . http://www.fao.org/ag/agp/AGPC/doc/gbase/Safricadata/eragcur.htm . [Accessed 2 Jun 2015]	[Densities unspecified] "This grass seeds heavily. It is harvested in early summer and again later in summer with a header-harvester or a hand sickle when one-third of the head has turned brown. Try to prevent scattering. "

802	Evidence that a persistent propagule bank is formed (>1 yr)	y
	Source(s)	Notes

Qsn #	Question	Answer
	<p>Cook, B.G., Pengelly, B.C., Brown, S.D., Donnelly, J.L., Eagles, D.A., Franco, M.A., Hanson, J., Mullen, B.F., Partridge, I.J., Peters, M., & Schultze-Kraft, R. 2005. Tropical Forages: an interactive selection tool., [CD-ROM], SIRO, DPI&F(Qld), CIAT and ILRI. http://www.tropicalforages.info/index.htm. [Accessed 3 Jun 2015]</p>	<p>"Less palatable, prolifically seeding types develop large, viable soil seed banks, making them difficult to eradicate and very competitive with other pasture species."</p>
	<p>Gucker, C. L. 2009. <i>Eragrostis curvula</i>. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/. [Accessed 2 Jun 2015]</p>	<p>"Seed banking: In the following studies, weeping lovegrass seed was recovered from soil samples but persistence of these seeds in the seed bank was unknown. In Arizona's Oracle State Park and Appleton-Whittel Research Ranch, weeping lovegrass made up 17% of the relative abundance of seedlings emerging from soil collections. Weeping lovegrass seed was abundant in the litter layer and in the top 2 inches (5 cm) of soil. Average seed number was not significantly different between the litter layer, 0- to 0.8-inch (2 cm) depths, or 0.8- to 2-inch (2-5 cm) soil depths but was greatest (slightly >1,000 seeds/m²) in the top soil layer. Weeping lovegrass seedlings also emerged from soil collected from sites where it did not occur in the aboveground vegetation [83]. In central Arizona, the greatest number of weeping lovegrass seedlings emerged after scarification of soil samples collected beneath Pringle manzanita (<i>Arctostaphylos pringlei</i>). Weeping lovegrass seedlings also emerged from soil samples that were burned, had their litter layer left intact, or had their litter layer removed. Intact soil samples were treated after they were removed from the site [45]."</p>
	<p>McLaughlin, S. P., & Bowers, J. E. (2007). Effects of exotic grasses on soil seed banks in southeastern Arizona grasslands. <i>Western North American Naturalist</i>, 67(2), 206-218</p>	<p>"Seeds of both <i>E. lehmanniana</i> and <i>E. curvula</i> var. <i>conferta</i> have a high degree of dormancy (Weaver and Jordan 1986, Voigt et al. 1996) and likely can survive in the soil for several years. Persistent seed banks enable them to maintain local dominance despite fire, drought, and treatment with herbicides (Biedenbender and Roundy 1996, Voigt et al. 1996)." ... "In contrast to most native species at our study site, <i>E. curvula</i> has a persistent seed bank" ... "Because <i>E. curvula</i> seeds are persistent, eradication efforts will need to target seedlings for at least 1 year after adults have been eliminated (Biedenbender and Roundy 1996)."</p>
	<p>Walters, C., Wheeler, L. M., & Grotenhuis, J. M. (2005). Longevity of seeds stored in a genebank: species characteristics. <i>Seed Science Research</i>, 15(01), 1-20</p>	<p><i>Eragrostis curvula</i> - "Table 1. Storage performance of seeds in the USDA National Plant Germplasm System (NPGS) collection." ... "Years stored = 28.7" ... "Table 3. Seed longevity values for species in different surveys." ... "<i>Eragrostis curvula</i> ... Relative longevity = Medium long"</p>

803	Well controlled by herbicides	y
	Source(s)	Notes
	<p>Parsons, W.T. & Cuthbertson, E.G. 2001. <i>Noxious Weeds of Australia</i>. Second Edition. CSIRO Publishing, Collingwood, Australia</p>	<p>"African lovegrass may also be controlled with herbicides. Spotspray with amitrole T, a flowable amitrole + atrazine mixture, or glyphosate, boomspraying the larger colonies. As these herbicides give total weed control, it is essential to replace the killed weed as soon as practicably by oversowing with a suitable perennial pasture, and topdressing as required to maintain a vigorous cover."</p>

804	Tolerates, or benefits from, mutilation, cultivation, or fire	y
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Qsn #	Question	Answer
	Source(s)	Notes
	Gucker, C. L. 2009. <i>Eragrostis curvula</i> . In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ . [Accessed 2 Jun 2015]	"Immediate fire effect on plant: Weeping lovegrass is often only top-killed by fire and sprouts soon after burning [97]. In a review, Crider [27] reports that weeping lovegrass' tightly packed basal stems are protected from high fire temperatures; however, heavy accumulations of dead fuel at the base of the plant and at the root crown may increase duration of burning or residence time, leading to more severe injury or death [34,92]."

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	Source(s)	Notes
	FAO. 2015. Grassland Species Profiles - <i>Eragrostis curvula</i> . http://www.fao.org/ag/agp/AGPC/doc/gbase/Safricadata/eragcur.htm . [Accessed 2 Jun 2015]	"Diseases and pests. None known."

Summary of Risk Traits:

High Risk / Undesirable Traits

- Elevation range exceeds 1000 m, demonstrating environmental versatility
- Thrives in tropical climates
- Naturalized on Maui, Oahu and Kahoolawe and widely naturalized elsewhere
- A disturbance-adapted grass
- A weed of pastures and potentially of certain crops
- An environmental weed in Australia and Japan
- Other *Eragrostis* species are highly invasive
- Palatability to animals decreases with age
- Potentially allelopathic
- Pollen allergenic to susceptible individuals
- Increases fire risk in invaded ecosystems
- Tolerates many soil types
- Capable of forming dense monocultures in invaded areas
- Reproduces by seed
- Reproduces apomictically
- Able to reach maturity in one growing season
- Seeds dispersed in mud, soil, contaminated agricultural produce. Also dispersed by wind, water, animals and vehicles
- Viable seed excreted by cattle
- Prolific seed production
- Forms a persistent seed bank
- Tolerates & resprouts after fire or cutting

Low Risk Traits

- Certain cultivars may be less weedy
- Unarmed (no spines, thorns or burrs)
- Palatable to animals at early stages of growth
- Prefers open areas (tolerant of partial shade)
- Not reported to spread vegetatively
- Herbicides may provide effective control

