

Taxon: Cenchrus elegans (Hassk.) Veldkamp	Family: Poaceae
Common Name(s): burgundy giant Pacific fountain grass	Synonym(s): Cenchrus caninus Morrone Gymnotrix macrostachys Brongn. Pennisetum macrostachys (Brongn.) Saccharum caninum Reinw. ex Blume Sericura elegans Hassk.

Assessor: Chuck Chimera	Status: Assessor Approved	End Date: 22 Jun 2017
WRA Score: 7.0	Designation: H(HPWRA)	Rating: High Risk

Keywords: Tropical Grass, Naturalized, Ornamental, Perennial, Unpalatable

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	?
301	Naturalized beyond native range	y = 1*multiplier (see Appendix 2), n= question 205	y
302	Garden/amenity/disturbance weed	n=0, y = 1*multiplier (see Appendix 2)	n
303	Agricultural/forestry/horticultural weed	n=0, y = 2*multiplier (see Appendix 2)	n
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	y
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		

Qsn #	Question	Answer Option	Answer
408	Creates a fire hazard in natural ecosystems		
409	Is a shade tolerant plant at some stage of its life cycle		
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	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		
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	2
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)		
702	Propagules dispersed intentionally by people	y=1, n=-1	y
703	Propagules likely to disperse as a produce contaminant		
704	Propagules adapted to wind dispersal		
705	Propagules water dispersed		
706	Propagules bird dispersed	y=1, n=-1	n
707	Propagules dispersed by other animals (externally)		
708	Propagules survive passage through the gut		
801	Prolific seed production (>1000/m2)		
802	Evidence that a persistent propagule bank is formed (>1 yr)		
803	Well controlled by herbicides	y=-1, n=1	y
804	Tolerates, or benefits from, mutilation, cultivation, or fire		
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)		

Supporting Data:

Qsn #	Question	Answer
101	Is the species highly domesticated?	n
	Source(s)	Notes
	Veldkamp, J. F. (2014). A revision of <i>Cenchrus</i> incl. <i>Pennisetum</i> (Gramineae) in Malesia with some general nomenclatural notes. <i>Blumea</i> , 59(1): 59-75	[No evidence] "Distribution — Widespread in W Malesia into the Pacific (Solomon Isl.), but not in the Malay Peninsula (once cultivated in Penang and Singapore) nor in Australia."

102	Has the species become naturalized where grown?	
	Source(s)	Notes
	WRA Specialist. 2017. Personal Communication	NA

103	Does the species have weedy races?	
	Source(s)	Notes
	WRA Specialist. 2017. 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, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 21 Jun 2017]	"Native: Asia-Tropical Malesia: Indonesia; Philippines Papuasias: Papua New Guinea"

202	Quality of climate match data	High
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 21 Jun 2017]	

203	Broad climate suitability (environmental versatility)	y
	Source(s)	Notes
	Veldkamp, J. F. (2014). A revision of <i>Cenchrus</i> incl. <i>Pennisetum</i> (Gramineae) in Malesia with some general nomenclatural notes. <i>Blumea</i> , 59(1): 59-75	[Elevation range exceeds 1000 m, demonstrating environmental versatility] "Habitat — Sunny, infertile soil, slopes, along hollow roads, Imperata fields, gravel beds, savannahs, 0–2130 m altitude."

Qsn #	Question	Answer
204	Native or naturalized in regions with tropical or subtropical climates	y
	Source(s)	Notes
	Veldkamp, J. F. (2014). A revision of <i>Cenchrus</i> incl. <i>Pennisetum</i> (Gramineae) in Malesia with some general nomenclatural notes. <i>Blumea</i> , 59(1): 59-75	"Distribution — Widespread in W Malesia into the Pacific (Solomon Isl.), but not in the Malay Peninsula (once cultivated in Penang and Singapore) nor in Australia."
205	Does the species have a history of repeated introductions outside its natural range?	?
	Source(s)	Notes
	Veldkamp, J. F. (2014). A revision of <i>Cenchrus</i> incl. <i>Pennisetum</i> (Gramineae) in Malesia with some general nomenclatural notes. <i>Blumea</i> , 59(1): 59-75	"Uses — Cultivated as an ornamental, best below 100 m altitude."
301	Naturalized beyond native range	y
	Source(s)	Notes
	Parker, J.L. & Parsons, B. 2016. New Plant Records from the Big Island for 2015. <i>Bishop Museum Occasional Papers</i> 118: 17–22	" <i>Cenchrus elegans</i> (Hassk.) Veldk. New naturalized record" ... "Material examined. HAWAII: Puna Distr., Kalapana Seaview estates, 2146873N 298234e, 12 ft tall stalks with long purple leaves more prominent in the top half, large cylindrical panicles, to 10", semi-erect to drooping, pale pink to purple, 1 Aug 2011, J. Parker & R. Parsons BIED160."
302	Garden/amenity/disturbance weed	n
	Source(s)	Notes
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence to date
303	Agricultural/forestry/horticultural weed	n
	Source(s)	Notes
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence to date
304	Environmental weed	n
	Source(s)	Notes
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence to date
305	Congeneric weed	y
	Source(s)	Notes

Qsn #	Question	Answer
	Marshall, V. M., Lewis, M. M., & Ostendorf, B. 2012. Buffel grass (<i>Cenchrus ciliaris</i>) as an invader and threat to biodiversity in arid environments: a review. <i>Journal of Arid Environments</i> , 78: 1-12	"Buffel grass invasion can devastate local ecosystems by altering wildfire regimes, soil erosion rates, ground surface temperatures and supply of vital resources to surrounding life forms, compromising biodiversity (D'Antonio and Vitousek, 1992). Significant invasions have been reported in arid communities throughout Australia, the USA, Mexico and South America and many species and ecosystem functions have been impacted (Table 5)."
	CABI. 2015. <i>Cenchrus echinatus</i> In: <i>Invasive Species Compendium</i> . www.cabi.org/isc	" <i>C. echinatus</i> occurs as a weed in many crops worldwide. It is common in cultivated fields, pastures, fallows, orchards, vineyards, coffee, vegetables, bananas, coconuts and lawns, where it can withstand repeated defoliation. It can be found along roadsides and beaches, in open ground and waste places. Crops competing for nutrients with <i>C. echinatus</i> typically have smaller leaf areas and lower growth rates and yields (Hammerton, 1981; Everaarts, 1993; Ramos and Pitelli, 1994). The burs of the seed heads can become firmly attached to clothes and coats of animals by the barbed spines. These can penetrate the skin causing painful or annoying injuries. In feeds and hay, the burs of the seed heads reduce the acceptability and palatability of the feed to animals. Nevertheless, it can serve as a forage grass before the burs are formed. <i>C. echinatus</i> also has some relevance as an alternative host for maize streak monogeminivirus and sugarcane streak monogeminivirus (Brunt et al., 1996)."

401	Produces spines, thorns or burrs	n
	Source(s)	Notes
	Veldkamp, J. F. (2014). A revision of <i>Cenchrus</i> incl. <i>Pennisetum</i> (Gramineae) in Malesia with some general nomenclatural notes. <i>Blumea</i> , 59(1): 59-75	[No evidence] "Perennials. Culms erect to geniculate at base, not rooting in the decumbent nodes, not stoloniferous, rhizomatous, 1–3 m long, solid, nodes glabrous. Ligule a ciliate rim, c. 0.15 mm long. Blades flat, 10–65 cm by (6–)8–35 mm, margins scaberulous. Peduncle puberulous below the panicle. Panicle exserted, many-spikeled, 15–40 cm long, common axis puberulous. Involucre stipitate, disarticulating at base. Bristles many, rather stiff, scaberulous, unequal, longest ones 32 – 55 mm long. Spikelets 1 within the involucre, pedicelled, 4.5–6.5 mm long. Lower glume 1.25–1.75 mm long, 0.39–0.53 times as long as the upper glume; upper glume 2.5–3.4 mm long, 1-nerved. First lemma epaleate, acuminate, membranous, 3–5-nerved, glabrous, nerves smooth; second lemma membranous. Anthers 1.65–2.1 mm long, apex glabrous."

402	Allelopathic	n
	Source(s)	Notes
	CABI. 2015. <i>Cenchrus ciliaris</i> In: <i>Invasive Species Compendium</i> . www.cabi.org/isc	[Unknown. Other <i>Cenchrus</i> species may be allelopathic] "The possibility of allelopathy by <i>C. ciliaris</i> is supported by laboratory assays in which <i>C. ciliaris</i> leachates reduced germination of other species (Fulbright and Fulbright 1990; Farrukh Hussain et al., 2011), but these findings need to be confirmed in field studies."

403	Parasitic	n
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Qsn #	Question	Answer
	Source(s)	Notes
	Veldkamp, J. F. (2014). A revision of <i>Cenchrus</i> incl. <i>Pennisetum</i> (Gramineae) in Malesia with some general nomenclatural notes. <i>Blumea</i> , 59(1): 59-75	"Perennials. Culms erect to geniculate at base, not rooting in the decumbent nodes, not stoloniferous, rhizomatous, 1–3 m long, solid, nodes glabrous." [Poaceae]
404	Unpalatable to grazing animals	y
	Source(s)	Notes
	Veldkamp, J. F. (2014). A revision of <i>Cenchrus</i> incl. <i>Pennisetum</i> (Gramineae) in Malesia with some general nomenclatural notes. <i>Blumea</i> , 59(1): 59-75	"Young stems eaten in the Baliem Valley, but otherwise too hard for fodder."
405	Toxic to animals	n
	Source(s)	Notes
	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
406	Host for recognized pests and pathogens	
	Source(s)	Notes
	WRA Specialist. 2017. Personal Communication	Unknown. Other <i>Cenchrus</i> species may host fungal pathogens
407	Causes allergies or is otherwise toxic to humans	
	Source(s)	Notes
	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 of toxicity. Unknown if pollen is an allergen
408	Creates a fire hazard in natural ecosystems	
	Source(s)	Notes
	Veldkamp, J. F. (2014). A revision of <i>Cenchrus</i> incl. <i>Pennisetum</i> (Gramineae) in Malesia with some general nomenclatural notes. <i>Blumea</i> , 59(1): 59-75	[Unknown. Other <i>Cenchrus</i> species increase fire risk] "Habitat — Sunny, infertile soil, slopes, along hollow roads, Imperata fields, gravel beds, savannahs, 0–2130 m altitude."
409	Is a shade tolerant plant at some stage of its life cycle	
	Source(s)	Notes
	Veldkamp, J. F. (2014). A revision of <i>Cenchrus</i> incl. <i>Pennisetum</i> (Gramineae) in Malesia with some general nomenclatural notes. <i>Blumea</i> , 59(1): 59-75	"Habitat — Sunny, infertile soil, slopes, along hollow roads, Imperata fields, gravel beds, savannahs, 0–2130 m altitude."

Qsn #	Question	Answer
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	
	Source(s)	Notes
	Veldkamp, J. F. (2014). A revision of <i>Cenchrus</i> incl. <i>Pennisetum</i> (Gramineae) in Malesia with some general nomenclatural notes. <i>Blumea</i> , 59(1): 59-75	"Habitat — Sunny, infertile soil, slopes, along hollow roads, Imperata fields, gravel beds, savannahs, 0–2130 m altitude."
411	Climbing or smothering growth habit	n
	Source(s)	Notes
	Veldkamp, J. F. (2014). A revision of <i>Cenchrus</i> incl. <i>Pennisetum</i> (Gramineae) in Malesia with some general nomenclatural notes. <i>Blumea</i> , 59(1): 59-75	"Perennials. Culms erect to geniculate at base, not rooting in the decumbent nodes, not stoloniferous, rhizomatous, 1–3 m long, solid, nodes glabrous."
412	Forms dense thickets	
	Source(s)	Notes
	Veldkamp, J. F. (2014). A revision of <i>Cenchrus</i> incl. <i>Pennisetum</i> (Gramineae) in Malesia with some general nomenclatural notes. <i>Blumea</i> , 59(1): 59-75	[Unknown] "Distribution — Widespread in W Malesia into the Pacific (Solomon Isl.), but not in the Malay Peninsula (once cultivated in Penang and Singapore) nor in Australia. Habitat — Sunny, infertile soil, slopes, along hollow roads, Imperata fields, gravel beds, savannahs, 0–2130 m altitude."
501	Aquatic	n
	Source(s)	Notes
	Veldkamp, J. F. (2014). A revision of <i>Cenchrus</i> incl. <i>Pennisetum</i> (Gramineae) in Malesia with some general nomenclatural notes. <i>Blumea</i> , 59(1): 59-75	[Terrestrial] "Habitat — Sunny, infertile soil, slopes, along hollow roads, Imperata fields, gravel beds, savannahs, 0–2130 m altitude."
502	Grass	y
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 21 Jun 2017]	Family: Poaceae (alt.Gramineae) Subfamily: Panicoideae Tribe: Paniceae Subtribe: Cenchrinae
503	Nitrogen fixing woody plant	n
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 21 Jun 2017]	Family: Poaceae (alt.Gramineae) Subfamily: Panicoideae Tribe: Paniceae Subtribe: Cenchrinae
504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n

Qsn #	Question	Answer
	Source(s)	Notes
	Veldkamp, J. F. (2014). A revision of <i>Cenchrus</i> incl. <i>Pennisetum</i> (Gramineae) in Malesia with some general nomenclatural notes. <i>Blumea</i> , 59(1): 59-75	"Perennials. Culms erect to geniculate at base, not rooting in the decumbent nodes, not stoloniferous, rhizomatous, 1–3 m long, solid, nodes glabrous. Ligule a ciliate rim, c. 0.15 mm long. Blades flat, 10–65 cm by (6–)8–35 mm, margins scaberulous. Peduncle puberulous below the panicle.

601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	Notes
	Veldkamp, J. F. (2014). A revision of <i>Cenchrus</i> incl. <i>Pennisetum</i> (Gramineae) in Malesia with some general nomenclatural notes. <i>Blumea</i> , 59(1): 59-75	[No evidence] "Distribution — Widespread in W Malesia into the Pacific (Solomon Isl.), but not in the Malay Peninsula (once cultivated in Penang and Singapore) nor in Australia."

602	Produces viable seed	y
	Source(s)	Notes
	Veldkamp, J. F. (2014). A revision of <i>Cenchrus</i> incl. <i>Pennisetum</i> (Gramineae) in Malesia with some general nomenclatural notes. <i>Blumea</i> , 59(1): 59-75	[Presumably yes, but no description of seeds provided] "Panicle exerted, many-spikeled, 15–40 cm long, common axis puberulous. Involucre stipitate, disarticulating at base. Bristles many, rather stiff, scaberulous, unequal, longest ones 32 – 55 mm long. Spikelets 1 within the involucre, pedicelled, 4.5–6.5 mm long. Lower glume 1.25–1.75 mm long, 0.39–0.53 times as long as the upper glume; upper glume 2.5–3.4 mm long, 1-nerved. First lemma epaleate, acuminate, membranous, 3–5-nerved, glabrous, nerves smooth; second lemma membranous. Anthers 1.65–2.1 mm long, apex glabrous."

603	Hybridizes naturally	
	Source(s)	Notes
	WRA Specialist. 2017. Personal Communication	[Unknown. Artificial hybridization in genus possible] " <i>Pennisetum violaceum</i> (Lam.) Rich. was based on <i>Panicum violaceum</i> Lam. (1791: 169) from Senegal. The type is Rousillon s.n. (? holo P-LAM). The species is used as an ornamental and in hybridization experiments as it is regarded as the progenitor of <i>P. glaucum</i> (= <i>Cenchrus americanus</i>)." ... "Hybrids with <i>P. purpureum</i> have been cultivated as fodder, e.g. in the Philippines." ... " <i>Cenchrus ciliaris</i> ... It hybridizes with <i>P. glaucum</i> (L.) R.Br. (National Research Council, USA (1996: 121))."

604	Self-compatible or apomictic	
	Source(s)	Notes
	WRA Specialist. 2017. Personal Communication	Unknown. Other <i>Cenchrus</i> species are apomictic

605	Requires specialist pollinators	n
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Qsn #	Question	Answer
	Source(s)	Notes
	Zomlefer, W.B. 1994. Guide to Flowering Plant Families. The University of North Carolina Press, Chapel Hill & London	"The reduced flowers are anemophilous" [Wind-pollinated. Poaceae family description]

606	Reproduction by vegetative fragmentation	n
	Source(s)	Notes
	Veldkamp, J. F. (2014). A revision of <i>Cenchrus</i> incl. <i>Pennisetum</i> (Gramineae) in Malesia with some general nomenclatural notes. <i>Blumea</i> , 59(1): 59-75	"Culms erect to geniculate at base, not rooting in the decumbent nodes, not stoloniferous, rhizomatous, 1–3 m long, solid, nodes glabrous."

607	Minimum generative time (years)	2
	Source(s)	Notes
	Veldkamp, J. F. (2014). A revision of <i>Cenchrus</i> incl. <i>Pennisetum</i> (Gramineae) in Malesia with some general nomenclatural notes. <i>Blumea</i> , 59(1): 59-75	"Perennials. Culms erect to geniculate at base, not rooting in the decumbent nodes, not stoloniferous, rhizomatous, 1–3 m long, solid, nodes glabrous." [Probably can flower in <1 year, but conservatively estimating 2 years]

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	
	Source(s)	Notes
	Veldkamp, J. F. (2014). A revision of <i>Cenchrus</i> incl. <i>Pennisetum</i> (Gramineae) in Malesia with some general nomenclatural notes. <i>Blumea</i> , 59(1): 59-75	[Roadside distribution suggests possible movement by human & vehicular traffic] "Habitat — Sunny, infertile soil, slopes, along hollow roads, Imperata fields, gravel beds, savannahs"

702	Propagules dispersed intentionally by people	y
	Source(s)	Notes
	Veldkamp, J. F. (2014). A revision of <i>Cenchrus</i> incl. <i>Pennisetum</i> (Gramineae) in Malesia with some general nomenclatural notes. <i>Blumea</i> , 59(1): 59-75	"Uses — Cultivated as an ornamental, best below 100 m altitude."

703	Propagules likely to disperse as a produce contaminant	
	Source(s)	Notes
	Veldkamp, J. F. (2014). A revision of <i>Cenchrus</i> incl. <i>Pennisetum</i> (Gramineae) in Malesia with some general nomenclatural notes. <i>Blumea</i> , 59(1): 59-75	"Uses — Cultivated as an ornamental, best below 100 m altitude." [No evidence, but may be possible if growing in proximity to other cultivated ornamental plants]

704	Propagules adapted to wind dispersal	
	Source(s)	Notes
	CABI. 2015. <i>Cenchrus ciliaris</i> In: Invasive Species Compendium. www.cabi.org/isc	[Unknown. Possibly, as other <i>Cenchrus</i> species are moved by wind] "Wind may be the primary mode of dispersal over short-to-moderate distances."

Qsn #	Question	Answer
705	Propagules water dispersed	
	Source(s)	Notes
	Veldkamp, J. F. (2014). A revision of <i>Cenchrus</i> incl. <i>Pennisetum</i> (Gramineae) in Malesia with some general nomenclatural notes. <i>Blumea</i> , 59(1): 59-75	"Sunny, infertile soil, slopes, along hollow roads, Imperata fields, gravel beds, savannahs, 0–2130 m altitude." [Possibly, if occurring in drainages]

706	Propagules bird dispersed	n
	Source(s)	Notes
	WRA Specialist. 2017. Personal Communication	Not fleshy-fruited. External dispersal may be possible, but probably unlikely

707	Propagules dispersed by other animals (externally)	
	Source(s)	Notes
	WRA Specialist. 2017. Personal Communication	Unknown. Bristles on seed-bearing fascicles of other <i>Cenchrus</i> species aid in attachment to fur

708	Propagules survive passage through the gut	
	Source(s)	Notes
	WRA Specialist. 2017. Personal Communication	Unknown. Lack of palatability may limit ingestion of seeds

801	Prolific seed production (>1000/m²)	
	Source(s)	Notes
	Veldkamp, J. F. (2014). A revision of <i>Cenchrus</i> incl. <i>Pennisetum</i> (Gramineae) in Malesia with some general nomenclatural notes. <i>Blumea</i> , 59(1): 59-75	Unknown. No information on reproductive potential provided.

802	Evidence that a persistent propagule bank is formed (>1 yr)	
	Source(s)	Notes
	WRA Specialist. 2017. Personal Communication	Unknown. Other taxa possess seeds that persist in the soil

803	Well controlled by herbicides	y
	Source(s)	Notes
	Motooka, P., Castro, L., Nelson, D., Nagai, G. & Ching, L. 2003. Weeds of Hawaii's Pastures and Natural Areas: An Identification and Management Guide. CTAHR, UH Manoa, Honolulu, HI	[No information on control of this species, but herbicides used on invasive <i>Cenchrus</i> species would presumably be effective] "Sensitive to glyphosate. Preemergence and postemergence control by drizzle application of hexazinone effective"

Qsn #	Question	Answer
804	Tolerates, or benefits from, mutilation, cultivation, or fire	
	Source(s)	Notes
	WRA Specialist. 2017. Personal Communication	Unknown. Other taxa tolerant grazing, burning and mowing

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	Source(s)	Notes
	WRA Specialist. 2017. Personal Communication	Unknown

Summary of Risk Traits:

High Risk / Undesirable Traits

- Elevation range exceeds 1000 m, demonstrating environmental versatility
- Thrives in tropical climates
- Naturalized on Hawaii Island
- Other *Cenchrus* species are invasive
- Unpalatable
- Presumably reproduces by seeds
- Dispersed & cultivated intentionally by people
- Limited ecological information reduces accuracy of risk prediction

Low Risk Traits

- No reports of detrimental impacts
- Unarmed (no spines, thorns, or burrs)
- Ornamental
- Not reported to spread vegetatively
- Herbicides effective in control of invasive *Cenchrus* species would presumably work on *Cenchrus elegans*