

Taxon: *Dactyloctenium australe* Steud.

Family: Poaceae

Common Name(s): Durban grass
Natal crowfoot
sweet smother grass

Synonym(s):

Assessor: Chuck Chimera

Status: Assessor Approved

End Date: 23 Mar 2019

WRA Score: 6.0

Designation: EVALUATE

Rating: Evaluate

Keywords: Perennial Grass, Naturalized, Palatable, Shade-Tolerant, Stoloniferous

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	n
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)	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	n
405	Toxic to animals	y=1, n=0	n
406	Host for recognized pests and pathogens		
407	Causes allergies or is otherwise toxic to humans	y=1, n=0	n
408	Creates a fire hazard in natural ecosystems		
409	Is a shade tolerant plant at some stage of its life cycle	y=1, n=0	y

Qsn #	Question	Answer Option	Answer
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y=1, n=0	y
411	Climbing or smothering growth habit	y=1, n=0	n
412	Forms dense thickets		
501	Aquatic	y=5, n=0	n
502	Grass	y=1, n=0	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	y
607	Minimum generative time (years)	1 year = 1, 2 or 3 years = 0, 4+ years = -1	1
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)		
702	Propagules dispersed intentionally by people	y=1, n=-1	y
703	Propagules likely to disperse as a produce contaminant		
704	Propagules adapted to wind dispersal	y=1, n=-1	n
705	Propagules water dispersed	y=1, n=-1	n
706	Propagules bird dispersed	y=1, n=-1	n
707	Propagules dispersed by other animals (externally)		
708	Propagules survive passage through the gut	y=1, n=-1	y
801	Prolific seed production (>1000/m ²)	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	n
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
	Quattrocchi, U. 2006. CRC World Dictionary of Grasses: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	[No evidence] "permanent ground cover, salt-spraytolerant, ornamental, useful as a shade-tolerant lawn grass and sand-binder, turf, often used in conjunction with <i>Stenotaphrum secundatum</i> (Walter) Kuntze, forage, palatable pasture grass, grazed by stock, good sandbinder, useful for erosion control, recommended for heavily shaded areas, sometimes weedy, common in urban and coastal regions, along forest roads, sandy seaside area, dunes, disturbed sites, under older orchards, sometimes confused with <i>Dactyloctenium aegyptium</i> "

102	Has the species become naturalized where grown?	
	Source(s)	Notes
	WRA Specialist. (2019). Personal Communication	NA

103	Does the species have weedy races?	
	Source(s)	Notes
	WRA Specialist. (2019). 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. 2019. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 21 Mar 2019]	"Native Africa EAST TROPICAL AFRICA: Kenya, Tanzania SOUTH TROPICAL AFRICA: Mozambique (e.?) SOUTHERN AFRICA: Eswatini, South Africa [KwaZulu-Natal, Transvaal, Cape Province (e.)]"

202	Quality of climate match data	High
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2019. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 21 Mar 2019]	

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

Qsn #	Question	Answer
	TurfFinder. (2019). Durban grass. https://www.turffinder.com/varieties/durban-grass . [Accessed 22 Mar 2019]	"Suitable climate classification Subtropical and Tropical "
	Toteng, J., Israel, A. L., Mpofo, C., & Mathowa, T. (2014). Performance of Three Warm Season Turfgrasses As Influenced By Different Seeding Rates in Gaborone Region, Botswana. Pp. 33-37 in Int'l Conf. on Advances in Environment, Agriculture & Medical Sciences (ICAEM'14) November 16-17, 2014 Kuala Lumpur (Malaysia)	[Climate of study area is semi-arid subtropical] "The study was conducted with three warm season turfgrasses; <i>Cynodon dactylon</i> (bermudagrass), <i>Pennisetum clandenstinum</i> (kikuyu grass) and <i>Dactyloctenium australe</i> (LM grass) at the Botswana College of Agriculture (BCA) in Sebele, Gaborone (latitude: of 24°33'S, longitude: 25°54'E, elevation: 994 m above sea level) from December 2013 to April 2014 growing season. The climate of the study area is semi-arid with an average annual rainfall (30 year mean) of 538 mm [20], [21]. Most rainfall is received in the summer months, starting in late October, continuing to March/April. Soils are predominantly sandy loams (76% sand, 10% silt and 14% clay) with low water holding capacity, low cation exchange capacity (1.2 meq/100g) and pH of 6.3."

204	Native or naturalized in regions with tropical or subtropical climates	y
	Source(s)	Notes
	Australian Biological Resources Study. 2005. Flora of Australia: Poaceae 3, Volume 44B. CSIRO Publishing, Melbourne	"Introduced. Naturalised on the N coast of N.S.W. and in SE Qld, and cultivated around Perth in W.A. Native to coastal and near-coastal areas of southern and eastern Africa."
	USDA, ARS, Germplasm Resources Information Network. 2019. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 21 Mar 2019]	"Native Africa EAST TROPICAL AFRICA: Kenya, Tanzania SOUTH TROPICAL AFRICA: Mozambique (e.?) SOUTHERN AFRICA: Eswatini, South Africa [KwaZulu-Natal, Transvaal, Cape Province (e.)]"

205	Does the species have a history of repeated introductions outside its natural range?	y
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2019. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 21 Mar 2019]	"Cultivated Africa SOUTHERN AFRICA: South Africa Australasia AUSTRALIA: Australia"
	Australian Biological Resources Study. 2005. Flora of Australia: Poaceae 3, Volume 44B. CSIRO Publishing, Melbourne	"Introduced. Naturalised on the N coast of N.S.W. and in SE Qld, and cultivated around Perth in W.A. Native to coastal and near-coastal areas of southern and eastern Africa."

301	Naturalized beyond native range	y
	Source(s)	Notes

Qsn #	Question	Answer
	Australian Biological Resources Study. 2005. Flora of Australia: Poaceae 3, Volume 44B. CSIRO Publishing, Melbourne	"Introduced. Naturalised on the N coast of N.S.W. and in SE Qld, and cultivated around Perth in W.A."
	DAISIE. 2019. Species Factsheet - <i>Dactyloctenium australe</i> . http://www.europe-aliens.org/speciesFactsheet.do?speciesId=3430# . [Accessed 22 Mar 2019]	Country - Madeira; Status - Alien/Established
	Bishop Museum.(2019). Online Natural Sciences Collections. http://nsdb.bishopmuseum.org/ . [Accessed 22 Mar 2019]	No evidence to date
	Wagner, W.L., Herbst, D.R.& Lorence, D.H. (2019). Flora of the Hawaiian Islands. Smithsonian Institution, Washington, D.C. http://botany.si.edu/ . [Accessed 22 Mar 2019]	No evidence to date

302	Garden/amenity/disturbance weed	
	Source(s)	Notes
	Materechera, S. A., & Modiakgotla, L. N. (2006). Cattle manure increases soil weed population and species diversity in a semi-arid environment. <i>South African Journal of Plant and Soil</i> , 23(1), 21-28	[Classified as a weed, but impacts not specified] "The most prevalent weeds were <i>Eleusine coracana</i> , <i>Cynodon dactylon</i> , <i>Eragrostis lehmanniana</i> ; <i>Portulaca oleracea</i> , <i>Chenopodium carinatum</i> and <i>Amaranthus hybridus</i> while <i>Dactyloctenium australe</i> , <i>Sporobolus nitens</i> , <i>Chambesyce prostrate</i> , <i>Tagetes minuta</i> and <i>Malva parviflora</i> were the least abundant. Both annual and perennial weeds were encountered. There were large differences among the villages in the numbers and spectrum of weed seedlings."
	Quattrocchi, U. 2006. <i>CRC World Dictionary of Grasses: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology</i> . CRC Press, Boca Raton, FL	[Described as weedy] "recommended for heavily shaded areas, sometimes weedy, common in urban and coastal regions, along forest roads, sandy seaside area, dunes, disturbed sites, under older orchards"
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	Cited as naturalized and weedy in some locations
	DAISIE. 2019. Species Factsheet - <i>Dactyloctenium australe</i> . http://www.europe-aliens.org/speciesFactsheet.do?speciesId=3430# . [Accessed 22 Mar 2019]	Country - Madeira; Status - Alien/Established
	WRA Specialist. (2019). Personal Communication	Reports of the weediness of this species may refer to its ability to spread where planted. Evidence of detrimental impacts was not confirmed. Generally regarded as a desirable plant where cultivated

Qsn #	Question	Answer
303	Agricultural/forestry/horticultural weed	n
	Source(s)	Notes
	Fleming, P. J., Ballard, G., Reid, N. C., & Tracey, J. P. (2018). Invasive species and their impacts on agri-ecosystems: issues and solutions for restoring ecosystem processes. <i>The Rangeland Journal</i> , 39(6), 523-535	[Regarded as beneficial] "Other examples of invasive species that are usually considered to be beneficial are exotic pasture plants that effectively persist as a productive part of naturalised swards (e.g. <i>Phalaris aquatica</i>) and non-endemic plants used to stabilise soils (e.g. <i>Dactyloctenium australe</i>)."
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

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
	Global Register of Introduced and Invasive Species. 2019. <i>Dactyloctenium australe</i> . http://griis.org/ . [Accessed 22 Mar 2019]	Reported as present in Australia, India and Portugal, with no evidence of impacts

305	Congeneric weed	y
	Source(s)	Notes
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	" <i>Dactyloctenium aegyptium</i> - Weed of: Bananas, Cereals, Cotton, Orchards & Plantations, Pastures, Pome Fruits, Sunflowers, Vegetables"
	Vanangamudi, K., Bhaskaran, M., Balavidhya, S. & Arthanari, M. (2013). <i>Weed Seed Biology</i> . Scientific Publishers, Jodhpur	" <i>Dactyloctenium aegyptium</i> ... A common weed of open ground and waste places in the tropics and subtropics of the World (Wiggins and Porter, 1971). It prefers light, dry soils in Java and grows mainly on sandy areas in Sudan. Despite its preference for a habitat with light soils and low moisture, it has been reported to be an important weed in many countries in the humid tropics (Holm et al., 1977)."
	Hitchcock, A. S. (1922). <i>The Grasses of Hawaii</i> . Memoirs of the Bernice Pauahi Bishop Museum Volume VIII, Number 3. Bishop Museum Press,	" <i>Dactyloctenium aegyptium</i> ... A weed along streets"
	Whitney, L.D., Hosaka, E.Y., & Ripperton, J.C. (1939). <i>Grasses of the Hawaiian Ranges</i> . Hawaii Agricultural Experiment Station Bulletin 82. University of Hawaii, Honolulu	" <i>Dactyloctenium aegyptium</i> ... A weedy annual ... Although not widespread, it is often abundant in dry areas near the sea, in waste places, and in pastures on all of the islands. It produces very scant foliage and is valueless for forage."
	Wagner, W.L., Herbst, D.R. & Sohmer, S.H. 1999. <i>Manual of the flowering plants of Hawaii</i> . Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	" <i>Dactyloctenium aegyptium</i> ... Native to the Paleotropics, now a pantropical weed; in Hawaii 'I usually occurring on sand where it has become partially stabilized, on lava, along roadsides, and in other dry, exposed, disturbed areas, 0-90 m, on Midway Atoll, O'ahu, Moloka'i, Maui, Kaho'olawe, and Hawai'i. First collected on O'ahu in 1909 (Forbes 1074.0, BISH)."

401	Produces spines, thorns or burrs	n
	Source(s)	Notes

Qsn #	Question	Answer
	Australian Biological Resources Study. 2005. Flora of Australia: Poaceae 3, Volume 44B. CSIRO Publishing, Melbourne	[No evidence] "Perennials, erect or geniculate, stoloniferous, rhizomes absent. Flowering culms 30-80 cm high. Ligule a ciliate membrane, ±0.5 mm long. Inflorescence branches 2-4, touching only near base (when flattened), 1.9-5.5 cm long, 3-7 mm wide including the spikelets and awns; bare tip 4-5 mm long, 9-22% of total branch length."

402	Allelopathic	
	Source(s)	Notes
	Sadaqa, E. A., Bawazir, A. A., & Qasem, J. R. (2010). Allelopathic activity of some common weeds species in onion fields. <i>Allelopathy Journal</i> , 26(2): 175-184	[Unknown. Extracts from a related species, <i>Dactyloctenium aegyptium</i> , demonstrates allelopathic properties] "Allelopathic activity of some common weed species in onion fields in Yemen Republic was investigated under laboratory and growth chamber. Test weeds spp. were: <i>Amaranthus graecizans</i> L., <i>Alhagi maurorum</i> Medik., <i>Brachiaria reptans</i> L. Gard. & Hubb., <i>Cassia italica</i> (Mill) Lam. Ex. Steus., <i>Corchorus trilocularis</i> L., <i>Cyperus rotundus</i> L., <i>Dactyloctenium aegyptium</i> L. P. Beauv., <i>Digera muricata</i> L. Mart., <i>Echinochloa colonum</i> L. Link., <i>Euphorbia granulata</i> Forsake., <i>Matura innoxia</i> Mill., <i>Phyllanthus maderaspatensis</i> L. and <i>Zaleya pentandra</i> L. Jeffr. In pot culture, the weed residues incorporated at 100 g kg ⁻¹ of soil inhibited the germination and growth of onion. The weed residues reduced the plant height, root length and shoot and root dry weight in onion. Shoot residue of <i>A. maurorum</i> was most harmful and drastically reduced the shoot and root dry weights of onion by 64% and 96%, respectively. Root exudates of some weed species were also phytotoxic. The root exudates of <i>A. graecizans</i> were most inhibitory to onion seed germination, <i>C. italica</i> root exudates drastically inhibited the plant height and shoot dry weight and <i>E. colonum</i> exudates decreased the onion root length and dry weight. Although none of the weeds foliage leachates was harmful to onion seed germination but leachates reduced the onion height and shoot and root dry weights. Foliage leachates of <i>A. graecizans</i> reduced the onion height and root length by 59 and 64% of control, respectively. The reduction in shoot and root dry weights of onion planted in the soil after the growth of <i>A. maurorum</i> was 76% and 79% of the control, respectively. It was concluded that shoot residues, root exudates and foliage leachates of most test weed species were phytotoxic to onion."

403	Parasitic	n
	Source(s)	Notes
	Australian Biological Resources Study. 2005. Flora of Australia: Poaceae 3, Volume 44B. CSIRO Publishing, Melbourne	"Perennials, erect or geniculate, stoloniferous, rhizomes absent." [Poaceae. No evidence]

404	Unpalatable to grazing animals	n
	Source(s)	Notes

Qsn #	Question	Answer
	Perrin, M. R., & Brereton-Stiles, R. (1999). Habitat use and feeding behaviour of the buffalo and the white rhinoceros in the Hluhluwe-Umfolozi Game Reserve. South African Journal of Wildlife Research, 29(3), 72-80	"As an opportunistic ground cover species, <i>D. australe</i> is maintained as extensive 'lawns' by white rhino at heights of <5cm (Owen-Smith 1988). This is interpreted as resource partitioning at the grass species level, since <i>D. australe</i> is of high nutritional value (Watson & Dallwitz 1992) and constitutes an important dietary component of white rhino."
	Quattrocchi, U. 2006. CRC World Dictionary of Grasses: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	"forage, palatable pasture grass, grazed by stock"
	Australian Biological Resources Study. 2005. Flora of Australia: Poaceae 3, Volume 44B. CSIRO Publishing, Melbourne	"Introduced in Australia and elsewhere as a lawn grass and soil binder, particularly for shady areas. Has been reported suitable for, and tolerant of, grazing."
	Roodt, V. (2015). Grasses & Grazers of Botswana and the surrounding savanna. Penguin Random House South Africa, Cape Town	"Nutritional value It is sometimes planted as pasture grass, especially for smaller animals such as sheep."

405	Toxic to animals	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] "forage, palatable pasture grass, grazed by stock, good sandbinder, useful for erosion control, recommended for heavily shaded areas,"

406	Host for recognized pests and pathogens	
	Source(s)	Notes
	Bhatt, N., Joshi, S. & Tiwari, S. N. (2018). Pests of Rice. Pp. 9-50 in Omkar (ed.). Pests and Their Management. Springer Nature, Singapore	"Rice Mealy Bug, <i>Brevienia rehi</i> (Lindinger) (Hemiptera: Pseudococcidae) Host Range Rice, sugarcane, <i>Cynodon dactylon</i> , <i>Heterachne abortive</i> , <i>Juncellus pygmaeus</i> , <i>Dactyloctenium australe</i> and some monocotyledons grassy weeds." ... "Nature of Damage Nymphs and adults feed by sucking the sap from plant. They affect growth and development of the plant. The plants become stunted and leaves become yellowish and dry off. The infestation also affects the panicle-bearing capacity of plant and produces chaffy grains. Under severe infestation the whole plant may dry (David and Ramamurthy 2011)."

Qsn #	Question	Answer
	<p>Bransgrove, K. (2006). Soil-Borne Turfgrass Diseases. Pp. 69-72 in Carson, C. (ed.). Healthy Soils for Great Turf Proceedings of a workshop held at Cleveland, 20 February 2006. The State of Queensland, Department of Primary Industries and Fisheries</p>	<p>"Soil-borne turfgrass diseases affect all warm-season grasses and cause major losses of turf quality. They are caused primarily by fungi and there are few examples of true disease resistance in turfgrass. All turf applications are affected, from home lawns to golf greens, although the incidence and severity of disease is usually higher in highly managed applications. Examples include golfing and bowling greens where the turf is cut low and frequently. Both incidence and disease severity are influenced by plant health, site factors like shading and sometimes directly by mowing height. At times environmental factors like shading, water logging or heat stress can cause severe turf injury and stress and are misdiagnosed as diseases. Commonly used warm-season turfgrass species are <i>Axonopus compressus</i> and <i>A. fissifolius</i> (broad and narrow leaf carpetgrass respectively), <i>Cynodon dactylon</i> and <i>C. dactylon</i> x <i>C. transvaalensis</i> (green and hybrid green couches respectively), <i>Dactyloctenium australe</i> (sweet smothergrass), <i>Digitaria didactyla</i> (blue couch), <i>Paspalum vaginatum</i> (seashore paspalum), <i>Pennisetum clandestinum</i> (kikuyu), <i>Stenotaphrum secundatum</i> (St. Augustinegrass) and <i>Zoysia</i> spp. (Zoysiagrass)."</p>
	<p>Lapierre, H. & Signoret, P. A. (eds.). 2004. Viruses and Virus Diseases of Poaceae (Gramineae). INRA, Paris</p>	<p>"Very little is known about <i>Bromus striate</i> mosaic virus (BrSMV)," ... "The host range of BrSMV is fairly broad and includes ... <i>Dactyloctenium australe</i> Steudel, ... The agronomic importance of BrSMV is unknown but it is unlikely that BrSMV poses any serious threat to agriculture."</p>

Qsn #	Question	Answer
	<p>Oka, Y., Karssen, G., & Mor, M. (2004). First report of the root-knot nematode <i>Meloidogyne marylandi</i> on turfgrasses in Israel. <i>Plant Disease</i>, 88(3), 309-309</p>	<p>[No egg masses were observed on the roots of <i>Dactyloctenium australe</i>] "In a turfgrass nursery in Arava, Israel, a population of root-knot nematodes was isolated from poorly growing <i>Zoysiagrass</i> (<i>Zoysia japonica</i> Steud.) with symptoms of foliar chlorosis and roots with very small, smooth galls and protruding egg masses. The isolated population (genus <i>Meloidogyne</i>) included females and second-stage juveniles, whereas no males were observed. Measurements and morphological observations of 20 second-stage juveniles (body length = 423 ± 13 µm, dorsal gland orifice from stylet base = 2.6 ± 0.4 µm, tail length = 63 ± 3 µm, hyaline tail length = 12.4 ± 0.9 µm and hemizonid posterior to excretory pore) and 10 adult females (stylet length = 12.5 ± 0.7 µm, dorsal gland orifice from stylet base = 3.3 ± 0.5 µm, excretory pore to head end = 11.9 ± 1.3 µm and perineal patterns rounded to ovoid with coarse striae) conformed to the description of <i>Meloidogyne marylandi</i> Jepson and Golden (3). Additionally, the identification was confirmed when females and second-stage juveniles were compared with available paratype slides. The isozymes malate dehydrogenase (EC 1.1.1.37) and esterase (EC 3.1.1.1) of young, adult females were also different from those of other described root-knot nematode species, including <i>M. graminis</i>, a taxon closely related to <i>M. marylandi</i> (4). <i>M. marylandi</i> was discovered and described from Bermudagrass (<i>Cynodon dactylon</i> (L.) Pers) in Maryland in 1987. Outside the United States, it has only been isolated from <i>Zoysia matrella</i> in Japan (1,2,3). In host range tests with different turfgrasses, stolons with roots were inoculated after 1 week with 500 second-stage juveniles per plant and 6 weeks later, the produced egg-masses were counted. These tests showed that this root-knot nematode isolate reproduced on <i>Z. japonica</i> and <i>Pennisetum clandestinum</i>, while no egg masses were observed on the roots of <i>Dactyloctenium australe</i>, <i>Paspalum vaginatum</i>, and <i>Stenotaphrum secundatum</i>. Additionally, some cereals grown from seeds were tested. Wheat (<i>Triticum aestivum</i>), barley (<i>Hordeum vulgare</i>), and bristle oat (<i>Avena strigosa</i>) were infested with this nematode, while oat (<i>A. sativa</i>) was not. Although the origin of this root-knot nematode in Israel is unknown, it could have been distributed throughout the country with commercial turfgrass. To our knowledge, this is the first report of <i>M. marylandi</i> in Israel and outside the United States and Japan."</p>

407	Causes allergies or is otherwise toxic to humans	n
	Source(s)	Notes
	<p>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</p>	<p>No evidence</p>

408	Creates a fire hazard in natural ecosystems	
	Source(s)	Notes

Qsn #	Question	Answer
	Australian Biological Resources Study. 2005. Flora of Australia: Poaceae 3, Volume 44B. CSIRO Publishing, Melbourne	"Introduced in Australia and elsewhere as a lawn grass and soil binder, particularly for shady areas. Has been reported suitable for, and tolerant of, grazing." [Unknown, but no indication of increased fire risk mentioned in the literature from Australia]
	Craine, J. M., Ballantyne, F., Peel, M., Zambatis, N., Morrow, C., & Stock, W. D. (2009). Grazing and landscape controls on nitrogen availability across 330 South African savanna sites. <i>Austral Ecology</i> , 34(7), 731-740	[May be associated with low incidence of fire] "Plots that were dominated with species that had high leaf d15N had species that were associated with disturbance, high grazing and/or low incidence of fire, for example, <i>Dactyloctenium aegyptium</i> (7.7%), <i>Sporobolus nitens</i> (6.4%) and <i>Dactyloctenium australe</i> (5.6%)."
	WRA Specialist. (2019). Personal Communication	Unknown. No evidence found, but could contribute to fuel load in fire prone areas. As a shade tolerant grass, however, fire risk in this grass may be lower due to possibly higher soil and plant moisture levels.

409	Is a shade tolerant plant at some stage of its life cycle	y
	Source(s)	Notes
	Aldous, D. (ed.). (2011). <i>International Turf Management Handbook</i> . Routledge, New York, NY	" <i>D. australe</i> is relatively tolerant to shade particularly if cut relatively high (30-50 mm). Propagated vegetatively from turf or sprigs. Performs well in the Sydney environment in both full sun and under trees."
	Australian Biological Resources Study. 2005. Flora of Australia: Poaceae 3, Volume 44B. CSIRO Publishing, Melbourne	"Introduced in Australia and elsewhere as a lawn grass and soil binder, particularly for shady areas."
	Roodt, V. (2015). <i>Grasses & Grazers of Botswana and the surrounding savanna</i> . Penguin Random House South Africa, Cape Town	"It is known as an excellent lawn grass and has the added advantage of growing in shade. Other indigenous lawn grasses, such as couch grass (<i>Cynodon dactylon</i>), do not grow well in shade."
	Quattrocchi, U. 2006. <i>CRC World Dictionary of Grasses: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology</i> . CRC Press, Boca Raton, FL	"recommended for heavily shaded areas"

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y
	Source(s)	Notes
	Mountain Herb Estate Nursery. (2019). <i>Dactyloctenium australe</i> . http://www.herb garden.co.za/mountainherb/herbinfo.php?id=598 . [Accessed 22 Mar 2019]	"It is adaptable to a wide variety of soil conditions and has moderate traffic tolerance."
	Seeds for Africa. (2019). LM Berea Lawn / Grass Seed. https://www.seedsforafrica.co.za/products/lm-berea-lawn-grass-seed . [Accessed 22 Mar 2019]	"LM Berea scientific name <i>Dactyloctenium Australe</i> is a popular lawn in Kwazulu Natal." ... "Adaptable to a wide variety of soil conditions."
	Roodt, V. (2015). <i>Grasses & Grazers of Botswana and the surrounding savanna</i> . Penguin Random House South Africa, Cape Town	"Soil type Sandy soils, especially coastal dunes." ... "Where it occurs naturally, it prefers sandy soils and grows well in shade."

Qsn #	Question	Answer
411	Climbing or smothering growth habit	n
	Source(s)	Notes
	Australian Biological Resources Study. 2005. Flora of Australia: Poaceae 3, Volume 44B. CSIRO Publishing, Melbourne	"Perennials, erect or geniculate, stoloniferous, rhizomes absent."

412	Forms dense thickets	
	Source(s)	Notes
	Firth, D.J., Jones, R.M., McFadyen, L.M. Cook, B., & Whalley, R. (2002). Selection of pasture species for groundcover suited to shade in mature macadamia orchards in subtropical Australia. <i>Tropical Grasslands</i> , 36, 1-12	"Dactyloctenium australe produced a dense sward which regrew quickly after mowing in summer." [Ability to exclude other vegetation not specified]
	Gibbs Russel, G. E., Watson, L., Koekemoer, M., Smook, L., Barker, N. P., Anderson, H. M., & Dallwitz, M. J. (1990). <i>Grasses of Southern Africa</i> . National Botanic Gardens / Botanical Research Institute, South Africa	[No description of dense swards or grasslands] "Dactyloctenium australe ... Flowering January to May. Sandy soils on seashores, dunes and along forest roads, often in light shade. Common. Biome: Savanna. Tropical east Africa. Pasture (grazed by stock), or erosion control (good sandbinder), or ornamental (lawns near coast, also grows in shade)."
	Fish, L., Mashau, A. C., Moeaha, M. J., & Nembudani, M. T. (2015). Identification guide to southern African grasses: an identification manual with keys, descriptions and distributions. <i>Strelitzia</i> 36. South African National Biodiversity Institute, Pretoria	[No evidence] "Flowering: January to May. Ecology: Sandy soils; on seashores, dunes and along forest roads, often in light shade. Frequency in southern Africa: Common. Distribution: Tropical East Africa, introduced into Australia. ?N, S, LIM, G, M, KZN, EC. Economics: Grazed by stock; erosion control as a good sand binder; as lawns as grows well in shade."

501	Aquatic	n
	Source(s)	Notes
	Australian Biological Resources Study. 2005. Flora of Australia: Poaceae 3, Volume 44B. CSIRO Publishing, Melbourne	[Terrestrial grass] "Perennials, erect or geniculate, stoloniferous, rhizomes absent." ... "Native to coastal and near coastal areas of southern and eastern Africa."

502	Grass	y
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2019. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 21 Mar 2019]	Family: Poaceae (alt.Gramineae) Subfamily: Chloridoideae Tribe: Cynodonteae

Qsn #	Question	Answer
503	Nitrogen fixing woody plant	n
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2019. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 21 Mar 2019]	Family: Poaceae (alt.Gramineae) Subfamily: Chloridoideae Tribe: Cynodonteae
504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	Notes
	Australian Biological Resources Study. 2005. Flora of Australia: Poaceae 3, Volume 44B. CSIRO Publishing, Melbourne	"Adaptable to a wide variety of soil conditions."
601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	Notes
	Fish, L. & Victor, J.E. (2005). <i>Dactyloctenium australe</i> Steud. National Assessment: Red List of South African Plants version 2017.1. http://redlist.sanbi.org/species.php?species=1365-2 . [Accessed 21 Mar 2019]	"Status and Criteria: Least Concern"
602	Produces viable seed	y
	Source(s)	Notes
	Christians, N., Patton, A. J., & Law, Q. D. (2017). Fundamentals of Turfgrass Management. Fifth Edition. John Wiley & Sons, Inc., Hoboken, NJ	"Durbangrass is established by sod in Australia or by sod or seed in South Africa (Aldous and Loch, 2013)."
	TurfFinder. (2019). Durban grass. https://www.turffinder.com/varieties/durban-grass . [Accessed 22 Mar 2019]	"Sweet smothergrass does produce some viable seed, but not in commercial quantity"

Qsn #	Question	Answer
	Materechera, S. A., & Modiakgotla, L. N. (2006). Cattle manure increases soil weed population and species diversity in a semi-arid environment. <i>South African Journal of Plant and Soil</i> , 23(1), 21-28	[Germinates from cattle manure] "This study investigated the quality of available cattle manure resources in selected villages of the North West province and its influence as a weed seed source when applied to soil. Analysis of manure samples showed a large variation in the quality of manure between seasons and between villages with respect to nitrogen, phosphorus, moisture and soil content. Apart from the obvious seasonal weather differences, the variations were attributed to management of the manure in terms of feed quality, storage and corralling practices. When mixed with soil, the manure significantly ($P < 0.05$) increased both the population (from seven to 24 times) and number of species of weed seedlings in all the villages during both summer and winter seasons. The most abundant weeds were <i>Eleusine coracana</i> , <i>Cynodon dactylon</i> and <i>Eragrostis lehmanniana</i> , while <i>Dactyloctenium australe</i> , <i>Sporobolus nitens</i> , <i>Tagetes minuta</i> and <i>Malva parviflora</i> were the least abundant. Grass species were more prevalent in the manure amended soils than broad-leaved weeds in all the villages and seasons. It was concluded that manure application to soil contributes to the problem of weeds in crop fields and that strategies of managing cattle manure designed to reduce the number and species of weed seeds need to be adopted."

603	Hybridizes naturally	
	Source(s)	Notes
	Kellogg, E. A. 2015. <i>The Families and Genera of Vascular Plants. Volume XIII. Flowering Plants. Monocots: Poaceae.</i> Springer International Publishing, Switzerland	[Unknown. No evidence of natural hybrids found] "Thirteen spp., Natal (South Africa) to north India, Australia, one species a cosmopolitan weed."

604	Self-compatible or apomictic	
	Source(s)	Notes
	Campbell, C. S., Quinn, J. A., Cheplick, G. P., & Bell, T. J. (1983). Cleistogamy in grasses. <i>Annual Review of Ecology and Systematics</i> , 14(1), 411-441	"Appendix I Distribution and morphological nature of cleistogamy in grasses" [Includes <i>Dactyloctenium</i>]
	Chapman, G.P. (ed.). (1990). <i>Reproductive Versatility in the Grasses.</i> Cambridge University Press, Cambridge, UK	"Table 1.1. Grass genera known to exhibit inbreeding (autogamy), cleistogamy, apomixis, hidden cleistogenes, subterranean cleistogenes (rhizanthogenes), fertile florets all unisexual, monoecism (fertile spikelets unisexual, males and females on the same plant), and dioecism (separate male and female-fertile plants)" [Cleistogamy, or self-fertilization that occurs within a permanently closed flower, reported for the genus <i>Dactyloctenium</i>]

605	Requires specialist pollinators	n
	Source(s)	Notes
	Kellogg, E. A. 2015. <i>The Families and Genera of Vascular Plants. Volume XIII. Flowering Plants. Monocots: Poaceae.</i> Springer International Publishing, Switzerland	"Most grasses are wind-pollinated. The tiny flowers, feathery stigmas, versatile anthers, and lack of nectar are all characteristic of the wind pollination syndrome"

606	Reproduction by vegetative fragmentation	y
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Qsn #	Question	Answer
	Source(s)	Notes
	Roodt, V. (2015). Grasses & Grazers of Botswana and the surrounding savanna. Penguin Random House South Africa, Cape Town	"Growth form: Stoloniferous." ... "It is very effective for managing erosion on coastal sand dunes, as its stoloniferous growth form makes it an excellent sand binder."
	TurfFinder. (2019). Durban grass. https://www.turffinder.com/varieties/durban-grass . [Accessed 22 Mar 2019]	"Sweet smothergrass also known as Durban grass is a coarse-textured perennial grass species with above-ground runners (stolons) which may extend for up to a metre. Leaves are 2.5-4.5 mm wide, blade length 50-70 mm in a lawn situation, mid-dark green, shiny, slightly hairy on the margins and slightly crinkled in appearance. The plants stolons produce tufted growths every 6-10 cm, which root at the nodes (DAF, no date)."
	Firth, D.J., Jones, R.M., McFadyen, L.M. Cook, B., & Whalley, R. (2002). Selection of pasture species for groundcover suited to shade in mature macadamia orchards in subtropical Australia. <i>Tropical Grasslands</i> , 36, 1-12	"There was minimal lateral movement of most species into adjacent plots. However, <i>Dactyloctenium australe</i> had spread approximately 5 m from the original plot after 2 years, and invaded adjacent plots in both high and medium light." ... "Four years after planting, <i>Dactyloctenium australe</i> had spread 10 m from the original planting site in highest light conditions."

607	Minimum generative time (years)	1
	Source(s)	Notes
	Materechera, S. A., & Modiakgotla, L. N. (2006). Cattle manure increases soil weed population and species diversity in a semi-arid environment. <i>South African Journal of Plant and Soil</i> , 23(1), 21-28	"Table 3 Prevalence of weed species in manure amended soils from the study villages during winter (W) and summer (S) seasons" [Dactyloctenium australe - Life form - Annual]

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	
	Source(s)	Notes
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	"Dispersed by: Humans, Cattle, Livestock"
	Clifford, H. (1959). Seed Dispersal by Motor Vehicles. <i>Journal of Ecology</i> , 47(2), 311-315	"Table 3. Species which germinated from samples of mud collected from cars at Ibadan in June and December 1957" [Seeds of a related species, <i>Dactyloctenium aegypticum</i> , are transported in mud stuck to vehicles]

702	Propagules dispersed intentionally by people	y
	Source(s)	Notes
	Australian Biological Resources Study. 2005. <i>Flora of Australia: Poaceae 3, Volume 44B</i> . CSIRO Publishing, Melbourne	"Introduced in Australia and elsewhere as a lawn grass and soil binder, particularly for shady areas. Has been reported suitable for, and tolerant of, grazing."

Qsn #	Question	Answer
703	Propagules likely to disperse as a produce contaminant	
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Major Pathway/s: Contaminant, Ornamental, Pasture" [Unverified report as a contaminant. No evidence found in subsequent literature searches]

704	Propagules adapted to wind dispersal	n
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Dispersed by: Humans, Cattle, Livestock" [No evidence]

705	Propagules water dispersed	n
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Dispersed by: Humans, Cattle, Livestock" [No evidence]
	Fish, L., Mashau, A. C., Moeaha, M. J., & Nembudani, M. T. (2015). Identification guide to southern African grasses: an identification manual with keys, descriptions and distributions. Strelitzia 36. South African National Biodiversity Institute, Pretoria	"Sandy soils; on seashores, dunes and along forest roads, often in light shade." [Distributed near water, but no evidence that seeds are dispersed in ocean currents or are tolerant of immersion in salt water]

706	Propagules bird dispersed	n
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Dispersed by: Humans, Cattle, Livestock"

707	Propagules dispersed by other animals (externally)	
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Dispersed by: Humans, Cattle, Livestock" [Dispersed internally by animals, but use as a forage could facilitate external dispersal by animals moving through grass. Seeds could potentially adhere to animal fur or attach in soil]

708	Propagules survive passage through the gut	y
	Source(s)	Notes

Qsn #	Question	Answer
	Materechera, S. A., & Modiakgotla, L. N. (2006). Cattle manure increases soil weed population and species diversity in a semi-arid environment. South African Journal of Plant and Soil, 23(1), 21-28	[<i>Dactyloctenium australe</i> seedlings germinated from cattle manure, suggesting that viable seeds were ingested and passed through the guts of cattle] "This study investigated the quality of available cattle manure resources in selected villages of the North West province and its influence as a weed seed source when applied to soil. Analysis of manure samples showed a large variation in the quality of manure between seasons and between villages with respect to nitrogen, phosphorus, moisture and soil content. Apart from the obvious seasonal weather differences, the variations were attributed to management of the manure in terms of feed quality, storage and corraling practices. When mixed with soil, the manure significantly (P <0.05) increased both the population (from seven to 24 times) and number of species of weed seedlings in all the villages during both summer and winter seasons. The most abundant weeds were <i>Eleusine coracana</i> , <i>Cynodon dactylon</i> and <i>Eragrostis lehmanniana</i> , while <i>Dactyloctenium australe</i> , <i>Sporobolus nitens</i> , <i>Tagetes minuta</i> and <i>Malva parviflora</i> were the least abundant. Grass species were more prevalent in the manure amended soils than broad-leaved weeds in all the villages and seasons. It was concluded that manure application to soil contributes to the problem of weeds in crop fields and that strategies of managing cattle manure designed to reduce the number and species of weed seeds need to be adopted."

801	Prolific seed production (>1000/m ²)	n
	Source(s)	Notes
	TurfFinder. (2019). Durban grass. https://www.turffinder.com/varieties/durban-grass . [Accessed 22 Mar 2019]	"Sweet smothergrass does produce some viable seed, but not in commercial quantity"
	Firth, D.J., Jones, R.M., McFadyen, L.M. Cook, B., & Whalley, R. (2002). Selection of pasture species for groundcover suited to shade in mature macadamia orchards in subtropical Australia. <i>Tropical Grasslands</i> , 36, 1-12	[Propagated by runners, suggesting seed availability may be limited] "D. australe spread under the trees by runners emanating from parent plants in the high light area. This species has the disadvantage of being propagated by runners, although they are commercially available, and requires some mowing to control growth in the harvest season, which was minimised if the sward was cut short in autumn."

802	Evidence that a persistent propagule bank is formed (>1 yr)	y
	Source(s)	Notes
	Royal Botanic Gardens Kew. (2019) Seed Information Database (SID). Version 7.1. Available from: http://data.kew.org/sid/ . [Accessed 23 Mar 2019]	Unknown. Other species have orthodox seeds.

803	Well controlled by herbicides	y
	Source(s)	Notes

Qsn #	Question	Answer
	Hashem, A. & Amjad, M. (2017). Biology and management of button grass (<i>Dactyloctenium radulans</i>): an emerging summer weed in Western Australian Grainbelt. Department of Agriculture and Food Western Australia, Northam	<ul style="list-style-type: none"> • Button grass is a summer emerging weed with high seed dormancy. It can grow up to 1.5m in diameter and produce up to 32,000 seed/m². • Glyphosate (Roundup Ultra Max[®]) applied at 3L/ha alone or as tank mix with 2,4-D ester) was highly effective on button grass when applied at seedling and rosette stage during very hot days at Mullewa, WA. • Roundup Ultra Max[®] applied at 2.4L/ha followed by Para-Trooper[®] at 3L/ha controlled 100% button grass at Nungarin, WA, in 2016 season when applied at seed set to seed shedding stage. • In contrast, Roundup Ultra Max[®] applied at 2.2L alone or as tank mix with phenoxy herbicides, or Para-Trooper[®] alone, provided 100% control of button grass when applied at seed set stage under mild autumn conditions at Mullewa."
	Chauhan, B. (2011). Crowfootgrass (<i>Dactyloctenium aegyptium</i>) Germination and Response to Herbicides in the Philippines. <i>Weed Science</i> , 59(4), 512-516	[Related, weedy species effectively controlled by herbicides] "Crowfootgrass, a C4 species, is one of the principal weeds of dry-seeded rice in Asia. Weed management decisions for this species can be derived from knowledge of its seed germination biology. Experiments were conducted in the laboratory and greenhouse to determine the effects of light, alternating day/night temperatures, water stress, seed burial depth, and rice residue on seed germination and seedling emergence of crowfootgrass and to evaluate the response of this weed to commonly available selective POST herbicides in the Philippines. Light stimulated seed germination, but it was not an absolute requirement for germination. Germination in the light/dark regime was greater at alternating day/night temperatures of 25/15 C (92%) than at 30/20 (70%) or 35/25 C (44%). The osmotic potential required for 50% inhibition of maximum germination was -0.23 MPa, although some seeds germinated at -0.6 MPa. Seedling emergence was greatest for the seeds placed on the soil surface (64%), and emergence declined with increased burial depth in soil. No seedlings emerged from a burial depth of 6 cm or greater. Seedling emergence of crowfootgrass was reduced by the addition of rice residue to the soil surface at rates equivalent to 4 to 6 Mg ha ⁻¹ . Fenoxaprop-p-ethyl + ethoxysulfuron at 45 g ai ha ⁻¹ provided excellent control of crowfootgrass when applied at the four- (99%) and six-leaf (86%) stage. The information gained from this study could contribute to developing components of integrated weed management strategies for crowfootgrass. Soil inversion by tillage to bury weed seeds below their maximum depth of emergence, use of crop residue as mulch, and early application of an effective POST herbicide could serve as important tools for managing crowfootgrass."
	WRA Specialist. (2019). Personal Communication	Related taxa are effectively controlled by several herbicides, and would likely be effective in controlling <i>Dactyloctenium australe</i> if needed

804	Tolerates, or benefits from, mutilation, cultivation, or fire	n
	Source(s)	Notes
	Christians, N., Patton, A. J., & Law, Q. D. (2017). <i>Fundamentals of Turfgrass Management</i> . Fifth Edition. John Wiley & Sons, Inc., Hoboken, NJ	"It is intolerant of frost and traffic and is slow to recover from injury"

Qsn #	Question	Answer
	Mountain Herb Estate Nursery. (2019). <i>Dactyloctenium australe</i> . http://www.herbgarden.co.za/mountainherb/herbinfo.php?id=598 . [Accessed 22 Mar 2019]	"LM must not be mowed too short as is a surface runner."
	TurfFinder. (2019). Durban grass. https://www.turffinder.com/varieties/durban-grass . [Accessed 22 Mar 2019]	[Does best in areas with no wear] "Relatively low maintenance turfgrass. Is best suited for (high) shaded areas with NO wear. The grass also handles full sun. The variety looks good following high fertility and mowing approx. 50 mm. The variety is more suited for domestic lawns, parks and garden areas."

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	Source(s)	Notes
	WRA Specialist. (2019). Personal Communication	NA

Summary of Risk Traits:

High Risk / Undesirable Traits

- Grows in tropical climates
- Naturalized in Australia (but no evidence in Hawaiian Islands to date)
- Described as “weedy” in some publications
- Other *Dactyloctenium* species are invasive
- Shade tolerant
- Tolerates many soil types (but may prefer sandy soils)
- Reproduces by seeds and vegetatively by stolons
- A perennial, but may reach maturity in one growing season
- Seeds dispersed by cattle and humans

Low Risk Traits

- Despite naturalization and reports of weediness, generally regarded as a desirable lawn or pasture grass
- Unarmed (no spines, thorns, or burrs)
- Provides fodder for livestock
- Herbicides may provide effective control

Second Screening Results for Herbs

(A) Reported as a weed of cultivated lands?> Unknown. Reported as “weedy”, but specific impacts are lacking
Outcome = Evaluate