

Assessment date 22 March 2018 Prepared by Young and Lieurance

<i>Nassella tenuissima</i> ALL ZONES		Answer	Score
1.01	Is the species highly domesticated?	n	0
1.02	Has the species become naturalised where grown?		
1.03	Does the species have weedy races?		
2.01	Species suited to Florida's USDA climate zones (0-low; 1-intermediate; 2-high) North Zone: suited to Zones 8, 9 Central Zone: suited to Zones 9, 10 South Zone: suited to Zone 10	2	
2.02	Quality of climate match data (0-low; 1-intermediate; 2-high)	2	
2.03	Broad climate suitability (environmental versatility)	y	1
2.04	Native or naturalized in habitats with periodic inundation North Zone: mean annual precipitation 50-70 inches Central Zone: mean annual precipitation 40-60 inches South Zone: mean annual precipitation 40-60 inches	y	1
2.05	Does the species have a history of repeated introductions outside its natural range?	y	
3.01	Naturalized beyond native range	y	2
3.02	Garden/amenity/disturbance weed	y	2
3.03	Weed of agriculture	unk	
3.04	Environmental weed	y	4
3.05	Congeneric weed	y	2
4.01	Produces spines, thorns or burrs	n	0
4.02	Allelopathic	n	0
4.03	Parasitic	n	0
4.04	Unpalatable to grazing animals	y	1
4.05	Toxic to animals	y	1
4.06	Host for recognised pests and pathogens	unk	0
4.07	Causes allergies or is otherwise toxic to humans	unk	0
4.08	Creates a fire hazard in natural ecosystems	y	1
4.09	Is a shade tolerant plant at some stage of its life cycle	n	0
4.10	Grows on infertile soils (oligotrophic, limerock, or excessively draining soils). North & Central Zones: infertile soils; South Zone: shallow limerock or Histisols.	y	1
4.11	Climbing or smothering growth habit	n	0
4.12	Forms dense thickets	y	1
5.01	Aquatic	n	0

5.02	Grass	y	1
5.03	Nitrogen fixing woody plant	n	0
5.04	Geophyte	n	0
6.01	Evidence of substantial reproductive failure in native habitat	n	0
6.02	Produces viable seed	y	1
6.03	Hybridizes naturally	unk	-1
6.04	Self-compatible or apomictic	y	1
6.05	Requires specialist pollinators	n	0
6.06	Reproduction by vegetative propagation	n	-1
6.07	Minimum generative time (years)	unk	-1
7.01	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y	1
7.02	Propagules dispersed intentionally by people	y	1
7.03	Propagules likely to disperse as a produce contaminant	unk	-1
7.04	Propagules adapted to wind dispersal	y	1
7.05	Propagules water dispersed	y	1
7.06	Propagules bird dispersed	unk	-1
7.07	Propagules dispersed by other animals (externally)	y	1
7.08	Propagules dispersed by other animals (internally)	y	1
8.01	Prolific seed production	y	1
8.02	Evidence that a persistent propagule bank is formed (>1 yr)	y	1
8.03	Well controlled by herbicides	y	-1
8.04	Tolerates, or benefits from, mutilation or cultivation	unk	-1
8.05		?	
Total Score			21
Implemented Pacific Second Screening			no
Risk Assessment Results			High

section	# questions answered	satisfy minimum?
A		10 yes
B		10 yes
C		18 yes
total		38 yes

	Reference	Source data
1.01		cultivated, but no evidence of selection for reduced weediness
1.02		
1.03		
2.01	<p>1. PERAL NAPPFAST Global Plant Hardiness (http://www.nappfast.org/Plant_hardiness/NAPPFAST%20Global%20zones/10-year%20climate/PLANT_HARDINESS_10YR%20lgnnd.tif). 2. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?409896 (0-00-0000).</p>	<p>No computer analysis was performed. 1. Global hardiness zone: 8, 9, 10, 11; equivalent to USDA Hardiness zones: 8, 9, 10, 11. 2. Native to Northern Mexico: Mexico Coahuila, Durango, Nuevo Leon, San Luis Potosi, Tamaulipas, Zacatecas South-Central U.S.A.: United States New Mexico, Texas Southern Mexico: Mexico Aguascalientes, Guanajuato, Hidalgo, Mexico, Oaxaca, Puebla, Tlaxcala, Veracruz Southern South America: Argentina Buenos Aires, Catamarca, Cordoba, Entre Rios, La Pampa, La Rioja, Mendoza, Rio Negro, San Juan, San Luis, Santa Cruz, Santa Fe, Santiago del Estero, Tucuman; Chile</p>
2.02		
2.03	<p>1. Köppen-Geiger climate map (http://www.hydrol-earth-syst-sci.net/11/1633/2007/hess-11-1633-2007.pdf).</p>	<p>1. Distribution in the native/cultivated range occurs in BSk, Bwh, Cfb, Cfa, Csb, Aw, Am (Zones Aw, Am, and Cfa are in Florida)</p>
2.04	<p>1. Climate Charts. World Climate Maps. http://www.climate-charts.com/World-Climate-Maps.html#rain (8-19-2015) 2. Jacobs, S. W. L., Everett, J., & Torres, M. A. (1998). <i>Nassella tenuissima</i> (Gramineae) recorded from Australia, a potential new weed related to Serrated Tussock. <i>Telopea</i>, 8(1), 41-46. 3. 1. Jacobs, S. W. L., Everett, J., & Torres, M. A. (1998). <i>Nassella tenuissima</i> (Gramineae) recorded from Australia, a potential new weed related to Serrated Tussock. <i>Telopea</i>, 8(1), 41-46.</p>	<p>1. Native to areas with 3-58 inches of precipitation 2. Naturalised populations of <i>Nassella tenuissima</i> were discovered only eight years after it had been imported to Australia as an ornamental tussock grass... It has also spread from gardens and naturalised in New Zealand and the United States where it has been difficult to control 3. In its natural habitat, <i>N. tenuissima</i> grows from about 20° to 35° North, and from 25° to 47° South, in areas with an average annual rainfall of 300 mm, and on extremely variable soils. Reports from Wellington, New Zealand, suggest that the climate there is too wet for it, suggesting an upper rainfall limit of <1250 mm.</p>
2.05	<p>1. Barker, J., R. Randall and Tony Grice. 2006. Weeds of the future? Threats to Australia's grazing industries by garden plants. Meat & Livestock Australia Limited .NORTH SYDNEY, NSW. 2. Csurhes, S. (2008). Pest plant risk assessment: Mexican feather grass: <i>Nassella tenuissima</i>. NSW Department of Primary Industries, Primary Industries Agriculture, New South Wales Department of Primary Industries (2014). NSW Weedwise.</p>	<p>1. Naturalised populations of <i>Nassella tenuissima</i> were discovered only eight years after it had been imported to Australia as an ornamental tussock grass... It has also spread from gardens and naturalised in New Zealand and the United States where it has been difficult to control 2. Mexican feather grass is a declared pest in South Africa, where it is invading mountain grassland and transforming these sites. It has also naturalised in California and New Zealand 3. available for sale onlie from Monrovia</p>

3.01	<p>1. Barker, J., R. Randall and Tony Grice. 2006. Weeds of the future? Threats to Australia's grazing industries by garden plants. Meat & Livestock Australia Limited .NORTH SYDNEY, NSW. 2. Csurhes, S. (2008). Pest plant risk assessment: Mexican feather grass: <i>Nassella tenuissima</i>. NSW Department of Primary Industries, Primary Industries Agriculture, New South Wales Department of Primary Industries (2014). NSW Weedwise.</p>	<p>1. Naturalised populations of <i>Nassella tenuissima</i> were discovered only eight years after it had been imported to Australia as an ornamental tussock grass... It has also spread from gardens and naturalised in New Zealand and the United States where it has been difficult to control 2. Mexican feather grass is a declared pest in South Africa, where it is invading mountain grassland and transforming these sites (Henderson 2001). It has also naturalised in California and New Zealand</p>
3.02	<p>1. Plant Right https://plantright.org/invasive/stipanassella-tenuissima/ (2-21-2018) 2. <i>Stipa tenuissima</i>: unwanted weedy grass on the move. P.J. de Lange and R.O. Gardner http://bts.nzpcn.org.nz/bts_pdf/Auck_1997_52_1_25-26.pdf (3-12-2018) 3. NSW WeedWise http://weeds.dpi.nsw.gov.au/Weeds/Details/162 (3-20-2018)</p>	<p>1. Mexican feathergrass often self-sows abundantly and may spread out of its designated place in the garden, giving gardeners more work and possibly giving your neighbors plants they don't want. 2. Weedy infestation spreading around the university of Waikato, Australia 3. Mexican feather grass, is a potentially serious weed of pastures, native grasslands and woodlands.</p>
3.03	<p>1. Barker, J., R. Randall and Tony Grice. 2006. Weeds of the future? Threats to Australia's grazing industries by garden plants. Meat & Livestock Australia Limited .NORTH SYDNEY, NSW.</p>	<p>1. <i>Nassella tenuissima</i> is unpalatable to livestock and it aggressively competes with desirable pastoral species.</p>
3.04	<p>1. Plant Right https://plantright.org/invasive/stipanassella-tenuissima/ (2-21-2018) 2. NSW WeedWise http://weeds.dpi.nsw.gov.au/Weeds/Details/162 (3-20-2018) 3. Barker, J., R. Randall and Tony Grice. 2006. Weeds of the future? Threats to Australia's grazing industries by garden plants. Meat & Livestock Australia Limited .NORTH SYDNEY, NSW.</p>	<p>1. In coastal areas of New South Wales, Australia it crowds out pasture species as well as native grasses. 2. Mexican feather grass, is a potentially serious weed of pastures, native grasslands and woodlands. 3. <i>N. tenuissima</i> is a declared weed in South Africa where it threatens native grasslands</p>
3.05	<p>1. Jacobs, S. W. L., Everett, J., & Torres, M. A. (1998). <i>Nassella tenuissima</i> (Gramineae) recorded from Australia, a potential new weed related to Serrated Tussock. <i>Telopea</i>, 8(1), 41-46. 2. Barker, J., R. Randall and Tony Grice. 2006. Weeds of the future? Threats to Australia's grazing industries by garden plants. Meat & Livestock Australia Limited .NORTH SYDNEY, NSW.</p>	<p>1. <i>Nassella tenuissima</i> is closely related to <i>N. trichotoma</i> (Serrated Tussock), a serious pasture and environmental weed in temperate Australia 2. The highly adaptable nature of <i>N. tenuissima</i> has led to projections of a potential distribution of 14 million hectares – much of it grazing land. This is approximately 6 times the potential range of <i>N. trichotoma</i>, a species which has cost the New South Wales grazing industry an estimated \$40m in lost production and can reduce the productivity of infected pastures by up to 95%. It is predicted that <i>N. tenuissima</i> may be more invasive than <i>N. trichotoma</i> because of its ability to adapt to a wide range of climates. If left to spread, the economic cost to Australia over the next 60 years is estimated to be \$39m annually.</p>
4.01	<p>1. Jacobs, S. W. L., Everett, J., & Torres, M. A. (1998). <i>Nassella tenuissima</i> (Gramineae) recorded from Australia, a potential new weed related to Serrated Tussock. <i>Telopea</i>, 8(1), 41-46.</p>	<p>1. no evidence of these characteristics</p>
4.02		<p>no evidence</p>
4.03	<p>1. Jacobs, S. W. L., Everett, J., & Torres, M. A. (1998). <i>Nassella tenuissima</i> (Gramineae) recorded from Australia, a potential new weed related to Serrated Tussock. <i>Telopea</i>, 8(1), 41-46.</p>	<p>no evidence of these characteristics</p>

4.04	1. Plant Right https://plantright.org/invasive/stipanassella-tenuissima/ (2-21-2018) 2. MORETTO, A. S., & DISTEL, R. A. (1998). Requirement of vegetation gaps for seedling establishment of two unpalatable grasses in a native grassland of central Argentina. <i>Austral Ecology</i> , 23(5), 419-423. 3. Gardenia https://www.gardenia.net/plant/stipa-tenuissima-mexican-feather-grass (3-12-2018) 4. If livestock are forced to feed on <i>N. tenuissima</i> , the undigested plant matter will cause serious illness or death. Sharp seeds may also cause injury to stock – including blindness – and devalue wool and pelts.	1. The grass forms indigestible balls in the stomach of livestock and, if they are forced to graze the infected pasture, the livestock may lose weight and die. 2. Unpalatable grass 3. rabbit and deer tolerant 4. If livestock are forced to feed on <i>N. tenuissima</i> , the undigested plant matter will cause serious illness or death. Sharp seeds may also cause injury to stock – including blindness – and devalue wool and pelts.
4.05	1. Barker, J., R. Randall and Tony Grice. 2006. Weeds of the future? Threats to Australia's grazing industries by garden plants. Meat & Livestock Australia Limited .NORTH SYDNEY, NSW.	1. If livestock are forced to feed on <i>N. tenuissima</i> , the undigested plant matter will cause serious illness or death. Sharp seeds may also cause injury to stock – including blindness – and devalue wool and pelts.
4.06	1. Anderson, F., W. Pettit, L. Morin, D. Briese and D. McLaren. 2004. Pathogens for the biological control of weedy stipoid grasses in Australia: completion of investigations in Argentina. Pp. 69-74 in J.M. Cullen, D.T. Briese, D.J. Kriticos, W.M. Lonsdale, L. Morin and J.K. Scott. (eds.). <i>Proceedings of the XI International Symposium on Biological Control of Weeds</i> . CSIRO Entomology, Canberra, Australia, 648 pp.	1. In a preliminary hostspecificity test, Anderson et al. (2002) demonstrated that the South American native <i>Nassella tenuissima</i> (Trin.) Barkworth was susceptible to a smut isolate from <i>N. trichotoma</i> . [no evidence of being a host for important crop pathogens]
4.07		no evidence
4.08	1. Plant Right https://plantright.org/invasive/stipanassella-tenuissima/ (2-21-2018) 2. Plant Pono http://plantpono.org/inv-plant.php?id=5 (3-22-2018)	1. It forms dense stands that thrive in dry areas, increasing the fire hazard. Fire simply enhances seeding and does not get rid of the plant. 2. An ornamental grass that will dominate natural areas and become a major fire hazard.
4.09	1. Gardenia https://www.gardenia.net/plant/stipa-tenuissima-mexican-feather-grass (3-12-2018) 2. Fine Gardening http://www.finegardening.com/plant/mexican-feather-grass-stipa-tenuissima (3-20-2018) 3. Barker, J., R. Randall and Tony Grice. 2006. Weeds of the future? Threats to Australia's grazing industries by garden plants. Meat & Livestock Australia Limited .NORTH SYDNEY, NSW.	1. full sun 2. grown in full sun 3. <i>N. tenuissima</i> is very adaptable and tolerant of many soil types and climatic extremes including drought. It prefers well-drained soil and sunny, dry conditions with limited vegetation cover
4.10	1. Gardenia https://www.gardenia.net/plant/stipa-tenuissima-mexican-feather-grass (3-12-2018) 2. Barker, J., R. Randall and Tony Grice. 2006. Weeds of the future? Threats to Australia's grazing industries by garden plants. Meat & Livestock Australia Limited .NORTH SYDNEY, NSW. 3. USDA Global Soils Map https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/use/?cid=nrcs142p2_054013 (3-22-2018)	1. medium to light, moderately fertile, well-drained soils 2. <i>N. tenuissima</i> is very adaptable and tolerant of many soil types and climatic extremes including drought. It prefers well-drained soil and sunny, dry conditions with limited vegetation cover 3. Native to regions with soil types found in all three Florida regions
4.11	1. Encyclopedia of Life http://eol.org/pages/1115646/details (3-21-2018)	1. Growth form is a grass
4.12	1. Plant Right https://plantright.org/invasive/stipanassella-tenuissima/ (2-21-2018) 2. NSW WeedWise http://weeds.dpi.nsw.gov.au/Weeds/Details/162 (3-20-2018) 2. Barker, J., R. Randall and Tony Grice. 2006. Weeds of the future? Threats to Australia's grazing industries by garden plants. Meat & Livestock Australia Limited .NORTH SYDNEY, NSW.	1. Forms dense stands 2. Mexican feather grass is a dense, upright tussock up to 70 cm.

5.01	1. Encyclopedia of Life http://eol.org/pages/1115646/details (3-21-2018)	Family: Poaceae
5.02	1. Encyclopedia of Life http://eol.org/pages/1115646/details (3-21-2018)	Family: Poaceae
5.03	1. Encyclopedia of Life http://eol.org/pages/1115646/details (3-21-2018)	Family: Poaceae
5.04	1. Encyclopedia of Life http://eol.org/pages/1115646/details (3-21-2018)	Family: Poaceae
6.01		no evidence
6.02	1. MORETTO, A. S., & DISTEL, R. A. (1998). Requirement of vegetation gaps for seedling establishment of two unpalatable grasses in a native grassland of central Argentina. <i>Austral Ecology</i> , 23(5), 419-423. 2. NSW WeedWise http://weeds.dpi.nsw.gov.au/Weeds/Details/162 (3-20-2018) 3. Fine Gardening http://www.finegardening.com/plant/mexican-feather-grass-stipa-tenuissima (1. Reproduces by seed 2. Mexican feather grass reproduces by seed. From mid spring to summer it germinates freely on well-drained soils where there is little competition from other vegetation. 3. self seeds
6.03		no evidence
6.04	1. Csurhes, S. (2008). Pest plant risk assessment: Mexican feather grass: <i>Nassella tenuissima</i> . NSW Department of Primary Industries, Primary Industries Agriculture, New South Wales Department of Primary Industries (2014). NSW Weedwise. 2. Jacobs, S. W. L., Everett, J., & Torres, M. A. (1998). <i>Nassella tenuissima</i> (Gramineae) recorded from Australia, a potential new weed related to Serrated Tussock. <i>Telopea</i> , 8(1), 41-46.	1. The flowers have a single, bisexual floret per spikelet 2. There is evidence of both cleistogamy and chasmogamy in <i>N. tenuissima</i>
6.05	1. Encyclopedia of Life http://eol.org/pages/1115646/details (3-21-2018)	Family: Poaceae [wind pollinated]
6.06		no evidence
6.07		no evidence
7.01	1. Plant Right https://plantright.org/invasive/stipanassella-tenuissima/ (2-21-2018) 2. NSW WeedWise http://weeds.dpi.nsw.gov.au/Weeds/Details/162 (3-20-2018) 3. Barker, J., R. Randall and Tony Grice. 2006. Weeds of the future? Threats to Australia's grazing industries by garden plants. Meat & Livestock Australia Limited .NORTH SYDNEY, NSW.	1. It self-sows just about everywhere, and especially in cracks in roads and sidewalks, making it a high maintenance plant unless you enjoy weeding. 2. Seeds can be dispersed by becoming attached to clothing, livestock and vehicles, or from contaminated seed and fodder. 3. <i>N. tenuissima</i> produces many thousands of seeds annually. Seeds are dispersed by wind, water, machinery, contaminated soil and animals
7.02	1. <i>Stipa tenuissima</i> : unwanted weedy grass on the move. P.J. de Lange and R.O. Gardner http://bts.nzpcn.org.nz/bts_pdf/Auck_1997_52_1_25-26.pdf (3-12-2018) 2. Barker, J., R. Randall and Tony Grice. 2006. Weeds of the future? Threats to Australia's grazing industries by garden plants. Meat & Livestock Australia Limited .NORTH SYDNEY, NSW. 3. Csurhes, S. (2008). Pest plant risk assessment: Mexican feather grass: <i>Nassella tenuissima</i> . NSW Department of Primary Industries, Primary Industries Agriculture, New South Wales Department of Primary Industries (2014). NSW Weedwise.	1. the spread of this species is still being assisted by New Zealand nurseries garden centres and perhaps gardening circles 2. Naturalised populations of <i>Nassella tenuissima</i> were discovered only eight years after it had been imported to Australia as an ornamental tussock grass. 3. Desired as an ornamental and sold in nurseries
7.03		no evidence

7.04	1. Plant Right https://plantright.org/invasive/stipanassella-tenuissima/ (2-21-2018) 2. Barker, J., R. Randall and Tony Grice. 2006. Weeds of the future? Threats to Australia's grazing industries by garden plants. Meat & Livestock Australia Limited .NORTH SYDNEY, NSW.	1. Mexican feathergrass produces 1000s of seeds, which are dispersed by wind, water or contaminated soil – as well as via automobiles and animal droppings. 2. N. tenuissima produces many thousands of seeds annually. Seeds are dispersed by wind, water, machinery, contaminated soil and animals
7.05	1. Plant Right https://plantright.org/invasive/stipanassella-tenuissima/ (2-21-2018) 2. Barker, J., R. Randall and Tony Grice. 2006. Weeds of the future? Threats to Australia's grazing industries by garden plants. Meat & Livestock Australia Limited .NORTH SYDNEY, NSW.	1. Mexican feathergrass produces 1000s of seeds, which are dispersed by wind, water or contaminated soil – as well as via automobiles and animal droppings. 2. N. tenuissima produces many thousands of seeds annually. Seeds are dispersed by wind, water, machinery, contaminated soil and animals
7.06		no evidence
7.07	1. NSW WeedWise http://weeds.dpi.nsw.gov.au/Weeds/Details/162 (3-20-2018) 2. Barker, J., R. Randall and Tony Grice. 2006. Weeds of the future? Threats to Australia's grazing industries by garden plants. Meat & Livestock Australia Limited .NORTH SYDNEY, NSW. 3. Csurhes, S. (2008). Pest plant risk assessment: Mexican feather grass: Nassella tenuissima. NSW Department of Primary Industries, Primary Industries Agriculture, New South Wales Department of Primary Industries (2014). NSW Weedwise.	1. Seeds can be dispersed by becoming attached to clothing, livestock and vehicles, or from contaminated seed and fodder. 2. N. tenuissima produces many thousands of seeds annually. Seeds are dispersed by wind, water, machinery, contaminated soil and animals 3. Seeds readily adhere to clothing and livestock. They can also be dispersed on farm machinery, or as a contaminant of seeds and fodder.
7.08	1. Plant Right https://plantright.org/invasive/stipanassella-tenuissima/ (2-21-2018) 2. Barker, J., R. Randall and Tony Grice. 2006. Weeds of the future? Threats to Australia's grazing industries by garden plants. Meat & Livestock Australia Limited .NORTH SYDNEY, NSW.	1. Mexican feathergrass produces 1000s of seeds, which are dispersed by wind, water or contaminated soil – as well as via automobiles and animal droppings. 2. N. tenuissima produces many thousands of seeds annually. Seeds are dispersed by wind, water, machinery, contaminated soil and animals
8.01	1. Barker, J., R. Randall and Tony Grice. 2006. Weeds of the future? Threats to Australia's grazing industries by garden plants. Meat & Livestock Australia Limited .NORTH SYDNEY, NSW.	1. N. tenuissima produces many thousands of seeds annually. Seeds are dispersed by wind, water, machinery, contaminated soil and animals
8.02	1. Csurhes, S. (2008). Pest plant risk assessment: Mexican feather grass: Nassella tenuissima. NSW Department of Primary Industries, Primary Industries Agriculture, New South Wales Department of Primary Industries (2014). NSW Weedwise.	1. The resulting seed-bank can persist for four years, even if further seed production is prevented. In South America, seedlings of N. tenuissima emerge in autumn and early winter, prior to the winter rains.
8.03	1. New Zealand Weed Control http://www.mzih.org.nz/pages/nppa_060.pdf (3-22-2018) 2. Barker, J., R. Randall and Tony Grice. 2006. Weeds of the future? Threats to Australia's grazing industries by garden plants. Meat & Livestock Australia Limited .NORTH SYDNEY, NSW.	1. Mexican feather grass can be effectively controlled with herbicide 2. Larger infestations should be treated with a herbicide before flowering and seeding.
8.04		no evidence
8.05		no evidence