

Australia/New Zealand Weed Risk Assessment adapted for Florida.

Data used for analysis published in: Gordon, D.R., D.A. Onderdonk, A.M. Fox, R.K. Stocker, and C. Gantz. 2008. Predicting Invasive Plants in Florida using the Australian Weed Risk Assessment. Invasive Plant Science and Management 1: 178-195.

<i>Rotboellia cochinchinensis (itchgrass)</i>			
Question number	Question	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)	2	
2.02	Quality of climate match data (0-low; 1-intermediate; 2-high)	2	
2.03	Broad climate suitability (environmental versatility)		
2.04	Native or naturalized in habitats with periodic inundation	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	0
3.02	Garden/amenity/disturbance weed	y	0
3.03	Weed of agriculture	y	0
3.04	Environmental weed	n	0
3.05	Congeneric weed	n	0
4.01	Produces spines, thorns or burrs	y	1
4.02	Allelopathic	y	1
4.03	Parasitic	n	0
4.04	Unpalatable to grazing animals	?	
4.05	Toxic to animals	n	0
4.06	Host for recognised pests and pathogens	y	1
4.07	Causes allergies or is otherwise toxic to humans	n	0
4.08	Creates a fire hazard in natural ecosystems	n	0
4.09	Is a shade tolerant plant at some stage of its life cycle	y	1
4.1	Grows on infertile soils (oligotrophic, limerock, or excessively draining soils)	n?	0
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		
6.02	Produces viable seed	y	1
6.03	Hybridizes naturally		
6.04	Self-compatible or apomictic	y	1
6.05	Requires specialist pollinators	n	0
6.06	Reproduction by vegetative fragmentation	n	-1
6.07	Minimum generative time (years)	1	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	y	1
7.04	Propagules adapted to wind dispersal	n	-1
7.05	Propagules water dispersed	y	1
7.06	Propagules bird dispersed	y	1
7.07	Propagules dispersed by other animals (externally)	n	-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		
8.05	Effective natural enemies present in Florida, or east of the continental divide		
Total Score			22

Outcome	Reject*
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*Used secondary screen from: Daehler, C. C., J.L. Denslow, S. Ansari, and H. Kuo. 2004. A risk assessment system for screening out harmful invasive pest plants from Hawaii's and other Pacific islands. *Conserv. Biol.* 18: 360-368.

section	# questions answered	satisfy minimum?
A	7	yes
B	11	yes
C	20	yes
total	38	yes

Data collected 2006-2007

Question number	Reference	Source data
1.01		no evidence of selection for reduced weediness
1.02		
1.03		
2.01	North American Plant Protection Organization (2003) Pest fact sheet: <i>Rottboellia cochinchinensis</i> (Lour.) Clayton (http://www.nappo.org/PRA-sheets/Rottboelliacochinchinensis.pdf).	"preferring tropical and subtropical climates"
2.02		
2.03		
2.04	Holm, Plucknett, Pancho, and Herberger (1977) <i>The World's Worst Weeds: Distribution and Biology</i> . The University Press of Hawaii, Honolulu.	"In South Africa...it frequents wet places and, in Madras, may even grow in shallow water."
2.05	Valverde (2003) Progress on <i>Rottboellia cochinchinensis</i> management. In Labrada (ed.) <i>Weed Management for Developing Countries, Addendum 1</i> . FAO Plant Production and Protection Paper 120 (http://www.fao.org/documents/show_cdr.asp?url_file=/DOCREP/006/Y5031E/y5031e07.htm).	Native to the Old World (Afro-Asian) but common throughout the New World.
3.01	Valverde (2003) Progress on <i>Rottboellia cochinchinensis</i> management. In Labrada (ed.) <i>Weed Management for Developing Countries, Addendum 1</i> . FAO Plant Production and Protection Paper 120 (http://www.fao.org/documents/show_cdr.asp?url_file=/DOCREP/006/Y5031E/y5031e07.htm).	Native to the Old World - very weedy in the New World tropics.
3.02	Waterhouse (1997) <i>The major invertebrate pests and weeds of agriculture and plantation forestry in the southern and western Pacific</i> . ACIAR Monograph No. 44, 99p.	Considered a weed of gardens and roadsides in the Pacific.
3.03	1. Holm, Plucknett, Pancho, and Herberger (1977) <i>The World's Worst Weeds: Distribution and Biology</i> . The University Press of Hawaii, Honolulu. 2. Waterhouse (1997) <i>The major invertebrate pests and weeds of agriculture and plantation forestry in the southern and western Pacific</i> . ACIAR Monograph No. 44, 99p.	1. "It is a weed of 18 crops in 28 countries." "its importance as a weed of several cultivated world crops is increasing" 2. Considered a major weed of agriculture in the Pacific - affects sugarcane and other crops.

3.04		no evidence
3.05		no evidence
4.01	Holm, Plucknett, Pancho, and Herberger (1977) <i>The World's Worst Weeds: Distribution and Biology</i> . The University Press of Hawaii, Honolulu.	"it has fiberglass-like needles on the sheath which penetrate the flesh, break off, and result in painful infections"
4.02	Valverde (2003) Progress on <i>Rottboellia cochinchinensis</i> management. In Labrada (ed.) <i>Weed Management for Developing Countries</i> , Addendum 1. FAO Plant Production and Protection Paper 120 (http://www.fao.org/documents/show_cdr.asp?url_file=/DOCREP/006/Y5031E/y5031e07.htm).	"it has been suggested to be allelopathic to crops, including to maize (Bridgemohan et al. 1992, Bridgemohan and McDavid, 1993) and rice, (Casini et al. 1998)"
4.03	Holm, Plucknett, Pancho, and Herberger (1977) <i>The World's Worst Weeds: Distribution and Biology</i> . The University Press of Hawaii, Honolulu.	no description of this
4.04	Holm, Plucknett, Pancho, and Herberger (1977) <i>The World's Worst Weeds: Distribution and Biology</i> . The University Press of Hawaii, Honolulu.	"Although attempts have been made to use it for pasture in many areas, there have been conflicting reports of its desirability...Although it is used for hay in Africa, it is also suitable for green fodder and silage. Cattle and horses appear to relish it at times...In Ceylon it is considered to be dangerous for stock because the stiff hairs may lacerate the animals' mouths and intestines."
4.05	Holm, Plucknett, Pancho, and Herberger (1977) <i>The World's Worst Weeds: Distribution and Biology</i> . The University Press of Hawaii, Honolulu.	used for hay, green fodder, and silage [and no evidence of toxicity]
4.06	Holm, Plucknett, Pancho, and Herberger (1977) <i>The World's Worst Weeds: Distribution and Biology</i> . The University Press of Hawaii, Honolulu.	" <i>R. exaltata</i> [synonym] is an alternate host of rice leaf gall virus and corn leaf gall virus"
4.07		no evidence
4.08		no evidence
4.09	Holm, Plucknett, Pancho, and Herberger (1977) <i>The World's Worst Weeds: Distribution and Biology</i> . The University Press of Hawaii, Honolulu.	"In some regions it requires sunny or moderately shaded places, whereas in others it is found in thickets or teak forests."
4.1	Holm, Plucknett, Pancho, and Herberger (1977) <i>The World's Worst Weeds: Distribution and Biology</i> . The University Press of Hawaii, Honolulu.	In Rhodesia [now Zimbabwe], "the weed was recorded only on heavier soils - clay to sandy clay loams...It is not a serious problem on lighter soils in Rhodesia."
4.11	USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Data compiled from various sources by Mark W. Skinner. National Plant Data Center, Baton Rouge, LA 70874-4490 USA.	growth habit: graminoid
4.12	Holm, Plucknett, Pancho, and Herberger (1977) <i>The World's Worst Weeds: Distribution and Biology</i> . The University Press of Hawaii, Honolulu.	forms dense stands in Rhodesia [now Zimbabwe]; up to 4 m tall
5.01		terrestrial
5.02	USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Data compiled from	Poaceae

	various sources by Mark W. Skinner. National Plant Data Center, Baton Rouge, LA 70874-4490 USA.	
5.03	USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Data compiled from various sources by Mark W. Skinner. National Plant Data Center, Baton Rouge, LA 70874-4490 USA.	herbaceous Poaceae
5.04	Holm, Plucknett, Pancho, and Herberger (1977) <i>The World's Worst Weeds: Distribution and Biology</i> . The University Press of Hawaii, Honolulu.	roots appear fibrous in illustration
6.01		
6.02	Holm, Plucknett, Pancho, and Herberger (1977) <i>The World's Worst Weeds: Distribution and Biology</i> . The University Press of Hawaii, Honolulu.	"Reproduction is by seeds."
6.03		
6.04	Valverde (2003) Progress on <i>Rottboellia cochinchinensis</i> management. In Labrada (ed.) <i>Weed Management for Developing Countries, Addendum 1</i> . FAO Plant Production and Protection Paper 120 (http://www.fao.org/documents/show_cdr.asp?url_file=/DOCREP/006/Y5031E/y5031e07.htm).	predominantly inbreeding
6.05		most grasses wind-pollinated
6.06	Valverde (2003) Progress on <i>Rottboellia cochinchinensis</i> management. In Labrada (ed.) <i>Weed Management for Developing Countries, Addendum 1</i> . FAO Plant Production and Protection Paper 120 (http://www.fao.org/documents/show_cdr.asp?url_file=/DOCREP/006/Y5031E/y5031e07.htm).	"Itchgrass reproduces solely by seeds"
6.07	1. Holm, Plucknett, Pancho, and Herberger (1977) <i>The World's Worst Weeds: Distribution and Biology</i> . The University Press of Hawaii, Honolulu. 2. North American Plant Protection Organization (2003) Pest fact sheet: <i>Rottboellia cochinchinensis</i> (Lour.) Clayton (http://www.nappo.org/PRA-sheets/Rottboelliacochinchinensis.pdf).	1. plants took between 47 and 154 days to flower 2. "Seed production begins 6-7 weeks after emergence"
7.01	Holm, Plucknett, Pancho, and Herberger (1977) <i>The World's Worst Weeds: Distribution and Biology</i> . The University Press of Hawaii, Honolulu.	seeds are spread by harvesting machines
7.02	Holm, Plucknett, Pancho, and Herberger (1977) <i>The World's Worst Weeds: Distribution and Biology</i> . The University Press of Hawaii, Honolulu.	"It was introduced into the Caribbean for grazing."
7.03	Holm, Plucknett, Pancho, and Herberger (1977) <i>The World's Worst Weeds: Distribution and Biology</i> . The University Press of Hawaii, Honolulu.	seeds are spread in poorly cleaned crop seeds
7.04	North American Plant Protection Organization (2003) Pest fact sheet: <i>Rottboellia cochinchinensis</i> (Lour.) Clayton (http://www.nappo.org/PRA-sheets/Rottboelliacochinchinensis.pdf).	fruit is an awnless spikelet [no evidence of adaptations for wind dispersal]
7.05	1. Holm, Plucknett, Pancho, and Herberger (1977) <i>The World's Worst Weeds: Distribution and Biology</i> . The University Press of Hawaii, Honolulu. 2. Smith, Valverde, Merayo, and Fonseca (2001) Integrated management of itchgrass in a corn cropping system:	1. seeds are spread by water 2. "Itchgrass seed floats easily, and irrigation or floodwater is known to be a source of contamination for other fields"

	modeling the effect of control tactics. <i>Weed Science</i> 49: 123–134.	
7.06	1. Smith, Valverde, Merayo, and Fonseca (2001) Integrated management of itchgrass in a corn cropping system: modeling the effect of control tactics. <i>Weed Science</i> 49: 123–134. 2. Valverde (2003) Progress on <i>Rottboellia cochinchinensis</i> management. In Labrada (ed.) <i>Weed Management for Developing Countries</i> , Addendum 1. FAO Plant Production and Protection Paper 120 (http://www.fao.org/documents/show_cdr.asp?url_file=/DOCREP/006/Y5031E/y5031e07.htm).	1. "Thomas (1970a) found that guinea fowl, mongoose, and cattle—but not smaller birds and mammals—could disperse itchgrass seed in Zimbabwe." But in another study, only a small percentage of seeds survived passage through the gut of birds. 2. seeds disseminated by birds
7.07	North American Plant Protection Organization (2003) Pest fact sheet: <i>Rottboellia cochinchinensis</i> (Lour.) Clayton (http://www.nappo.org/PRA-sheets/Rottboelliacochinchinensis.pdf).	fruit is an awnless spikelet [no evidence of any means of attachment]
7.08	Smith, Valverde, Merayo, and Fonseca (2001) Integrated management of itchgrass in a corn cropping system: modeling the effect of control tactics. <i>Weed Science</i> 49: 123–134.	"Thomas (1970a) found that guinea fowl, mongoose, and cattle—but not smaller birds and mammals—could disperse itchgrass seed in Zimbabwe."
8.01	1. Smith, Valverde, Merayo, and Fonseca (2001) Integrated management of itchgrass in a corn cropping system: modeling the effect of control tactics. <i>Weed Science</i> 49: 123–134. 2. Holm, Plucknett, Pancho, and Herberger (1977) <i>The World's Worst Weeds: Distribution and Biology</i> . The University Press of Hawaii, Honolulu.	1. "Curves fitted to itchgrass seed production (Table 1; Figure 3) indicate that under very severe uncontrolled infestations of itchgrass, seed production of > 10,000 seeds m ⁻² is possible." 2. Individual plants can produce between 2,200 and 16,500 seeds.
8.02	1. Holm, Plucknett, Pancho, and Herberger (1977) <i>The World's Worst Weeds: Distribution and Biology</i> . The University Press of Hawaii, Honolulu. 2. North American Plant Protection Organization (2003) Pest fact sheet: <i>Rottboellia cochinchinensis</i> (Lour.) Clayton (http://www.nappo.org/PRA-sheets/Rottboelliacochinchinensis.pdf).	1. "The dormancy of the seeds and the germination habit vary a great deal across the world...In other areas the seeds are said to have a deep dormancy, sometimes lasting for years" 2. "The seed remains viable in the soil for up to 4 years"
8.03	Valverde (2003) Progress on <i>Rottboellia cochinchinensis</i> management. In Labrada (ed.) <i>Weed Management for Developing Countries</i> , Addendum 1. FAO Plant Production and Protection Paper 120 (http://www.fao.org/documents/show_cdr.asp?url_file=/DOCREP/006/Y5031E/y5031e07.htm).	"Typically, selective itchgrass chemical control has been achieved with some triazines (e.g. dimetamethrin), dinitroanilines (e.g. pendimethalin) and acid amides (e.g. diphenamid)."
8.04		
8.05		