

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>Sida spinosa (prickly sida)</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		
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	y	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		
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)	?	
4.11	Climbing or smothering growth habit	n	0
4.12	Forms dense thickets	n	0
5.01	Aquatic	n	0

5.02	Grass	n	0
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		
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)		
7.02	Propagules dispersed intentionally by people	n	-1
7.03	Propagules likely to disperse as a produce contaminant	n	-1
7.04	Propagules adapted to wind dispersal	n	-1
7.05	Propagules water dispersed	n	-1
7.06	Propagules bird dispersed	n	-1
7.07	Propagules dispersed by other animals (externally)	y	1
7.08	Propagules dispersed by other animals (internally)	n	-1
8.01	Prolific seed production		
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			9

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	6	yes
B	9	yes
C	17	yes
total	32	yes

Data collected 2006-2007

Question number	Reference	Source data
1.01		no evidence of cultivation
1.02		
1.03		
2.01		
2.02		
2.03		
2.04		
2.05	Wagner, Herbst, and Sohmer (1999) Manual of the flowering plants of Hawai'i. University of Hawai'i Press/Bishop Museum Press, Honolulu.	"Native to tropical America,...now widely naturalized in tropical and warm temperate regions worldwide"
3.01	Wagner, Herbst, and Sohmer (1999) Manual of the flowering plants of Hawai'i. University of Hawai'i Press/Bishop Museum Press, Honolulu.	"Native to tropical America,...now widely naturalized in tropical and warm temperate regions worldwide"
3.02	Illinois Wildflowers (http://www.illinoiswildflowers.info/weeds/plants/prickly_sida.htm).	"Habitats include cropland, abandoned fields, gardens, grassy areas along railroads and roadsides, and waste areas where the soil has been recently disturbed. This is primarily a weed of fields and gardens that is rarely observed in high quality natural habitats."
3.03	Holm (1979) A Geographical Atlas of World Weeds. John Wiley and Sons.	Considered a serious weed in Australia and a principal weed in Mexico.
3.04	Illinois Wildflowers (http://www.illinoiswildflowers.info/weeds/plants/prickly_sida.htm).	"This is primarily a weed of fields and gardens that is rarely observed in high quality natural habitats."
3.05	Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing, Collingwood, Australia.	<i>S. acuta</i> , <i>S. cordifolia</i> , and <i>S. rhombifolia</i> are considered noxious weeds in Australia.
4.01	Illinois Wildflowers (http://www.illinoiswildflowers.info/weeds/plants/prickly_sida.htm).	"A distinguishing characteristic of Prickly Sida is the blunt green spines that occur below the petioles of the lower leaves."
4.02	Pope, Thompson, and Cole (1985) Phytotoxicity of	Root exudates of <i>S. spinosa</i>

	root exudates and leaf extracts of nine plant species. Pp. 219-234 in Thompson (ed.) The Chemistry of Allelopathy. American Chemical Society, Washington, D.C.	reduced germination or growth of several crop species.
4.03	Wagner, Herbst, and Sohmer (1999) Manual of the flowering plants of Hawai'i. University of Hawai'i Press/Bishop Museum Press, Honolulu.	no description of this
4.04	Illinois Wildflowers (http://www.illinoiswildflowers.info/weeds/plants/prickly_sida.htm).	"The foliage...may be eaten occasionally by mammalian herbivores." [occasionally browsed]
4.05	Illinois Wildflowers (http://www.illinoiswildflowers.info/weeds/plants/prickly_sida.htm).	"The foliage is not known to be toxic and may be eaten occasionally by mammalian herbivores."
4.06		
4.07		no evidence
4.08		no evidence
4.09	1. Hoveland, Buchanan, Crowley, Teem, and McGuire (1978) Response of weed and crop species to shade. Abstracts, 1978 Meeting of the Weed Science Society of America: 1-2. 2. Illinois Wildflowers (http://www.illinoiswildflowers.info/weeds/plants/prickly_sida.htm).	1. " <i>Sida spinosa</i> tolerated up to 73% shade" BUT 2. "Typical growing conditions are full or partial sun..."
4.1	Illinois Wildflowers (http://www.illinoiswildflowers.info/weeds/plants/prickly_sida.htm).	"Typical growing conditions are...moist to mesic soil that is loamy and fertile."
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: subshrub, forb/herb
4.12	Illinois Wildflowers (http://www.illinoiswildflowers.info/weeds/plants/prickly_sida.htm).	"occasionally forms colonies" [but a low herb]
5.01		terrestrial
5.02	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.	Malvaceae
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.	Malvaceae, herbaceous
5.04	Illinois Wildflowers (http://www.illinoiswildflowers.info/weeds/plants/prickly_sida.htm).	"The root system consists of a shallow taproot that divides into secondary roots."
6.01		
6.02	1. Egley and Chandler (1983) Longevity of weed seeds after 5.5 years in the Stoneville 50-year buried-seed study. Weed Science 31: 264-270. 2. Illinois Wildflowers (http://www.illinoiswildflowers.info/weeds/plants/prickly_sida.htm).	1. Control group of <i>S. spinosa</i> seeds showed 100% viability. 2. "This plant spreads by reseeding itself"
6.03		

6.04		
6.05	Illinois Wildflowers (http://www.illinoiswildflowers.info/weeds/plants/prickly_sida.htm).	"The flowers attract various bees, including bumblebees, Little Carpenter bees, and Halictid bees, as well as small to medium-sized butterflies and skippers."
6.06	Illinois Wildflowers (http://www.illinoiswildflowers.info/weeds/plants/prickly_sida.htm).	"This plant spreads by reseeding itself"; is an annual [at least in some places]
6.07	Wagner, Herbst, and Sohmer (1999) Manual of the flowering plants of Hawai'i. University of Hawai'i Press/Bishop Museum Press, Honolulu.	annual or perennial
7.01		
7.02		no evidence
7.03		no evidence
7.04	Wagner, Herbst, and Sohmer (1999) Manual of the flowering plants of Hawai'i. University of Hawai'i Press/Bishop Museum Press, Honolulu.	fruit a schizocarp with 5 mericarps
7.05		no evidence
7.06		externally dispersed
7.07	1. Wagner, Herbst, and Sohmer (1999) Manual of the flowering plants of Hawai'i. University of Hawai'i Press/Bishop Museum Press, Honolulu. 2. Illinois Wildflowers (http://www.illinoiswildflowers.info/weeds/plants/prickly_sida.htm).	1. mericarps have two awns at tip, 0.5-1.5 mm long 2. "These animals help to distribute the seeds as the spines on the segments of the seedpods can cling to either fur or clothing."
7.08		externally dispersed
8.01	Wagner, Herbst, and Sohmer (1999) Manual of the flowering plants of Hawai'i. University of Hawai'i Press/Bishop Museum Press, Honolulu.	fruit a schizocarp with 5 mericarps (each one-seeded)
8.02	1. Egley and Chandler (1983) Longevity of weed seeds after 5.5 years in the Stoneville 50-year buried-seed study. <i>Weed Science</i> 31: 264-270. 2. Egley, Paul, Vaughn, and Duke (1983) The physiology and anatomy of prickly sida (<i>Sida spinosa</i> L.) seed coat impermeability to water. Abstracts, 1983 Meeting of the Weed Science Society of America: 84-85.	1. Seeds of <i>S. spinosa</i> buried for 3.5 years showed 21% viability. 2. "Newly matured prickly sida seeds have coats that are impermeable to water. Thus seeds may persist in the soil for many yr before they imbibe water and germinate."
8.03	Grymes, Schraer, Smith, Black, Martin, and Pullins (2001) Touchdown with IQ technology: postemergence weed control and tolerance in glyphosate tolerant corn, cotton, and soybean. <i>Proceedings of the Southern Weed Science Society</i> 54: 144.	"The 0.75 lb/A rate [of Touchdown with IQ technology] resulted in >90% control of prickly sida (<i>Sida spinosa</i>)."
8.04		
8.05		