

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>Feijoa sellowiana (pineapple guava)</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)	n	0
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	n	0
3.03	Weed of agriculture	n	0
3.04	Environmental weed	n	0
3.05	Congeneric weed	n	0
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		
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	y	1
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	?	
4.1	Grows on infertile soils (oligotrophic, limerock, or excessively draining soils)	y	1
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	y	1
6.05	Requires specialist pollinators	n	0
6.06	Reproduction by vegetative fragmentation		
6.07	Minimum generative time (years)	3	0
7.01	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)		
7.02	Propagules dispersed intentionally by people	y	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	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)	n	-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			5

Outcome Evaluate*

*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	10	yes
C	18	yes
total	35	yes

Data collected 2006-2007

Question number	Reference	Source data
1.01	Morton (1987) Fruits of Warm Climates. Julia F. Morton, Miami.	"Later, after improvement by selection and naming of types with large, superior fruits and their vegetative propagation, small commercial plantings were made in citrus-growing areas of the North Island [of New Zealand]." [selection has likely not reduced weediness]
1.02		
1.03		
2.01	Morton (1987) Fruits of Warm Climates. Julia F. Morton, Miami.	"The feijoa needs a subtropical climate with low humidity... The plant thrives where the weather is cool part of the year and it can withstand temperatures as low as 12° to 15° F."
2.02		
2.03	Morton (1987) Fruits of Warm Climates. Julia F. Morton, Miami.	"The feijoa is native to extreme southern Brazil, northern Argentina, western Paraguay and Uruguay where it is common wild in the mountains."
2.04		
2.05	Morton (1987) Fruits of Warm Climates. Julia F. Morton, Miami.	Beginning in the late 1800s, feijoa was taken from South America to Europe, the U.S., the Caribbean, New Zealand, Australia, and southern Africa, where it is grown as an ornamental and commercially for its fruit.
3.01	1. Tunison and Zimmer (1992) Success in controlling localized alien plants in Hawaii Volcanoes National Park. Pp. 506-524 in Stone, Smith, and Tunison (eds.) Alien Plant Invasions in Native Ecosystems of Hawaii: Management and Research. University of Hawaii Press, Honolulu. 2. Meyer (2000) Preliminary review of the invasive plants in the Pacific Islands (SPREP member countries). Pp. 85-114 in Sherley	1. <i>Feijoa sellowiana</i> was one of 41 localized alien species targeted for control in Hawaii Volcanoes National Park because it was spreading in the park. 2. <i>Feijoa sellowiana</i> is

	(tech. ed.) Invasive Species in the Pacific: a Technical Review and Draft Regional Strategy. South Pacific Regional Environmental Programme, Samoa. 3. New Zealand Plant Conservation Network (2005) New Zealand Adventive Vascular Plant List.	listed as a "potential invader"; "potential invaders are naturalised alien plants which are not considered as invaders yet, but are known to be highly invasive elsewhere and/or are showing signs of extension". [But NOT naturalized in New Zealand (3), where it is extensively grown.]
3.02		no evidence
3.03		no evidence
3.04	Meyer (2000) Preliminary review of the invasive plants in the Pacific Islands (SPREP member countries). Pp. 85-114 in Sherley (tech. ed.) Invasive Species in the Pacific: a Technical Review and Draft Regional Strategy. South Pacific Regional Environmental Programme, Samoa.	Listed as a "potential invader", but no evidence of invasiveness so far.
3.05		no evidence
4.01	Morton (1987) Fruits of Warm Climates. Julia F. Morton, Miami.	no description of these traits
4.02		no evidence
4.03	Morton (1987) Fruits of Warm Climates. Julia F. Morton, Miami.	no description of this
4.04		
4.05		no mention of toxicity in horticultural or toxicity references
4.06	1. Segura, Vera, and Cladera (2004) Seasonal fluctuation on infestation of several hosts by the Mediterranean fruit fly, <i>Ceratitidis capitata</i> (Diptera: Tephritidae) in Buenos Aires Province. Ecologia Austral 14: 3-17. 2. Morton (1987) Fruits of Warm Climates. Julia F. Morton, Miami.	1. <i>Feijoa sellowiana</i> is a host of the Mediterranean fruit fly in Argentina. 2. "Planting of feijoas has been officially discouraged in New South Wales and Victoria, Australia, because the fruit is a prime host of the fruit fly."
4.07	Horticopia 4.0	"Pollen can cause mild allergy."
4.08		no evidence
4.09	Morton (1987) Fruits of Warm Climates. Julia F. Morton, Miami.	"The feijoa can tolerate partial shade."
4.1	Canhoto and Cruz (1996) <i>Feijoa sellowiana</i> Berg (pineapple guava). Pp. 156-171 in Bajaj (ed) Biotechnology in Agriculture and Forestry, vol. 35. Springer-Verlag, Berlin.	"Feijoa is not a very demanding plant as far as the type of soil is concerned."
4.11	Morton (1987) Fruits of Warm Climates. Julia F. Morton, Miami.	bushy shrub
4.12		no evidence
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	Myrtaceae

	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.	Myrtaceae
5.04	Morton (1987) Fruits of Warm Climates. Julia F. Morton, Miami.	shallow, fibrous root system
6.01		
6.02	Morton (1987) Fruits of Warm Climates. Julia F. Morton, Miami.	"The feijoa is generally grown from seed"
6.03		
6.04	Morton (1987) Fruits of Warm Climates. Julia F. Morton, Miami.	several varieties are self-fertile
6.05	1. Morton (1987) Fruits of Warm Climates. Julia F. Morton, Miami. 2. Stewart and Craig (1989) Factors affecting pollinator effectiveness in <i>Feijoa sellowiana</i> . New Zealand Journal of Crop and Horticultural Science 17: 145-154.	1. "It has been said that feijoa pollen is transferred by birds that are attracted to and eat the flowers, but bees are the chief pollinators." 2. Only large birds (not insects or small birds) were found to be effective pollinators of feijoa. [whether insects or large birds, neither is specialized]
6.06		
6.07	Morton (1987) Fruits of Warm Climates. Julia F. Morton, Miami.	"The plant fruits in 3 to 5 years from seed."
7.01		
7.02	Canhoto and Cruz (1996) <i>Feijoa sellowiana</i> Berg (pineapple guava). Pp. 156-171 in Bajaj (ed) Biotechnology in Agriculture and Forestry, vol. 35. Springer-Verlag, Berlin.	Feijoa is used ornamentally and grown commercially for its fruit.
7.03		large fruits seem unlikely to contaminate other produce (and no evidence)
7.04	Morton (1987) Fruits of Warm Climates. Julia F. Morton, Miami.	fruit is round and fleshy
7.05		no evidence
7.06	Lorenzi (2002) Brazilian Trees, 4th edition. Instituto Plantarum de Estudos da Flora Ltda. Sao Paulo, Brazil.	seeds are "widely disseminated by birds"
7.07		no description of any means of attachment - fruit is round and fleshy
7.08		fleshy fruit
8.01	1. Morton (1987) Fruits of Warm Climates. Julia F. Morton, Miami. 2. Lorenzi (2002) Brazilian Trees, 4th edition. Instituto Plantarum de Estudos da Flora Ltda. Sao Paulo, Brazil.	1. A 20-year-old plant produced 2,000 fruits; there are usually 20 to 40 (occasionally up to 100) very small, oblong seeds per fruit. This gives 40,000-80,000 (up to 200,000) seeds per tree. The 20-year-old tree was 5.5 m in diameter (23.75m ² in area), for an average of 1,684-3,368

		seeds per m ² . 2. "Yields annually a large quantity of viable seeds."
8.02	Canhoto and Cruz (1996) <i>Feijoa sellowiana</i> Berg (pineapple guava). Pp. 156-171 in Bajaj (ed) <i>Biotechnology in Agriculture and Forestry</i> , vol. 35. Springer-Verlag, Berlin.	"Seeds germinate readily but lose viability in a short period of time."
8.03	Tunison and Zimmer (1992) Success in controlling localized alien plants in Hawaii Volcanoes National Park. Pp. 506-524 in Stone, Smith, and Tunison (eds.) <i>Alien Plant Invasions in Native Ecosystems of Hawaii: Management and Research</i> . University of Hawaii Press, Honolulu.	Tordon RTU was applied to cut stumps of mature trees for control; species was not found over one year after treatment (apparently eliminated).
8.04		
8.05		