

Australia/New Zealand Weed Risk Assessment adapted for United States.

Data used for analysis published in: Gordon, D.R. and C.A. Gantz. 2008. Potential impacts on the horticultural industry of screening new plants for invasiveness. Conservation Letters 1: 227-235. Available at: <http://www3.interscience.wiley.com/cgi-bin/fulltext/121448369/PDFSTART>

<i>Mangifera griffithii</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 U.S. climates (USDA hardiness zones; 0-low, 1-intermediate, 2-high)	1	
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 regions with an average of 11-60 inches of annual precipitation	n	0
2.05	Does the species have a history of repeated introductions outside its natural range?	?	
3.01	Naturalized beyond native range	n	-1
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		
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		
4.09	Is a shade tolerant plant at some stage of its life cycle		
4.1	Grows on one or more of the following soil types: alfisols, entisols, or mollisols	y	1
4.11	Climbing or smothering growth habit	n	0
4.12	Forms dense thickets		
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	n	0
6.02	Produces viable seed	y	1
6.03	Hybridizes naturally	n	-1
6.04	Self-compatible or apomictic		
6.05	Requires specialist pollinators	n	0
6.06	Reproduction by vegetative fragmentation		
6.07	Minimum generative time (years)		
7.01	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	n	-1
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	n	-1
8.02	Evidence that a persistent propagule bank is formed (>1 yr)		
8.03	Well controlled by herbicides		
8.04	Tolerates, or benefits from, mutilation or cultivation		
8.05	Effective natural enemies present in U.S.		
Total Score			-3

Outcome	Accept
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section	# questions answered	satisfy minimum?
A	10	Yes
B	6	Yes
C	17	Yes
total	33	yes

Data collected 2008

Question number	Reference	Source data
1.01		cultivated, but no evidence of significant modification
1.02		
1.03		
2.01	1. PERAL NAPPFAST Global Plant Hardiness (http://www.nappfast.org/Plant_hardiness/NAPPFAST%20Global%20zones/10-year%20climate/PLANT_HARDINESS_10YR%20lgn.d.tif). 2. Kostermans, AJGH, and J-M Bompard (1993) <i>The Mangoes: Their Botany, Nomenclature, Horticulture and Utilization</i> . Academic Press, London.	1. Global hardiness zones 12-13. 2. "Western Malesia: Malay Peninsula and Borneo, also in cultivation; Sumatra"
2.02		
2.03	1. Köppen-Geiger climate map (http://www.hydrol-earth-syst-sci.net/11/1633/2007/hess-11-1633-2007.pdf). 2. Kostermans, AJGH, and J-M Bompard (1993) <i>The Mangoes: Their Botany, Nomenclature, Horticulture and Utilization</i> . Academic Press, London.	1. Only one climatic region. 2. "Western Malesia: Malay Peninsula and Borneo, also in cultivation; Sumatra"
2.04	1. Indonesia: Microsoft Encarta World Precipitation and Average Rainfall (http://uk.encarta.msn.com/encnet/RefPages/RefMedia.aspx?refid=461530746&artrefid=761554737&pn=3&sec=-1). 2. Malaysia: Atlapedia Online (http://www.atlapedia.com/online/countries/). 3. Kostermans, AJGH, and J-M Bompard (1993) <i>The Mangoes: Their Botany, Nomenclature, Horticulture and Utilization</i> .	1. For Indonesia, average annual precipitation is over 80 inches/year. 2. For peninsular Malaysia: "Average annual precipitation for West Malaysia is 2,540 mm (100 inches)." 3. "Species known from wetlands include... <i>M. griffithii</i> "; "preferring temporarily inundated areas"

	Academic Press, London.	
2.05		Cultivated within native range, but no evidence of introductions outside native range.
3.01		no evidence
3.02		no evidence
3.03		no evidence
3.04		no evidence
3.05		no evidence
4.01	Kostermans, AJGH, and J-M Bompard (1993) The Mangoes: Their Botany, Nomenclature, Horticulture and Utilization. Academic Press, London.	no description of these traits
4.02		
4.03	Kostermans, AJGH, and J-M Bompard (1993) The Mangoes: Their Botany, Nomenclature, Horticulture and Utilization. Academic Press, London.	no description of this
4.04		
4.05	Kostermans, AJGH, and J-M Bompard (1993) The Mangoes: Their Botany, Nomenclature, Horticulture and Utilization. Academic Press, London.	Fruit eaten and dispersed by many animal species (hornbills, monkeys, elephants, porcupines).
4.06		
4.07	Kostermans, AJGH, and J-M Bompard (1993) The Mangoes: Their Botany, Nomenclature, Horticulture and Utilization. Academic Press, London.	Fruit is eaten.
4.08		
4.09		
4.1	USDA, National Resources Conservation Services (NRCS), Soil Survey Division, World Soil Resources (http://soils.usda.gov/use/worldsoils/mapindex/order.html).	Malaysia: almost entirely ultisols, with very small amounts of alfisols, entisols and inceptisols (and also very small amounts of histisols and oxisols).
4.11	Mukherji, SK (1949) A monograph on the genus <i>Mangifera</i> L. <i>Lloydia</i> 12: 73-136.	A tree, 24-30 m high.
4.12		

5.01		terrestrial
5.02	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?316158).	Anacardiaceae
5.03	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?316158).	Anacardiaceae
5.04	Mukherji, SK (1949) A monograph on the genus <i>Mangifera</i> L. <i>Lloydia</i> 12: 73-136.	A tree, 24-30 m high.
6.01		no evidence
6.02	Kostermans, AJGH, and J-M Bompard (1993) <i>The Mangoes: Their Botany, Nomenclature, Horticulture and Utilization</i> . Academic Press, London.	Seedlings grow under parent tree.
6.03	Kostermans, AJGH, and J-M Bompard (1993) <i>The Mangoes: Their Botany, Nomenclature, Horticulture and Utilization</i> . Academic Press, London.	"Hybridization [in the genus as a whole] seems to be very rare, not surprising as some trees flower only after periods of 10-20 years (or even longer)."
6.04		
6.05	Kostermans, AJGH, and J-M Bompard (1993) <i>The Mangoes: Their Botany, Nomenclature, Horticulture and Utilization</i> . Academic Press, London.	"Pollinators are insects, mostly flies and perhaps thrips" [genus description].
6.06		
6.07		
7.01		Large fruit/seed, no means of attachment, not growing in pastures, etc.
7.02	Kostermans, AJGH, and J-M Bompard (1993) <i>The Mangoes: Their Botany, Nomenclature, Horticulture and Utilization</i> . Academic Press, London.	"It is cultivated in the Malay Peninsula...and in western Borneo".
7.03		no evidence

7.04	1. Mukherji, SK (1949) A monograph on the genus <i>Mangifera</i> L. <i>Lloydia</i> 12: 73-136. 2. Kostermans, AJGH, and J-M Bompard (1993) <i>The Mangoes: Their Botany, Nomenclature, Horticulture and Utilization</i> . Academic Press, London.	1. Fruit an oblong, slightly obovoid drupe, about 4 cm long, greenish-yellow when ripe. 2. "The fruit does not look like a mango; it is normally elongate, subcylindrical or oblong, purplish black when mature with sweet dark orange yellow pulp."
7.05	Kostermans, AJGH, and J-M Bompard (1993) <i>The Mangoes: Their Botany, Nomenclature, Horticulture and Utilization</i> . Academic Press, London.	"Fruits [of <i>Mangifera</i> species] are dispersed by water only in <i>M. gedebe</i> ".
7.06	Kostermans, AJGH, and J-M Bompard (1993) <i>The Mangoes: Their Botany, Nomenclature, Horticulture and Utilization</i> . Academic Press, London.	"All other species [including <i>M. griffithii</i>] are dispersed by animals (hornbills, monkeys, terrestrial mammals, such as elephants, porcupines, etc." [and is a fleshy drupe about 4 cm long].
7.07	1. Mukherji, SK (1949) A monograph on the genus <i>Mangifera</i> L. <i>Lloydia</i> 12: 73-136. 2. Kostermans, AJGH, and J-M Bompard (1993) <i>The Mangoes: Their Botany, Nomenclature, Horticulture and Utilization</i> . Academic Press, London.	1. Fruit an oblong, slightly obovoid drupe, about 4 cm long, greenish-yellow when ripe. 2. "The fruit does not look like a mango; it is normally elongate, subcylindrical or oblong, purplish black when mature with sweet dark orange yellow pulp."
7.08	Kostermans, AJGH, and J-M Bompard (1993) <i>The Mangoes: Their Botany, Nomenclature, Horticulture and Utilization</i> . Academic Press, London.	"All other species [including <i>M. griffithii</i>] are dispersed by animals (hornbills, monkeys, terrestrial mammals, such as elephants, porcupines, etc.".
8.01	Kostermans, AJGH, and J-M Bompard (1993) <i>The Mangoes: Their Botany, Nomenclature, Horticulture and Utilization</i> . Academic Press, London.	"It is a rather irregular producer"; "the tree is a slow producer"; "the fruit is not available every year"; [about the genus] "Flowering is usually irregular to very irregular with long, intermittent sterile years" [so per year yield is low]
8.02		
8.03		
8.04		
8.05		