

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>Dioscorea dodecaneura</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)	y	1
2.04	Native or naturalized in regions with an average of 11-60 inches of annual precipitation	?	
2.05	Does the species have a history of repeated introductions outside its natural range?	y	
3.01	Naturalized beyond native range	n	-2
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		
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	y	1
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	?	
6.01	Evidence of substantial reproductive failure in native habitat	n	0
6.02	Produces viable seed		
6.03	Hybridizes naturally		
6.04	Self-compatible or apomictic		
6.05	Requires specialist pollinators		
6.06	Reproduction by vegetative fragmentation	y	1
6.07	Minimum generative time (years)		
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	y	1
7.05	Propagules water dispersed		
7.06	Propagules bird dispersed		
7.07	Propagules dispersed by other animals (externally)	n	-1
7.08	Propagules dispersed by other animals (internally)		
8.01	Prolific seed production		
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			2

Outcome	Evaluate
----------------	-----------------

section	# questions answered	satisfy minimum?
A	10	Yes
B	5	Yes
C	9	Yes
total	24	yes

Data collected 2008

Question number	Reference	Source data
1.01		used horticulturally, but no evidence of significant modification
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%20Ign d.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?14199). 3. Funk, V, Hollowell, T, Berry, P, Kelloff, C, and Alexander, SN (2007) Checklist of the plants of the Guiana Shield (Venezuela: Amazonas, Bolivar, Delta Amacuro; Guyana, Surinam, French Guiana). Department of Botany, National Museum of Natural History, Washington, DC. 4. Flores, FA (1998) Dioscoreaceae del Peru. Amazonian Natural Products E.I.R., Iquitos, Peru.</p>	<p>1. Global plant hardiness zones 11-13. 2. "Northern South America: French Guiana; Guyana; Suriname; Brazil: Brazil - Amazonas, Bahia, Espirito Santo, Federal District, Goias, Maranhao, Mato Grosso, Minas Gerais, Parana, Rio Grande do Sul, Rio de Janeiro, Sao Paulo; Western South America: Bolivia; Peru - Huancavelica, Huanuco, Junin, Loreto; Southern South America: Argentina - Chaco, Corrientes, Jujuy, Misiones, Salta; Paraguay". 3. "Guyana, Suriname, French Guiana". 4. "Distribución. Esta especie se extiende a traves de Brazil, Paraguay, Bolivia y Perú [This species extends through Brazil, Paraguay, Bolivia and Peru]".</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). 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?14199). 3. Funk, V, Hollowell, T, Berry, P, Kelloff, C, and Alexander, SN (2007) Checklist of the plants of the Guiana Shield (Venezuela: Amazonas, Bolivar, Delta Amacuro; Guyana, Surinam, French Guiana). Department of Botany, National Museum of Natural History, Washington, DC. 4. Flores, FA (1998) Dioscoreaceae del Peru. Amazonian Natural Products E.I.R., Iquitos, Peru.</p>	<p>1. Occurs in three climatic regions. 2. "Northern South America: French Guiana; Guyana; Suriname; Brazil: Brazil - Amazonas, Bahia, Espirito Santo, Federal District, Goias, Maranhao, Mato Grosso, Minas Gerais, Parana, Rio Grande do Sul, Rio de Janeiro, Sao Paulo; Western South America: Bolivia; Peru - Huancavelica, Huanuco, Junin, Loreto; Southern South America: Argentina - Chaco, Corrientes, Jujuy, Misiones, Salta; Paraguay". 3. "Guyana, Suriname, French Guiana". 4. "Distribución. Esta especie se extiende a traves de Brazil, Paraguay, Bolivia y Perú [This species extends through Brazil, Paraguay, Bolivia and Peru]".</p>

2.04	<p>1. Atlapedia Online (http://www.atlapedia.com/online/countries/frenguin.htm). 2. Altapedia Online (http://www.atlapedia.com/online/countries/guyana.htm). 3. Altapedia Online (http://www.atlapedia.com/online/countries/suriname.htm). 4. Atlapedia Online (http://www.atlapedia.com/online/countries/brazil.htm). 5. Microsoft Encarta World Precipitation and Average Rainfall (http://uk.encyclopedia.msn.com/encnet/RefPages/RefMedia.aspx?refid=461530746&artrefid=761554737&pn=3&sec=-1). 6. Atlapedia Online (http://www.atlapedia.com/online/countries/peru.htm). 7. World Trade Press (http://www.worldtradeexpress.com/Precipitation_Map_Argentina.html). 8. Atlapedia Online (http://www.atlapedia.com/online/countries/paraguay.htm).</p>	<p>1. For French Guiana: Average annual precipitation is more than 2,500 mm (100 inches). 2. For Guyana: Average annual precipitation in Georgetown is 2,280 mm (90 inches) with less rainfall occurring on the higher plateau. 3. For Suriname: Average annual precipitation in Paramaribo is 2,200 mm (87 inches). 4. For Brazil: "the nationwide average annual precipitation varies between 1,010 mm (40 inches) and 2,030 mm (80 inches)." 5. For Bolivia, the average annual precipitation ranges from under 10 inches/year to 80 inches/year. 6. For Peru: average annual precipitation varies from 2,540 mm (100 inches) to 3,960 mm (156 inches) depending on the region. 7. Northern Argentina receives between 9.8 and 98.4 inches of rainfall per year, depending upon the region. 8. Average annual precipitation in the east is around 2,030 mm (80 inches) and diminishes westward to an average of 1,190 mm (47 inches). [most of the regions seem to be above 60 inches, so this answer is uncertain]</p>
2.05	<p>1. Macbride, JF (1936) Flora of Peru. Part I. Fieldiana. Botany v. 13, Publication 351. Field Museum of Natural History, Chicago. 2. Botanic Garden and Botanical Museum Berlin-Dahlem, Freie Universität Berlin. 7 May 2008. ww2.bgbm.org/herbarium/Access.cfm.</p>	<p>1. "Frequently grown in conservatories". 2. "Collection: Cameroon: Victoria...Notes: cult.?"</p>
3.01		no evidence
3.02		no evidence
3.03		no evidence
3.04		no evidence
3.05		no evidence

4.01	Macbride, JF (1936) Flora of Peru. Part I. Fieldiana. Botany v. 13, Publication 351. Field Museum of Natural History, Chicago.	no evidence
4.02		
4.03	Macbride, JF (1936) Flora of Peru. Part I. Fieldiana. Botany v. 13, Publication 351. Field Museum of Natural History, Chicago.	no evidence
4.04		
4.05	Macbride, JF (1936) Flora of Peru. Part I. Fieldiana. Botany v. 13, Publication 351. Field Museum of Natural History, Chicago.	no evidence
4.06		
4.07		
4.08		
4.09		
4.1	<p>USDA, National Resources Conservation Services (NRCS), Soil Survey Division, World Soil Resources (http://soils.usda.gov/use/worldsoils/mapindex/order.html).</p>	<p>French Guiana: a small amount of inceptisols and a very small amount of entisols (almost entirely oxisols); Guyana: primarily ultisols and entisols in the north and oxisols and inceptisols in the south; Suriname: almost entirely ultisols with a small amount of entisols and a very small amount of oxisols; Brazil (by state): Amazonas: almost entirely oxisols with some inceptisols and ultisols; Bahia: mostly alfisols, some aridisols, inceptisols, and mollisols (with a very small amount of oxisols); Espirito Santo: ultisols and oxisols; Federal District: entisols?; Goias: entisols, ultisols, oxisols; Maranhao: ultisols, oxisols, small amount of alfisols?; Mato Grosso: entisols, oxisols, ultisols; Minas Gerais: alfisols, inceptisols, ultisols, some entisols, oxisols ; Parana: ultisols, oxisols, some entisols?, some alfisols?; Rio Grande do Sul: ultisols, oxisols, some alfisols, some mollisols; Rio de Janeiro: ultisols, oxisols, alfisols, inceptisols; Sao Paulo: ultisols, oxisols, alfisols, some entisols; Bolivia: mostly ultisols, alfisols, and inceptisols, with some mollisols, aridisols, and entisols (also a small amount of</p>

		<p>andisols); Peru (by state): Huancavelica: ultisols, inceptisols, small amount of mollisols (with a small amount of andisols and rocky land); Huanuco: ultisols, small amount of inceptisols (small amount of oxisols); Junin: ultisols, inceptisols, small amount of mollisols (small amount of oxisols); Loreto: mostly oxisols, small amounts of inceptisols and ultisols; Argentina (by state): Chaco: mollisols, some aridisols, some alfisols?, some inceptisols, some entisols; Corrientes: alfisols, some entisols, some ultisols; Jujuy: aridisols, entisols, small amount of gelisols, small amount of inceptisols; Misiones: mollisols, very small amount of ultisols, small amount of oxisols; Sata: aridisols, very small amount of gelisols, very small amount of entisols?, very small amount of rocky land?; Paraguay: Mostly mollisols, alfisols, and ultisols, with some aridisols and a small amount of inceptisols and oxisols.</p>
4.11	<p>1. Macbride, JF (1936) Flora of Peru. Part I. Fieldiana. Botany v. 13, Publication 351. Field Museum of Natural History, Chicago. 2. Tellez, O (1995) <i>Dioscorea</i>. Pp. 686-687. In: Berry, PE, Holst, BK, and Yatskievych, K (Editors). Flora of the Venezuelan Guayana. Missouri Botanical Garden Press, St. Louis. 3. Correa, MN (1969) Flora Patagonica. Parte II. Typhaceae a Orchidaceae (excepto Gramineae). Coleccion Cientifica del Inta, Buenos Aires.</p>	<p>1. "A glabrous vine". 2. "Twining herbs". 3. "Generally climbers" [genus description].</p>
4.12		
5.01		terrestrial
5.02	<p>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?14199).</p>	Dioscoreaceae

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?14199).	Dioscoreaceae
5.04	1. Macbride, JF (1936) Flora of Peru. Part I. Fieldiana. Botany v. 13, Publication 351. Field Museum of Natural History, Chicago. 2. Tellez, O (1995) <i>Dioscorea</i> . Pp. 686-687. In: Berry, PE, Holst, BK, and Yatskievych, K (Editors). Flora of the Venezuelan Guayana. Missouri Botanical Garden Press, St. Louis.	1. "A glabrous vine". 2. "Twining herbs, with rhizomes or tubers often underground, sometimes epiphytic or epigeous" [genus description].
6.01	Macbride, JF (1936) Flora of Peru. Part I. Fieldiana. Botany v. 13, Publication 351. Field Museum of Natural History, Chicago.	no evidence
6.02		
6.03		
6.04		
6.05		
6.06	Tellez, O (1995) <i>Dioscorea</i> . Pp. 686-687. In: Berry, PE, Holst, BK, and Yatskievych, K (Editors). Flora of the Venezuelan Guayana. Missouri Botanical Garden Press, St. Louis.	Twining herbs, with rhizomes or tubers often underground, sometimes epiphytic or epigeous [genus description].
6.07		
7.01		
7.02	1. Macbride, JF (1936) Flora of Peru. Part I. Fieldiana. Botany v. 13, Publication 351. Field Museum of Natural History, Chicago. 2. Botanic Garden and Botanical Museum Berlin-Dahlem, Freie Universität Berlin. 7 May 2008. ww2.bgbm.org/herbarium/Access.cfm .	1. "Frequently grown in conservatories". 2. "Collection: Cameroon: Victoria...Notes: cult.?"
7.03		no evidence
7.04	1. Macbride, JF (1936) Flora of Peru. Part I. Fieldiana. Botany v. 13, Publication 351. Field Museum of Natural History, Chicago. 2. Tellez, O (1995) <i>Dioscorea</i> . Pp. 686-687. In: Berry, PE, Holst, BK, and Yatskievych, K (Editors). Flora of the Venezuelan Guayana. Missouri Botanical Garden Press, St. Louis. 3. Correa, MN (1969) Flora Patagonica. Parte II. Typhaceae a Orchidaceae (excepto Gramineae). Coleccion Cientifica del Inta, Buenos Aires. 4. Flores, FA (1998) <i>Dioscoreaceae</i> del Peru. Amazonian Natural Products E.I.R., Iquitos,	1. "Fruit a 3-winged capsule. Seeds more or less winged" [genus description]. 2. "Fruit capsular or samaroid...seeds 1-4 per locule, either surrounded by a membranous wing, with a lateral wing, or wingless" [genus description]. 3. "Cápsula 3-valvada, alargada; semillas comprimidas, aladas" [Capsule 3-valved, elongated; compressed seeds, winged] [genus description]. 4.

	Peru.	"Cápsula...oblonga, 18-20 mm long [Capsule...oblong, 18-20 mm long]".
7.05		
7.06		
7.07	<p>1. Macbride, JF (1936) Flora of Peru. Part I. Fieldiana. Botany v. 13, Publication 351. Field Museum of Natural History, Chicago. 2. Tellez, O (1995) <i>Dioscorea</i>. Pp. 686-687. In: Berry, PE, Holst, BK, and Yatskievych, K (Editors). Flora of the Venezuelan Guayana. Missouri Botanical Garden Press, St. Louis. 3. Correa, MN (1969) Flora Patagonica. Parte II. Typhaceae a Orchidaceae (excepto Gramineae). Coleccion Cientifica del Inta, Buenos Aires. 4. Flores, FA (1998) Dioscoreaceae del Peru. Amazonian Natural Products E.I.R., Iquitos, Peru.</p>	<p>1. "Fruit a 3-winged capsule. Seeds more or less winged" [genus description]. 2. "Fruit capsular or samaroid...seeds 1-4 per locule, either surrounded by a membranous wing, with a lateral wing, or wingless" [genus description]. 3. "Cápsula 3-valvada, alargada; semillas comprimidas, aladas" [Capsule 3-valved, elongated; compressed seeds, winged] [genus description]. 4. "Cápsula...oblonga, 18-20 mm long [Capsule...oblong, 18-20 mm long]". [no evidence of adaptations to external dispersal]</p>
7.08		
8.01		
8.02		
8.03		
8.04		
8.05		