

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>Sinacalia tangutica</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)	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 regions with an average of 11-60 inches of annual precipitation	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	2
3.02	Garden/amenity/disturbance weed	y	2
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	?	
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			7

Outcome	Reject
----------------	---------------

section	# questions answered	satisfy minimum?
A	11	Yes
B	6	Yes
C	9	Yes
total	26	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	1. PERAL NAPPFAST Global Plant Hardiness (http://www.nappfast.org/Plant_hardiness/NAPPFAST%20Global%20zones/10-year%20climate/PLANT_HARDINESS_10YR%20gnd.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?413910). 3. Ying, T.-S, Zhang, Y.-L, and Boufford, DE (1993) The endemic genera of seed plants of China. Science Press, Beijing.	1. Global hardiness zones 4-9. 2. China: China [c.] [temperate Asia]. 3. China: Gansu, Hebei, Hubei, Ningxia, Qinghai, Shaanxi, Shanxi, Sichuan, and Yunnan [from map in reference, it does not appear to be occurring in Xizang Province]
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. 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?413910). 3. Ying, T.-S, Zhang, Y.-L, and Boufford, DE (1993) The endemic genera of seed plants of China. Science Press, Beijing.	1. 1-2 climatic regions. 2. China: China [c.] [only 1-2 biomes]. 3. China: Gansu, Hebei, Hubei, Ningxia, Qinghai, Shaanxi, Shanxi, Sichuan, and Yunnan [from map in reference, it does not appear to be occurring in Xizang Province]
2.04	Climate Source (http://www.climatesource.com/cn/fact_sheets/chinappt_xl.jpg).	For the regions listed, average annual precipitation ranges from less than 2 inches/yr to 196.9 in/yr.
2.05	1. Huxley (1992) The New Royal Horticultural Society Dictionary of Gardening. The MacMillan Press, London. 2. B & T World Seeds (http://www.b-and-t-world-seeds.com/carth.asp?species=Sinacalia%20tangutica&sref=71421)	1. Cultivated. 2. Sold internationally.
3.01	Hawaiian Ecosystems at Risk (http://hear.org/gcw/species/sinacalia_tangutica/).	listed as naturalised in the British Isles

3.02	Hawaiian Ecosystems at Risk (http://hear.org/gcw/species/sinacalia_tangutica/).	listed as a "garden thug" and cultivation escape
3.03		no evidence
3.04		no evidence
3.05		no evidence
4.01	Huxley (1992) The New Royal Horticultural Society Dictionary of Gardening. The MacMillan Press, London.	no description of these traits
4.02		
4.03	Huxley (1992) The New Royal Horticultural Society Dictionary of Gardening. The MacMillan Press, London.	no description of parasitism
4.04		
4.05	1. Huxley (1992) The New Royal Horticultural Society Dictionary of Gardening. The MacMillan Press, London. 2. Ying, T.-S, Zhang, Y.-L, and Boufford, DE (1993) The endemic genera of seed plants of China. Science Press, Beijing.	no evidence
4.06		
4.07	1. Huxley (1992) The New Royal Horticultural Society Dictionary of Gardening. The MacMillan Press, London. 2. Ying, T.-S, Zhang, Y.-L, and Boufford, DE (1993) The endemic genera of seed plants of China. Science Press, Beijing.	no evidence
4.08		
4.09	Huxley (1992) The New Royal Horticultural Society Dictionary of Gardening. The MacMillan Press, London.	"Performing best...in semi-shade".
4.1	USDA, National Resources Conservation Services (NRCS), Soil Survey Division, World Soil Resources (http://soils.usda.gov/use/worldsoils/mapindex/order.html).	Entisols occur in this region.
4.11	Ying, T.-S, Zhang, Y.-L, and Boufford, DE (1993) The endemic genera of seed plants of China. Science Press, Beijing.	"Erect perennial herbs" [genus description].
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?413910).	Asteraceae
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?413910).	Asteraceae
5.04	Ying, T.-S, Zhang, Y.-L, and Boufford, DE (1993) The endemic genera of seed plants of China. Science Press, Beijing.	"Rhizomatous erect perennial herbs" [genus description].
6.01		no evidence
6.02		
6.03		
6.04		
6.05		
6.06	1. Huxley (1992) The New Royal Horticultural Society Dictionary of Gardening. The MacMillan Press, London. 2. Ying, T.-S, Zhang, Y.-L, and Boufford, DE (1993) The endemic genera of seed plants of China. Science Press, Beijing.	1. "Strong creeping rootstock". 2. "Rhizomatous erect perennial herbs" [genus description].
6.07		
7.01		
7.02	1. Huxley (1992) The New Royal Horticultural Society Dictionary of Gardening. The MacMillan Press, London. 2. B & T World Seeds (http://www.b-and-t-world-seeds.com/carth.asp?species=Sinacalia%20tangutica&sref=71421)	1. Cultivated. 2. Sold internationally.
7.03		no evidence
7.04	1. Huxley (1992) The New Royal Horticultural Society Dictionary of Gardening. The MacMillan Press, London. 2. Ying, T.-S, Zhang, Y.-L, and Boufford, DE (1993) The endemic genera of seed plants of China. Science Press, Beijing.	1. "Pappus 7-8 mm". 2. "Pappus capillary, persistent" [genus description].
7.05		
7.06		
7.07	1. Ying, T-S, Zhang, Y-L, and Boufford, DE (1993) The Endemic Genera of Seed Plants of China.	1. "Achenes cylindrical, ribbed, glabrous" [genus description]. 2.

	Science Press, Beijing. 2. Huxley (1992) The New Royal Horticultural Society Dictionary of Gardening. The MacMillan Press, London.	"Fruit to 3 mm; pappus 7-8 mm". [no evidence of adaptations to external dispersal]
7.08		
8.01		
8.02		
8.03		
8.04		
8.05		