

**Family:** Asteraceae

**Taxon:** *Ajania pacifica*

**Synonym:** *Chrysanthemum pacificum* Nakai

**Common Name:** iso giku  
ajania

**Questionnaire :** current 20090513  
**Status:** Assessor Approved

**Assessor:** Chuck Chimera  
**Data Entry Person:** Chuck Chimera

**Designation:** L

**WRA Score** 1

101	Is the species highly domesticated?	y=-3, n=0	n
102	Has the species become naturalized where grown?	y=1, n=-1	
103	Does the species have weedy races?	y=1, n=-1	
201	Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"	(0-low; 1-intermediate; 2-high) (See Appendix 2)	Low
202	Quality of climate match data	(0-low; 1-intermediate; 2-high) (See Appendix 2)	High
203	Broad climate suitability (environmental versatility)	y=1, n=0	y
204	Native or naturalized in regions with tropical or subtropical climates	y=1, n=0	n
205	Does the species have a history of repeated introductions outside its natural range?	y=-2, ?=-1, n=0	y
301	Naturalized beyond native range	y = 1*multiplier (see Appendix 2), n= question 205	n
302	Garden/amenity/disturbance weed	n=0, y = 1*multiplier (see Appendix 2)	n
303	Agricultural/forestry/horticultural weed	n=0, y = 2*multiplier (see Appendix 2)	n
304	Environmental weed	n=0, y = 2*multiplier (see Appendix 2)	n
305	Congeneric weed	n=0, y = 1*multiplier (see Appendix 2)	n
401	Produces spines, thorns or burrs	y=1, n=0	n
402	Allelopathic	y=1, n=0	
403	Parasitic	y=1, n=0	n
404	Unpalatable to grazing animals	y=1, n=-1	
405	Toxic to animals	y=1, n=0	n
406	Host for recognized pests and pathogens	y=1, n=0	
407	Causes allergies or is otherwise toxic to humans	y=1, n=0	n
408	Creates a fire hazard in natural ecosystems	y=1, n=0	n
409	Is a shade tolerant plant at some stage of its life cycle	y=1, n=0	
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y=1, n=0	y
411	Climbing or smothering growth habit	y=1, n=0	n

412	Forms dense thickets	y=1, n=0	
501	Aquatic	y=5, n=0	n
502	Grass	y=1, n=0	n
503	Nitrogen fixing woody plant	y=1, n=0	n
504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	y=1, n=0	n
601	Evidence of substantial reproductive failure in native habitat	y=1, n=0	n
602	Produces viable seed	y=1, n=-1	y
603	Hybridizes naturally	y=1, n=-1	
604	Self-compatible or apomictic	y=1, n=-1	n
605	Requires specialist pollinators	y=-1, n=0	n
606	Reproduction by vegetative fragmentation	y=1, n=-1	y
607	Minimum generative time (years)	1 year = 1, 2 or 3 years = 0, 4+ years = -1	2
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y=1, n=-1	
702	Propagules dispersed intentionally by people	y=1, n=-1	y
703	Propagules likely to disperse as a produce contaminant	y=1, n=-1	n
704	Propagules adapted to wind dispersal	y=1, n=-1	
705	Propagules water dispersed	y=1, n=-1	
706	Propagules bird dispersed	y=1, n=-1	n
707	Propagules dispersed by other animals (externally)	y=1, n=-1	
708	Propagules survive passage through the gut	y=1, n=-1	
801	Prolific seed production (>1000/m2)	y=1, n=-1	
802	Evidence that a persistent propagule bank is formed (>1 yr)	y=1, n=-1	
803	Well controlled by herbicides	y=-1, n=1	
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y=1, n=-1	y
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	y=-1, n=1	

Designation: L

WRA Score 1

## Supporting Data:

101	2013. gardening in mediterranean climates worldwide. <i>Ajania pacifica</i> . <a href="http://gimcw.org/plants/Ajania.pacifica.cfm">http://gimcw.org/plants/Ajania.pacifica.cfm</a> [Accessed 04 Feb 2013]	[Is the species highly domesticated? Hybrid cultivars exist] "Hybrids have recently become available and are even starting to replace this species in cultivation. This development is driven by the desire to combine the striking leaves of this species with the more typical composite flowers (with rays) of hybrid chrysanthemums ( <i>Dendranthema xgrandiflorum</i> ). Because these hybrids are generally listed as <i>A. pacifica</i> cultivars, or sometimes even without the cultivar names, it is becoming harder to obtain the true species from unqualified plant lists."
101	2013. WRA Specialist. Personal Communication.	[Is the species highly domesticated? No evidence]
102	2013. WRA Specialist. Personal Communication.	NA
103	2013. WRA Specialist. Personal Communication.	NA
201	2013. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). <a href="http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl">http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl</a>	[Species suited to tropical or subtropical climate(s) 2-High] "Native: ASIA-TEMPERATE - Eastern Asia: Japan - Honshu"
202	2013. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). <a href="http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl">http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl</a>	[Quality of climate match data 2-High]
203	1955. Nagami, S.. The Natural Population of <i>Chrysanthemum pacificum</i> Nakai (n = 45). Science Reports of the Yokohama National University. Sec.II. No. 4: 12-25.	[Broad climate suitability (environmental versatility)? Not elevationally, but climatically] "Vertically, this plant never distributes on high mountain or hill overing [sic] 330 m, but occupies the seaside area lying under 10 m in altitude. It is very, therefore, that the decaploid is found on the top of Mt. Nokogiri (329,4 m). Though it is observed in the coast-nearing field [sic] and on the sandy beach under sea-cliffs (rocky coast), <i>Chr. pacificum</i> grows mainly on rocky coast (Ca. alt. 1-10 m, inclination 10-80°) of south-east Japan."
203	2013. gardening in mediterranean climates worldwide. <i>Ajania pacifica</i> . <a href="http://gimcw.org/plants/Ajania.pacifica.cfm">http://gimcw.org/plants/Ajania.pacifica.cfm</a> [Accessed 04 Feb 2013]	[Broad climate suitability (environmental versatility)? Yes] "Because of the beauty of this plant, and because it prefers (even requires) good drainage, is it sometimes found in mediterranean climate gardens. It is quite hardy in cold climates, going completely dormant in cold-winter regions, but in warmer climes it is more-or-less evergreen (though at its best in spring and summer). "
203	2013. Missouri Botanical Gardens. <i>Ajania pacifica</i> . <a href="http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/h600/ajania-pacifica.aspx">http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/h600/ajania-pacifica.aspx</a> [Accessed 4 Feb 2013]	[Broad climate suitability (environmental versatility)? Yes] "Zone: 5 to 9"
204	2013. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). <a href="http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl">http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl</a>	[Native or naturalized in regions with tropical or subtropical climates? No] "Native: ASIA-TEMPERATE - Eastern Asia: Japan - Honshu"
205	2007. Randall, R.P.. The introduced flora of Australia and its weed status. CRC for Australian Weed Management, Glen Osmond, Australia	[Does the species have a history of repeated introductions outside its natural range? Yes]
205	2013. Dave's Gardern. PlantFiles: Pacific <i>Chrysanthemum</i> , Gold-and-Silver <i>Chrysanthemum</i> , Silver and Gold <i>Chrysanthemum</i> - <i>Ajania pacifica</i> . <a href="http://davesgarden.com/guides/pf/go/992/">http://davesgarden.com/guides/pf/go/992/</a> [Accessed 04 Feb 2013]	[Does the species have a history of repeated introductions outside its natural range? Yes] "This plant has been said to grow in the following regions: , Gadsden, Alabama Ladonia, Alabama Montgomery, Alabama Vincent, Alabama Little Rock, Arkansas Chula Vista, California Laguna West-lakeside, California Oakland, California Vacaville, California Lake Lorraine, Florida Palm Beach, Florida West Palm Beach, Florida Prien, Louisiana Westminster, Maryland East Longmeadow, Massachusetts Westport Point, Massachusetts Montauk, New York Bridgeton, North Carolina Chapel Hill, North Carolina Elizabeth City, North Carolina Emerald Isle, North Carolina Winston-salem, North Carolina (2 reports) Haviland, Ohio Broken Arrow, Oklahoma Oklahoma City, Oklahoma Conway, South Carolina Austin, Texas Colmesneil, Texas Copper Canyon, Texas Desoto, Texas Garland, Texas Houston, Texas Liberty Hill, Texas Rowlett, Texas San Antonio, Texas Herriman, Utah Manassas, Virginia Kalama, Washington"
301	2007. Randall, R.P.. The introduced flora of Australia and its weed status. CRC for Australian Weed Management, Glen Osmond, Australia	[Naturalized beyond native range? No evidence in Australia]

301	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Naturalized beyond native range? No evidence]
302	1997. Yura, H.. Comparative ecophysiology of <i>Chrysanthemum pacificum</i> Nakai and <i>Solidago altissima</i> L. 1. Why <i>S. altissima</i> cannot be established on the seashore. Ecological Research. 12: 313-323.	[Garden/amenity/disturbance weed? Not considered a weed in this publication, but plant is adapted to disturbance] "Young plants of <i>C. pacificum</i> are frequently found being established on bared slopes caused by erosion, landslide or artificial clearing. Although <i>C. pacificum</i> is a perennial of the Compositae as is <i>S. altissima</i> , the habitat of <i>C. pacificum</i> is restricted to the seashore and it is absent from inland vegetation, making a strong contrast with <i>S. altissima</i> ."
302	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Garden/amenity/disturbance weed? No evidence]
302	2013. Learn 2 Grow. <i>Ajania pacifica</i> 'Silver and Gold'. <a href="http://www.learn2grow.com/plants/ajania-pacifica-silver-and-gold/">http://www.learn2grow.com/plants/ajania-pacifica-silver-and-gold/</a> [Accessed 04 Feb 2013]	[Garden/amenity/disturbance weed? "Aggressive"] "It spreads via rhizomes and can become quite aggressive if grown in good soil and provided regular water" ... "Invasive - Sometimes"
303	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Agricultural/forestry/horticultural weed? No evidence]
304	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Environmental weed? No evidence]
305	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Congeneric weed? No evidence. Several <i>Chrysanthemum</i> species, the genus from which <i>Ajania</i> was split, are listed as naturalized and/or invasive]
401	2011. Wu, Z.Y./Raven, P.H./Hong, D. Y., (eds.). Flora of China Vol. 20-21 (Asteraceae). Missouri Botanical Garden and Harvard University Herbaria, Beijing & St. Louis	[Produces spines, thorns or burrs? No evidence. Generic description] "Herbs, perennial, or small shrubs. Leaves alternate, pinnately or palmately pinnately divided, serrate, rarely entire. Synflorescences cymose, flat-topped or rarely capitula solitary. Capitula heterogamous, disciform. Involucres campanulate or cylindrical; phyllaries in 4 or 5 rows, herbaceous, scarious margin white or brown. Receptacle convex to conical, epaleate. Florets yellow, rarely purple. Marginal florets in 1 row, female, corolla usually narrowly tubular, rarely wider, apex 2- or 3(-5)-denticulate; disk florets bisexual, corolla tubular, 5-lobed. Anthers obtuse at base, apical appendage lanceolate. Style branches linear, apex truncate. Achenes obovoid, 4-6-ribbed/striate. Corona absent."
402	2013. WRA Specialist. Personal Communication.	[Allelopathic? Unknown]
403	2013. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). <a href="http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl">http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl</a>	[Parasitic? No] Asteraceae
404	2013. Gateway Garden Center. <i>Ajania pacifica</i> . <a href="http://www.gatewaygardens.com/index.cfm?fuseaction=plants.plantDetail&amp;plant_id=604">http://www.gatewaygardens.com/index.cfm?fuseaction=plants.plantDetail&amp;plant_id=604</a> [Accessed 04 Feb 2013]	[Unpalatable to grazing animals? Possibly] "Deer resistant"
405	2008. Wagstaff, D.J.. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	[Toxic to animals? No evidence]
405	2013. Specialized Information Services, U.S. National Library of Medicine. TOXNET toxicology data network [online database]. National Institutes of Health, <a href="http://toxnet.nlm.nih.gov/">http://toxnet.nlm.nih.gov/</a>	[Toxic to animals? No evidence]
406	2013. gardening in mediterranean climates worldwide. <i>Ajania pacifica</i> . <a href="http://gimcw.org/plants/Ajania.pacifica.cfm">http://gimcw.org/plants/Ajania.pacifica.cfm</a> [Accessed 04 Feb 2013]	[Host for recognized pests and pathogens?] "Prohibited in some areas because it is a host to white rust."
406	2013. Missouri Botanical Gardens. <i>Ajania pacifica</i> . <a href="http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/h600/ajania-pacifica.aspx">http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/h600/ajania-pacifica.aspx</a> [Accessed 4 Feb 2013]	[Host for recognized pests and pathogens? No evidence] "Problems - No serious insect or disease problems."
407	2008. Wagstaff, D.J.. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	[Causes allergies or is otherwise toxic to humans? No evidence]

407	2013. Specialized Information Services, U.S. National Library of Medicine. TOXNET toxicology data network [online database]. National Institutes of Health, <a href="http://toxnet.nlm.nih.gov/">http://toxnet.nlm.nih.gov/</a>	[Causes allergies or is otherwise toxic to humans? No evidence]
408	1997. Yura, H.. Comparative ecophysiology of <i>Chrysanthemum pacificum</i> Nakai and <i>Solidago altissima</i> L. 1. Why <i>S. altissima</i> cannot be established on the seashore. Ecological Research. 12: 313-323.	[Creates a fire hazard in natural ecosystems? No evidence] "Although <i>C. pacificum</i> is a perennial of the Compositae as is <i>S. altissima</i> , the habitat of <i>C. pacificum</i> is restricted to the seashore and it is absent from inland vegetation, making a strong contrast with <i>S. altissima</i> ." ... " ... "All slopes were facing the sea and were covered mainly by <i>C. pacificum</i> with other maritime cliff species. Vegetation on the slopes was sparse" [Unlikely given coastal habitat]
409	2013. Dave's Gardern. PlantFiles: Pacific <i>Chrysanthemum</i> , Gold-and-Silver <i>Chrysanthemum</i> , Silver and Gold <i>Chrysanthemum</i> - <i>Ajania pacifica</i> . <a href="http://davesgarden.com/guides/pf/go/992/">http://davesgarden.com/guides/pf/go/992/</a> [Accessed 04 Feb 2013]	[Is a shade tolerant plant at some stage of its life cycle?] "Sun Exposure: Full Sun"
409	2013. Fine Gardening. <i>Ajania pacifica</i> 'Yellow Splash' (Pacific chrysanthemum). The Taunton Press, Inc., Newtown, CT <a href="http://www.finegardening.com/plantguide/ajania-pacifica-yellow-splash-pacific-chrysanthemum.aspx">http://www.finegardening.com/plantguide/ajania-pacifica-yellow-splash-pacific-chrysanthemum.aspx</a> [Accessed 4 Feb 2013]	[Is a shade tolerant plant at some stage of its life cycle? Possibly No] "Light - Full Sun Only"
409	2013. Missouri Botanical Gardens. <i>Ajania pacifica</i> . <a href="http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/h600/ajania-pacifica.aspx">http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/h600/ajania-pacifica.aspx</a> [Accessed 4 Feb 2013]	[Is a shade tolerant plant at some stage of its life cycle? Possibly Yes] "Grow in average, medium moisture, well drained soils in full sun to part shade. Some afternoon shade is beneficial in hot summer climates."
410	2013. Missouri Botanical Gardens. <i>Ajania pacifica</i> . <a href="http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/h600/ajania-pacifica.aspx">http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/h600/ajania-pacifica.aspx</a> [Accessed 4 Feb 2013]	[Tolerates a wide range of soil conditions?] "Plants generally tolerate poor soils as long as drainage is good. Wet soils in winter can be fatal."
410	2013. Perennials.com. <i>Ajania pacifica</i> . <a href="http://www.perennials.com/plants/ajania-pacifica.html">http://www.perennials.com/plants/ajania-pacifica.html</a> [Accessed 4 Feb 2013]	[Tolerates a wide range of soil conditions? Yes] "Soil Type - Normal or Sandy or Clay. Soil pH - Neutral or Alkaline or Acid. Soil Moisture - Average or Moist"
410	2013. Shoot Gardening. <i>Ajania pacifica</i> (Pacific chrysanthemum). <a href="http://www.shootgardening.co.uk/plant/ajania-pacifica">http://www.shootgardening.co.uk/plant/ajania-pacifica</a> [Accessed 04 Feb 2103]	[Tolerates a wide range of soil conditions ? Yes] "Soil types: Loamy, Sandy. Soil drainage: Well-drained. Soil pH: Acid, Alkaline, Neutral"
411	2013. Missouri Botanical Gardens. <i>Ajania pacifica</i> . <a href="http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/h600/ajania-pacifica.aspx">http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/h600/ajania-pacifica.aspx</a> [Accessed 4 Feb 2013]	[Climbing or smothering growth habit? No] "Native to central and eastern Asia, this <i>ajania</i> (sometimes commonly called gold and silver chrysanthemum) is a mound-forming, rhizomatous perennial that is noted for its attractive variegated foliage in spring and summer."
412	1997. Yura, H.. Comparative ecophysiology of <i>Chrysanthemum pacificum</i> Nakai and <i>Solidago altissima</i> L. 1. Why <i>S. altissima</i> cannot be established on the seashore. Ecological Research. 12: 313-323.	[Forms dense thickets> Possibly] " <i>Chrysanthemum pacificum</i> is usually found forming a dense tussock reaching about 1 m in height"
412	2013. Missouri Botanical Gardens. <i>Ajania pacifica</i> . <a href="http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/h600/ajania-pacifica.aspx">http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/h600/ajania-pacifica.aspx</a> [Accessed 4 Feb 2013]	[Forms dense thickets?] "It typically forms a dense foliage mound to 18-24" tall that spreads over time by rhizomes to as much as 36" wide."
501	2013. WRA Specialist. Personal Communication.	[Aquatic? No] Terrestrial
502	2013. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). <a href="http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl">http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl</a>	[Grass? No] Asteraceae

503	2013. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). <a href="http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl">http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl</a>	[Nitrogen fixing woody plant? No] Asteraceae
504	2010. Gordon, D.R./Mitterdorfer, B./Pheloung, P.C. et al.. Guidance for addressing the Australian Weed Risk Assessment questions. <i>Plant Protection Quarterly</i> . 25(2): 56-74.	[Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? No] "This question relates to perennial plants with tubers, corms or bulbs. This question is specifically to deal with plants that have specialized organs and should not include plants merely with rhizomes" [A. pacifica spreads via seeds & rhizomes]
504	2013. Missouri Botanical Gardens. <i>Ajania pacifica</i> . <a href="http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/h600/ajania-pacifica.aspx">http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/h600/ajania-pacifica.aspx</a> [Accessed 4 Feb 2013]	[Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? No] "...a mound-forming, rhizomatous perennial that is noted for its attractive variegated foliage in spring and summer."
601	1997. Yura, H.. Comparative ecophysiology of <i>Chrysanthemum pacificum</i> Nakai and <i>Solidago altissima</i> L. 1. Why <i>S. altissima</i> cannot be established on the seashore. <i>Ecological Research</i> . 12: 313-323.	[Evidence of substantial reproductive failure in native habitat? No evidence] "One of the common maritime perennials of Boso Peninsula is <i>Chrysanthemum pacificum</i> Nakai." ... "Young plants of <i>C. pacificum</i> are frequently found being established on bared slopes caused by erosion, landslide or artificial clearing."
602	2003. Yura, H.. Survival and Growth of <i>Chrysanthemum pacificum</i> Nakai Seedlings at an Inland Site. <i>Natural History Research</i> . 7(2): 107-114.	[Produces viable seed? Yes] "Seeds of the maritime species <i>Chrysanthemum pacificum</i> were sown on bare ground some distance from shore to determine what factors prevent it from becoming established in inland areas. The sown area was divided into two plots. All emerging plants except <i>C. pacificum</i> were frequently removed from one of the plots (weeded plot), whereas the second plot was not manipulated (control plot). Although seed germination began simultaneously in the two plots, <i>C. pacificum</i> seedlings in the control plot were gradually covered by inland annuals and perennials that emerged naturally from buried seeds. Subsequent observations of the growth and survival of <i>C. pacificum</i> seedlings over three years revealed a marked difference between the two plots. Seedlings in the weeded plot grew well, sprouted new shoots, and flowered, and the number of surviving shoots increased over time. In contrast, seedling growth in the control plot was substantially lower than in the weeded plot. The number of surviving shoots decreased gradually, and only 10% of those observed in the first year survived to the end of the third year. These results indicate that although <i>C. pacificum</i> has the potential to grow and reproduce away from the seashore, it is unable to become established in the presence of naturally emerging inland plants. This inferior competitive ability could be one factor that makes it difficult for <i>C. pacificum</i> to become established in inland areas. (author abst.)"
602	2013. Fine Gardening. <i>Ajania pacifica</i> 'Yellow Splash' (Pacific chrysanthemum). The Taunton Press, Inc., Newtown, CT <a href="http://www.finegardening.com/plantguide/ajania-pacifica-yellow-splash-pacific-chrysanthemum.aspx">http://www.finegardening.com/plantguide/ajania-pacifica-yellow-splash-pacific-chrysanthemum.aspx</a> [Accessed 4 Feb 2013]	[Produces viable seed? Yes] "Propagation: Sow seed in container in spring, divide runners in spring, or take basal root cuttings in spring or summer."
603	2009. HongBo, Z./FaDi, C./HengBin, M./WeiMing, G.. Intergeneric cross-compatibility between <i>Dendranthema x grandiflorum</i> and <i>Ajania pacifica</i> and the seed sets of their F1 progenies in different conditions of backcross, selfing and open pollination. Guangxi	[Hybridizes naturally? Unknown. Able to be crossed under experimental conditions] "Intergeneric cross-compatibility between <i>Dendranthema x grandiflorum</i> [ <i>Chrysanthemum morifolium</i> ] 'Aoyunhuoju', 'Yidalihong' and <i>Ajania pacifica</i> [ <i>D. pacificum</i> ] and the seed sets of their F1 progenies in different conditions of backcross, selfing and open pollination were investigated. The pollen germinated well on the stigmas with <i>D. x grandiflorum</i> or <i>A. pacifica</i> as the female parent, but the seed sets were very low. The seed sets of reciprocal hybrids between 'Aoyunhuoju' and <i>A. pacifica</i> were 3.72 per capitulum, and the seed sets of reciprocal hybrids between 'Yidalihong' and <i>A. pacifica</i> were 1.2 and 0.87, respectively. The seed sets of the backcross of F1 progenies between 'Aoyunhuoju' and <i>A. pacifica</i> with 'Aoyunhuoju' were very low, similar to those of the backcross of reciprocal hybrid F1 between 'Yidalihong' and <i>A. pacifica</i> with their parents. The selfing seed sets of all F1 progenies were almost zero. However, the seed sets in open pollination were very high and the highest seed set was up to 47.5 per capitulum. It can be inferred that the development process of female gamete was normal and the reproductive course of F1 was also normal. The reasons of low seed sets of backcross were the distant crossing barrier and low seed sets of selfing were determined by the mechanism of self-incompatibility."

604	2009. HongBo, Z./FaDi, C./HengBin, M./WeiMing, G.. Intergeneric cross-compatibility between <i>Dendranthema x grandiflorum</i> and <i>Ajania pacifica</i> and the seed sets of their F1 progenies in different conditions of backcross, selfing and open pollination. Guangxi	[Self-compatible or apomictic? No] "The reasons of low seed sets of backcross were the distant crossing barrier and low seed sets of selfing were determined by the mechanism of self-incompatibility."
604	2013. Learn 2 Grow. <i>Ajania pacifica</i> 'Silver and Gold'. <a href="http://www.learn2grow.com/plants/ajania-pacifica-silver-and-gold/">http://www.learn2grow.com/plants/ajania-pacifica-silver-and-gold/</a> [Accessed 04 Feb 2013]	[Self-compatible or apomictic? No] "Self Sowing - No"
605	2009. Pellicer, J./Hidalgo, O./Garcia, S./Garnatje, T./Korobkov, A.A./Valles, J./Martín, J.. Palynological study of <i>Ajania</i> and related genera (Asteraceae, Anthemideae). <i>Botanical Journal of the Linnean Society</i> . 161: 171–189.	[Requires specialist pollinators? No evidence. Insect or wind] "The pollination syndrome is also expressed in terms of floral and inflorescence features, with larger, showy structures found in insect pollinated plants and smaller, non-showy structures in wind pollinated plants (Friedman & Barrett, 2009). This trend agrees well in Artemisiinae with small, greenish or whitish capitula generally displayed by taxa with Artemisiatype pollen and radiate capitula (e.g. <i>Dendranthema</i> ), coloured capitula (e.g. <i>Ajania pacifica</i> ) or corymbose capitula (e.g. <i>Stilpnolepis</i> ) in taxa showing Anthemistype pollen. Therefore, a shift in pollination, from entomophily to anemophily may account for the change from Anthemis to Artemisia pollen type."
606	2003. Tenenbaum, F.. Taylor's encyclopedia of garden plants. Houghton Mifflin Harcourt, New York, NY	[Reproduction by vegetative fragmentation? Possibly in localized settings] "Shrubby to mounding 1-foot-tall species spreading by runners to form 3-foot-wide mounds of handsome silver-edged leaves."
606	2013. Learn 2 Grow. <i>Ajania pacifica</i> 'Silver and Gold'. <a href="http://www.learn2grow.com/plants/ajania-pacifica-silver-and-gold/">http://www.learn2grow.com/plants/ajania-pacifica-silver-and-gold/</a> [Accessed 04 Feb 2013]	[Reproduction by vegetative fragmentation? Yes. Spreads vegetatively via rhizomes] "It is native to Japan where it exists along the Honshu Island coastline and slopes. It spreads via rhizomes and can become quite aggressive if grown in good soil and provided regular water."
606	2013. Shoot Gardening. <i>Ajania pacifica</i> (Pacific chrysanthemum). <a href="http://www.shootgardening.co.uk/plant/ajania-pacifica">http://www.shootgardening.co.uk/plant/ajania-pacifica</a> [Accessed 04 Feb 2103]	[Reproduction by vegetative fragmentation? Possibly for short distances] "Propagation methods: Basal cuttings, Runners, Seed."
607	2013. Shoot Gardening. <i>Ajania pacifica</i> (Pacific chrysanthemum). <a href="http://www.shootgardening.co.uk/plant/ajania-pacifica">http://www.shootgardening.co.uk/plant/ajania-pacifica</a> [Accessed 04 Feb 2103]	[Minimum generative time (years)? 2+] "2-5 years to maturity"
701	2013. WRA Specialist. Personal Communication.	[Propagules likely to be dispersed unintentionally? Unknown] Possesses achenes without a pappus, but dispersal mechanisms and vectors unknown. Able to spread via rhizomes, and cuttings, so may be able to establish as green waste
702	2013. Missouri Botanical Gardens. <i>Ajania pacifica</i> . <a href="http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/h600/ajania-pacifica.aspx">http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/h600/ajania-pacifica.aspx</a> [Accessed 4 Feb 2013]	[Propagules dispersed intentionally by people? Yes] "Rock gardens, border foregrounds. Attractive ground cover. May be grown in containers." [Cultivated as an ornamental]
703	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Propagules likely to disperse as a produce contaminant? No evidence of produce contamination or otherwise inadvertent dispersal of achenes]
704	1993. Bremer, K./Humphries, C.J.. Generic monograph of the Asteraceae-Anthemideae. The Bulletin of The Natural History Museum Lond. (Bot.). 23(2): 71-177.	[Propagules adapted to wind dispersal? Possibly for short distances] "Pappus absent." [Generic description. Lack of pappus may limit wind dispersal]
705	1997. Yura, H.. Comparative ecophysiology of <i>Chrysanthemum pacificum</i> Nakai and <i>Solidago altissima</i> L. 1. Why <i>S. altissima</i> cannot be established on the seashore. <i>Ecological Research</i> . 12: 313-323.	[Propagules water dispersed? Unknown. Coastal habit, and tolerance of salt spray may allow for dispersal via ocean currents] "The results of this study indicate that intensive salt spray, intermittently blown from the sea, is one of the most critical environmental factors that eliminated the inland plant <i>S. altissima</i> from the seashore. The seashore plant <i>C. pacificum</i> , on the other hand, received little injury from the intensive salt spray. Furthermore, no conspicuous difference in germination rate or resistance to desiccation between <i>S. altissima</i> and <i>C. pacificum</i> was found. It can, therefore, be conjectured from this difference in response to salt spray that <i>C. pacificum</i> seedlings have a much higher resistance to salt spray than <i>S. altissima</i> seedlings, which will be reported in the next paper."
706	2010. Kadereit, J.W./Jeffrey, C. (eds.). The Families and genera of vascular plants. Volume VIII. Flowering Plants. Eudicots: Asterales. Springer-Verlag, Berlin, Heidelberg, New York	[Propagules bird dispersed? No evidence] "Achenes obovoid, with 4–6 ribs; apex marginally rounded; pericarp with myxogenic cells in rows, without resin sacs." [Generic description]
707	2013. WRA Specialist. Personal Communication.	[Propagules dispersed by other animals (externally)? Unknown] Possesses achenes without a pappus, but dispersal mechanisms and vectors unknown.

708	2013. WRA Specialist. Personal Communication.	[Propagules survive passage through the gut? Unknown] Achenes probably not adapted for passage through GI tract
801	2013. Learn 2 Grow. <i>Ajania pacifica</i> 'Silver and Gold'. <a href="http://www.learn2grow.com/plants/ajania-pacifica-silver-and-gold/">http://www.learn2grow.com/plants/ajania-pacifica-silver-and-gold/</a> [Accessed 04 Feb 2013]	[Prolific seed production (>1000/m2)? Unknown] "In subtropical areas it may bloom twice per year, once in early summer and again in early winter."
802	2013. WRA Specialist. Personal Communication.	[Evidence that a persistent propagule bank is formed (>1 yr)? Unknown]
803	2013. WRA Specialist. Personal Communication.	[Well controlled by herbicides? Unknown]
804	2003. Tenenbaum, F.. Taylor's encyclopedia of garden plants. Houghton Mifflin Harcourt, New York, NY	[Tolerates, or benefits from, mutilation, cultivation, or fire? Yes] "Plants will become bushier if you severely prune them back in early spring." [Plants can tolerate "severe" pruning]
805	2013. WRA Specialist. Personal Communication.	[Effective natural enemies present locally (e.g. introduced biocontrol agents)? Unknown]

## **Summary of Risk Traits**

### **High Risk / Undesirable Traits**

- Thrives in temperate climates (possibly higher elevations of tropical islands)
- Host to white rust
- Tolerates many soil conditions (and potentially able to exploit many different habitat types)
- Possibly hybridizes with other species
- Spreads via rhizomes and seeds
- Lack of good information on ecology of seed dispersal makes accurate risk prediction difficult
- Described as aggressive and sometimes invasive by gardening website

### **Low Risk / Desirable Traits**

- No reports of naturalization elsewhere
- Unarmed (no spines, thorns or burrs)
- Non-toxic
- Landscaping and ornamental value
- Reaches maturity in 2-5 years