

**Family:** *Rubiaceae*

**Taxon:** *Pentas lanceolata*

**Synonym:** *Mussaenda luteola* Delile  
*Ophiorrhiza lanceolata* Forssk. (basionym)  
*Pentas carnea* auct. pl.

**Common Name:** Pentas  
Egyptian star cluster

<b>Questionnaire :</b>	current 20090513	<b>Assessor:</b>	Chuck Chimera	<b>Designation:</b>	EVALUATE
<b>Status:</b>	Assessor Approved	<b>Data Entry Person:</b>	Chuck Chimera	<b>WRA Score</b>	<b>5</b>
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)	High
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	y
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	y
302	Garden/amenity/disturbance weed			n=0, y = 1*multiplier (see Appendix 2)	
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	n
403	Parasitic			y=1, n=0	n
404	Unpalatable to grazing animals			y=1, n=-1	y
405	Toxic to animals			y=1, n=0	n
406	Host for recognized pests and pathogens			y=1, n=0	n
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	n
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	y
605	Requires specialist pollinators	y=-1, n=0	n
606	Reproduction by vegetative fragmentation	y=1, n=-1	n
607	Minimum generative time (years)	1 year = 1, 2 or 3 years = 0, 4+ years = -1	1
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	
704	Propagules adapted to wind dispersal	y=1, n=-1	n
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	n
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	n
803	Well controlled by herbicides	y=-1, n=1	
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y=1, n=-1	
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	y=-1, n=1	

Designation: EVALUATE

WRA Score **5**

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**Supporting Data:**

101	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Is the species highly domesticated? No] "Compact of dwarf cultivars have appeared in the nursery trade and contributed to its popularity." [Although certain cultivars may have been highly modified, this assessment refers to the original species]
102	2011. WRA Specialist. Personal Communication.	NA
103	2011. WRA Specialist. Personal Communication.	NA
201	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Species suited to tropical or subtropical climate(s) 2- high] "Native to Yemen, tropical East Africa, and the Comoro Islands..."
202	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Quality of climate match data 2-high] "Native to Yemen, tropical East Africa, and the Comoro Islands..."
203	1987. Blundell, M.. Wild Flowers of East Africa. Harper Collins Publishers, Hong Kong	[Broad climate suitability (environmental versatility)? Yes] "It grows best at forest edges at 1520-3000 m (5000-10,000 ft)...A very variable species found in all moist upland parts of Kenya." [Broad elevational distribution >1000 m, demonstrating environmental versatility]
204	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Native or naturalized in regions with tropical or subtropical climates? Yes] "Native to Yemen, tropical East Africa, and the Comoro Islands..."
205	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Does the species have a history of repeated introductions outside its natural range? Yes] "... <i>P. lanceolata</i> has in recent years exploded in popularity with gardeners in tropical and subtropical places."
301	1995. Nagata, K.M.. New Hawaiian Plant Records. IV. Bishop Museum Occasional Papers. 42: 10-13.	[Naturalized beyond native range? Yes] "Hawaii: A common garden plant, this species is naturalized along the Hwy between Laupahoehoe and Hilo, Hawaii Island, Nagata 2650, 2651, 2 Apr 1983 (HLA). Lavender and white flowered forms occur in this population."
301	2002. Starr, F./Martz, K./Loope, L.L.. New plant records from the Hawaiian archipelago. Bishop Museum Occasional Papers. 69: 16-27.	[Naturalized beyond native range? Yes] "Native to forest margins and scrub from Yemen to tropical East Africa (Brickell & Zuk 1996: 770); in Hawai'i, <i>P. lanceolata</i> (star cluster) has recently been noted spreading at least on the Hāmākua coast of the Big Island (Nagata, 1995: 12; Wagner et al., 1999: 1160). On Maui, <i>P. lanceolata</i> volunteers in scrub areas and steep banks from Haiku to Makawao. These collections represent a new island record for Maui. Material examined. MAUI: E. Maui, Haiku, growing on side of road, 400 ft [122 m], 10 Nov 1998, Starr & Martz 981110-3; E. Maui, Makawao, volunteering in unmaintained portions of lawn, 1600 ft [488 m], 16 Jan 2000, Starr & Martz 000116-1."
301	2010. Wunderlin, R.P./Hansen, B.F./Franck, A.R./Bradley, K.A./Kunzer, J.M.. Plants New to Florida. Journal of the Botanical Research Institute of Texas. 4(1): 349 – 355.	[Naturalized beyond native range? Yes] " <i>Pentas lanceolata</i> (Forssk.) Deflers (Rubiaceae). Native to northern Africa, it is commonly cultivated in the tropics and subtropics worldwide as an ornamental where it has sometimes become naturalized. This is the first report of the species naturalized in the continental United States. Voucher specimen. Miami-Dade Co.: Hattie Bauer Hammock, The Orchid Jungle, E side of SW 157 Ave. at theoretical 268 St., disturbed ground at park entrance on 157 Ave., 25.518421°N, 80.444942°W, 23 Feb 2002, Bradley 2192 (FTG)"
301	2011. Gann, G.D./Bradley, K.A./Woodmansee, S.W./Duquesnel, J.A.. <i>Pentas lanceolata</i> - Floristic Inventory of the Florida Keys Database Online. The Institute for Regional Conservation, Miami, FL <a href="http://www.regionalconservation.org/ircs/database/plants/Plan">http://www.regionalconservation.org/ircs/database/plants/Plan</a>	[Naturalized beyond native range? Yes] "South Florida: Native Status: Not Native, Naturalized"
301	2011. The Charles Darwin Foundation. Galapagos Species Checklist - <i>Pentas lanceolata</i> . <a href="http://www.darwinfoundation.org/datazone/checklists/vascular-plants/magnoliophyta/pentas-lanceolata-forssk-deflers/">http://www.darwinfoundation.org/datazone/checklists/vascular-plants/magnoliophyta/pentas-lanceolata-forssk-deflers/</a>	[Naturalized beyond native range? Not in Galapagos] "Taxon introduced for agricultural or domestic use; not naturalized"

302	2005. Dunlop, E./Hardcastle, J./Shah, N.J.. Cousin and Cousine Islands Status and Management of Alien Invasive Species. <a href="http://www.natureseychelles.org/index.php?option=com_docman&amp;task=doc_download&amp;gid=42&amp;Itemid=89">http://www.natureseychelles.org/index.php?option=com_docman&amp;task=doc_download&amp;gid=42&amp;Itemid=89</a>	[Garden/amenity/disturbance weed? Possibly a weed of unknown impacts] "Table 27. Main invasive non-woody plant species" [Includes <i>Pentas lanceolata</i> with no information on impacts]
303	2007. Randall, R.P.. Global Compendium of Weeds - <i>Pentas lanceolata</i> [Online Database]. <a href="http://www.hear.org/gcw/species/pentas_lanceolata/">http://www.hear.org/gcw/species/pentas_lanceolata/</a>	[Agricultural/forestry/horticultural weed? No] No evidence
304	2000. Staples, G.W./Herbst, D.R./Imada, C.T.. Survey of invasive or potentially invasive cultivated plants in Hawai'i. Bishop Museum Occasional Papers. 65: 1-35.	[Environmental weed? No] "Table 2. Annotated checklist of invasive or potentially invasive cultivated plants in Hawai'i with dispersal syndrome" [List includes <i>P. lanceolata</i> . Despite naturalization, no evidence was found that it has become an environmental weed.]
305	2007. Randall, R.P.. Global Compendium of Weeds - Index [Online Database]. <a href="http://www.hear.org/gcw/">http://www.hear.org/gcw/</a>	[Congeneric weed? No] No evidence
305	2011. Pacific Islands Ecosystems at Risk (PIER). Plant threats to Pacific ecosystems - Index. <a href="http://www.hear.org/Pier/index.html">http://www.hear.org/Pier/index.html</a>	[Congeneric weed? No] No evidence
401	1953. Verdcourt, B.. A Revision of Certain African Genera of Herbaceous Rubiaceae V.: A Revision of the Genus <i>Pentas</i> Bentham Together with a Key to Related Genera. Bulletin du Jardin botanique de l'État a Bruxelles. 23(Fasc. 3/4): 237-371.	[Produces spines, thorns or burrs? No] "Herb or subshrub, erect, woody, 0.5-1.3 m tall. Stems striate, hairy, internodes 0.7-20 cm long. Stipules with 3-9 setae 2-9 mm long with small colleters from a small base, in some specimens becoming orange and corky. Leaves ovate, lanceolate, ovate-lanceolate or elliptic, acute apically, cuneate basally, petioles 1-8 mm long, lamina pubescent or hairy, 3.5-9 cm long and 1.1-3.9 cm wide; lateral nerves 6-14 prominent below by virtue of the hairs being at right angles. Inflorescence with terminal and axillary components combined into a single cluster."
401	1987. Blundell, M.. Wild Flowers of East Africa. Harper Collins Publishers, Hong Kong	[Produces spines, thorns or burrs? No] "An erect branched woody shrub with ovate-lanceolate leaves and mauve to white flowers 3 mm (1/8 in) long; corolla c. 15 mm (3/5 in) across, corolla tube 2-4 cm (4/5-1 1/2 in) long."
402	1953. Verdcourt, B.. A Revision of Certain African Genera of Herbaceous Rubiaceae V.: A Revision of the Genus <i>Pentas</i> Bentham Together with a Key to Related Genera. Bulletin du Jardin botanique de l'État a Bruxelles. 23(Fasc. 3/4): 237-371.	[Allelopathic? No] No evidence
402	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Allelopathic? No] No evidence
403	1987. Blundell, M.. Wild Flowers of East Africa. Harper Collins Publishers, Hong Kong	[Parasitic? No] "An erect branched woody shrub with ovate-lanceolate leaves and mauve to white flowers 3 mm (1/8 in) long; corolla c. 15 mm (3/5 in) across, corolla tube 2-4 cm (4/5-1 1/2 in) long." [Rubiaceae]
404	2010. Baker, L.A.. State Survey of White-Tailed Deer ( <i>Odocoileus virginianus</i> Zimmerman) Impacts on Residential Landscapes and the Green Industry of Alabama and an Evaluation of Commercial Deer Repellents. MSc Thesis. Auburn University, Auburn, AL	[Unpalatable to grazing animals? Yes] "Table 1. Compiled state extension lists of susceptible and resistant plant species to white-tailed deer damage" [Includes <i>Pentas lanceolata</i> with the description "Annuals w/ high deer tolerance" suggesting either that plants are unpalatable, or able to recover from deer browsing]
404	2011. Glen, C.. Deer Resistant Plants Recommended for Pender County Landscapes. Urban Horticulture Fact Sheet 15. North Carolina Cooperative Extension, <a href="http://pender.ces.ncsu.edu/files/library/71/Deer%20Resistant%20Plants.pdf">http://pender.ces.ncsu.edu/files/library/71/Deer%20Resistant%20Plants.pdf</a>	[Unpalatable to grazing animals? Yes] <i>Pentas lanceolata</i> included in a list of Seldom Damaged plants
404	2011. WRA Specialist. Personal Communication.	[Unpalatable to grazing animals? Probably yes]
405	1953. Verdcourt, B.. A Revision of Certain African Genera of Herbaceous Rubiaceae V.: A Revision of the Genus <i>Pentas</i> Bentham Together with a Key to Related Genera. Bulletin du Jardin botanique de l'État a Bruxelles. 23(Fasc. 3/4): 237-371.	[Toxic to animals? No] No evidence

405	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Toxic to animals? No] No evidence
406	1999. Gilman, E.F./Shiffit, S.. Pentas lanceolata - Pentas. Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL <a href="http://edis.ifas.ufl.edu/pdffiles/FP/FP46500.pdf">http://edis.ifas.ufl.edu/pdffiles/FP/FP46500.pdf</a>	[Host for recognized pests and pathogens? No] "Pest resistance: long-term health usually not affected by pests ... No pests or diseases are of major concern, but occasionally mites. Caterpillars sometimes chew on the foliage."
406	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Host for recognized pests and pathogens? No] "Few pests trouble pentas, although thrips and spider mites may disfigure the foliage; these can be controlled with insecticides if infestations are severe."
407	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Causes allergies or is otherwise toxic to humans? No] No evidence
407	2011. Missouri Botanical Garden. Kemper Center for Home Gardening PlantFinder - Pentas lanceolata. <a href="http://www.mobot.org/gardeninghelp/plantfinder/plant.asp?code=A538">http://www.mobot.org/gardeninghelp/plantfinder/plant.asp?code=A538</a>	[Causes allergies or is otherwise toxic to humans? No] No evidence
408	1953. Verdcourt, B.. A Revision of Certain African Genera of Herbaceous Rubiaceae V.: A Revision of the Genus Pentas Bentham Together with a Key to Related Genera. Bulletin du Jardin botanique de l'État a Bruxelles. 23(Fasc. 3/4): 237-371.	[Creates a fire hazard in natural ecosystems? No] No evidence from native range
409	1999. Gilman, E.F./Shiffit, S.. Pentas lanceolata - Pentas. Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL <a href="http://edis.ifas.ufl.edu/pdffiles/FP/FP46500.pdf">http://edis.ifas.ufl.edu/pdffiles/FP/FP46500.pdf</a>	[Is a shade tolerant plant at some stage of its life cycle? Possibly] "Light requirement: plant grows in part shade/part sun"
409	2011. Floridata. Pentas lanceolata. <a href="http://www.floridata.com/ref/p/pen_lanc.cfm">http://www.floridata.com/ref/p/pen_lanc.cfm</a>	[Is a shade tolerant plant at some stage of its life cycle? Possibly] "Light: Sun to shade. Blooms better and is more robust in good sun, but will still bloom in shade and look good!"
409	2011. Missouri Botanical Garden. Kemper Center for Home Gardening PlantFinder - Pentas lanceolata. <a href="http://www.mobot.org/gardeninghelp/plantfinder/plant.asp?code=A538">http://www.mobot.org/gardeninghelp/plantfinder/plant.asp?code=A538</a>	[Is a shade tolerant plant at some stage of its life cycle? Possibly] "Tolerates part shade, but best flowering in full sun."
410	1999. Gilman, E.F./Shiffit, S.. Pentas lanceolata - Pentas. Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL <a href="http://edis.ifas.ufl.edu/pdffiles/FP/FP46500.pdf">http://edis.ifas.ufl.edu/pdffiles/FP/FP46500.pdf</a>	[Tolerates a wide range of soil conditions? Yes] "Soil tolerances: clay; sand; acidic; loam ... Tolerant of a wide range of soil types, pentas prefers fertile, well-drained soils, regular moisture, and will grow quickly in full sun or light shade."
411	1987. Blundell, M.. Wild Flowers of East Africa. Harper Collins Publishers, Hong Kong	[Climbing or smothering growth habit? No] "An erect branched woody shrub with ovate-lanceolate leaves and mauve to white flowers 3 mm (1/8 in) long; corolla c. 15 mm (3/5 in) across, corolla tube 2-4 cm (4/5-1 1/2 in) long."
412	1953. Verdcourt, B.. A Revision of Certain African Genera of Herbaceous Rubiaceae V.: A Revision of the Genus Pentas Bentham Together with a Key to Related Genera. Bulletin du Jardin botanique de l'État a Bruxelles. 23(Fasc. 3/4): 237-371.	[Forms dense thickets? No] "This species is dominant in some parts of open woodland at Kikuyu and district; it also occurs at Kiu, Nairobi, and in the rift at Longonot." [Dominant, but no evidence that it forms thickets excluding other vegetation]
501	1987. Blundell, M.. Wild Flowers of East Africa. Harper Collins Publishers, Hong Kong	[Aquatic? No] "An erect branched woody shrub with ovate-lanceolate leaves and mauve to white flowers 3 mm (1/8 in) long; corolla c. 15 mm (3/5 in) across, corolla tube 2-4 cm (4/5-1 1/2 in) long." [terrestrial]
502	1987. Blundell, M.. Wild Flowers of East Africa. Harper Collins Publishers, Hong Kong	[Grass? No] Rubiaceae
503	1987. Blundell, M.. Wild Flowers of East Africa. Harper Collins Publishers, Hong Kong	[Nitrogen fixing woody plant? No] Rubiaceae
504	1987. Blundell, M.. Wild Flowers of East Africa. Harper Collins Publishers, Hong Kong	[Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? No] "An erect branched woody shrub with ovate-lanceolate leaves and mauve to white flowers 3 mm (1/8 in) long; corolla c. 15 mm (3/5 in) across, corolla tube 2-4 cm (4/5-1 1/2 in) long."

601	1953. Verdcourt, B.. A Revision of Certain African Genera of Herbaceous Rubiaceae V.: A Revision of the Genus Pentas Bentham Together with a Key to Related Genera. Bulletin du Jardin botanique de l'État a Bruxelles. 23(Fasc. 3/4): 237-371.	[Evidence of substantial reproductive failure in native habitat? No] No evidence
602	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Produces viable seed? Yes] "New cultivars can be developed from seed, but seed is produced only if plants of more than one flower type are grown so that cross-pollination can occur."
603	1953. Verdcourt, B.. A Revision of Certain African Genera of Herbaceous Rubiaceae V.: A Revision of the Genus Pentas Bentham Together with a Key to Related Genera. Bulletin du Jardin botanique de l'État a Bruxelles. 23(Fasc. 3/4): 237-371.	[Hybridizes naturally? Unknown]
604	1970. Bahadur, B.. Heterostyly and homostyly in <i>Pentas lanceolata</i> (Forsk.) Delf. Journal of Genetics. 60(2): 199-204.	[Self-compatible or apomictic? Yes] "From the data given in Table 3 it is obvious that pin and thrum are self compatible as they give seeds on selfing, the degree of compatibility, however, differs as shown by the seed set per capsule."
604	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Self-compatible or apomictic? No. But see Bahadur 1970] "New cultivars can be developed from seed, but seed is produced only if plants of more than one flower type are grown so that cross-pollination can occur."
605	2009. Nishida, K./Nakamura, I./Morales, C.O.. Plants and butterflies of a small urban preserve in the Central Valley of Costa Rica. Revista de Biología Tropical. 57 (Suppl. 1): 31-67.	[Requires specialist pollinators? No] "East African ornamental, cultivated to attract butterflies ... Fig. 37. <i>Heliconius charithonia</i> on flowers of <i>Pentas lanceolata</i> in the nursery garden (11:00 am, April 22, 2006)."
605	2011. Dave's Garden. PlantFiles: Egyptian Star Cluster, Star Flower, Pentas - <i>Pentas lanceolata</i> . <a href="http://davesgarden.com/guides/pf/go/239/">http://davesgarden.com/guides/pf/go/239/</a>	[Requires specialist pollinators? No] "Other details: This plant is attractive to bees, butterflies and/or birds"
606	2011. Missouri Botanical Garden. Kemper Center for Home Gardening PlantFinder - <i>Pentas lanceolata</i> . <a href="http://www.mobot.org/gardeninghelp/plantfinder/plant.asp?code=A538">http://www.mobot.org/gardeninghelp/plantfinder/plant.asp?code=A538</a>	[Reproduction by vegetative fragmentation? No] "May be easily grown from seed started indoors in late winter approximately 8-10 weeks before last frost date...Cuttings may also be taken from favorite plants in late summer for overwintering. "
607	2008. Lemke, C.. Cal's Plant of the Week - <i>Pentas lanceolata</i> - Egyptian Stars. University of Oklahoma Department of Botany & Microbiology, <a href="http://www.plantoftheweek.org/week465.shtml">http://www.plantoftheweek.org/week465.shtml</a>	[Minimum generative time (years)? 1] "Seeds should be surface sown and will germinate in 5-12 days at 70°F (22°C). Plants will bloom in 15-19 weeks from sowing. "
701	1953. Verdcourt, B.. A Revision of Certain African Genera of Herbaceous Rubiaceae V.: A Revision of the Genus Pentas Bentham Together with a Key to Related Genera. Bulletin du Jardin botanique de l'État a Bruxelles. 23(Fasc. 3/4): 237-371.	[Propagules likely to be dispersed unintentionally? Unknown] "Seeds minute, brownish, irregular globose, or tetrahedral, tests reticulate." [May be possible that small seeds are inadvertently transported, but no direct evidence was found]
701	1995. Nagata, K.M.. New Hawaiian Plant Records. IV. Bishop Museum Occasional Papers. 42: 10-13.	[Propagules likely to be dispersed unintentionally? Unknown] "Hawaii: A common garden plant, this species is naturalized along the Hwy between Laupahoehoe and Hilo, Hawaii Island, Nagata 2650, 2651, 2 Apr 1983 (HLA). Lavender and white flowered forms occur in this population." [distribution along highway suggests plants could be dispersed unintentionally along heavily trafficked areas]
702	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Propagules dispersed intentionally by people? Yes] "Pentas is one of the most popular garden plants in Hawaii, used in landscapes as well as for its cut flowers."
703	1953. Verdcourt, B.. A Revision of Certain African Genera of Herbaceous Rubiaceae V.: A Revision of the Genus Pentas Bentham Together with a Key to Related Genera. Bulletin du Jardin botanique de l'État a Bruxelles. 23(Fasc. 3/4): 237-371.	[Propagules likely to disperse as a produce contaminant? Unknown] "The fruits of <i>Pentas</i> merely scatter the seeds in the immediate vicinity of the parent plant and the efficiency is probably roughly the same for all the species." [could be inadvertently dispersed in other potted plants if grown together in nursery or plant retailer]

704	1953. Verdcourt, B.. A Revision of Certain African Genera of Herbaceous Rubiaceae V.: A Revision of the Genus Pentas Benthams Together with a Key to Related Genera. Bulletin du Jardin botanique de l'État a Bruxelles. 23(Fasc. 3/4): 237-371.	[Propagules adapted to wind dispersal? No] "The fruits of Pentas merely scatter the seeds in the immediate vicinity of the parent plant and the efficiency is probably roughly the same for all the species." [gravity dispersed]
705	1953. Verdcourt, B.. A Revision of Certain African Genera of Herbaceous Rubiaceae V.: A Revision of the Genus Pentas Benthams Together with a Key to Related Genera. Bulletin du Jardin botanique de l'État a Bruxelles. 23(Fasc. 3/4): 237-371.	[Propagules water dispersed? No] "The fruits of Pentas merely scatter the seeds in the immediate vicinity of the parent plant and the efficiency is probably roughly the same for all the species." [may be dispersed secondarily by water, but distribution suggests this vector is uncommon or unlikely]
706	1958. Verdcourt, B.. Remarks on the Classification of the Rubiaceae. Bulletin du Jardin botanique de l'État a Bruxelles. 28(Fasc. 3): 209-290.	[Propagules bird dispersed? No] "The following types of fruit occur in the family: Dehiscent : ... loculicidal or septicidal capsules with beaks (e.g. Pentas)." [Not fleshy-fruited]
707	1953. Verdcourt, B.. A Revision of Certain African Genera of Herbaceous Rubiaceae V.: A Revision of the Genus Pentas Benthams Together with a Key to Related Genera. Bulletin du Jardin botanique de l'État a Bruxelles. 23(Fasc. 3/4): 237-371.	[Propagules dispersed by other animals (externally)? Probably not] "The fruits of Pentas merely scatter the seeds in the immediate vicinity of the parent plant and the efficiency is probably roughly the same for all the species." [Although seeds may stick to animal fur or hooves in mud, the seeds do not possess any means of external attachment]
708	2011. WRA Specialist. Personal Communication.	[Propagules survive passage through the gut? Unknown] Fruits are capsular, and seeds unlikely to be ingested
801	2003. Puff, C./Chamchumroon, V.. Non-indigenous Rubiaceae grown in Thailand. Thai Forest Bulletin (Botany). 31: 75-94.	[Prolific seed production (>1000/m <sup>2</sup> )? Unknown] "Fruits capsular, dehiscent into 2 valves, to ca. 5 mm long; seeds numerous, minute." [Estimate of seed production unknown]
802	2011. Dave's Garden. PlantFiles: Egyptian Star Cluster, Star Flower, Pentas - Pentas lanceolata. <a href="http://davesgarden.com/guides/pf/go/239/">http://davesgarden.com/guides/pf/go/239/</a>	[Evidence that a persistent propagule bank is formed (>1 yr)? No] "Seed does not store well; sow as soon as possible" [Suggests that a soil seed bank will not form]
803	2011. WRA Specialist. Personal Communication.	[Well controlled by herbicides? Unknown] Probably controlled by a foliar herbicide, but no information found on herbicide efficacy
804	2011. WRA Specialist. Personal Communication.	[Tolerates, or benefits from, mutilation, cultivation, or fire? Unknown]
805	2011. WRA Specialist. Personal Communication.	[Effective natural enemies present locally (e.g. introduced biocontrol agents)? Unknown]