

Taxon: <i>Pelargonium citronellum</i> J. J. A. van der Walt	Family: Geraniaceae
Common Name(s): citronella pelargonium lemon-scent pelargonium	Synonym(s):

Assessor: Chuck Chimera	Status: Assessor Approved	End Date: 5 Mar 2018
WRA Score: 0.0	Designation: L	Rating: Low Risk

Keywords: Shrub, Aromatic, Unarmed, Ornamental, Wind-Dispersed

Qsn #	Question	Answer Option	Answer
101	Is the species highly domesticated?	y=-3, n=0	n
102	Has the species become naturalized where grown?		
103	Does the species have weedy races?		
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)	Intermediate
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	n
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	?
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)	y
401	Produces spines, thorns or burrs	y=1, n=0	n
402	Allelopathic		
403	Parasitic	y=1, n=0	n
404	Unpalatable to grazing animals		
405	Toxic to animals	y=1, n=0	n
406	Host for recognized pests and pathogens		
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	y

Qsn #	Question	Answer Option	Answer
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	y
604	Self-compatible or apomictic		
605	Requires specialist pollinators	y=-1, n=0	n
606	Reproduction by vegetative fragmentation	y=1, n=-1	n
607	Minimum generative time (years)		
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y=1, n=-1	n
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	y
705	Propagules water dispersed		
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	n
801	Prolific seed production (>1000/m2)		
802	Evidence that a persistent propagule bank is formed (>1 yr)		
803	Well controlled by herbicides		
804	Tolerates, or benefits from, mutilation, cultivation, or fire		
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)		

Supporting Data:

Qsn #	Question	Answer
101	Is the species highly domesticated?	n
	Source(s)	Notes
	Vorster, P., & van der Walt, J. J. (1983). Two new species of <i>Pelargonium</i> L'Hérit.(Geraniaceae) from South Africa. <i>South African Journal of Botany</i> , 2(1), 76-81	[No evidence of domestication] "P. citronellum is apparently confined to the one-degree square which includes the village of Ladismith in the southern Cape. It is common on the northern foothills of the Langeberg range between Muiskraal and Herbertsdale. As is the case with many other species of the section <i>Pelargonium</i> , it is usually found near streams in well-drained sandy soil. The distribution area of <i>P. citronellum</i> receives most of its rainfall during the winter months."

102	Has the species become naturalized where grown?	
	Source(s)	Notes
	WRA Specialist. 2018. Personal Communication	NA

103	Does the species have weedy races?	
	Source(s)	Notes
	WRA Specialist. 2018. Personal Communication	NA

201	Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"	Intermediate
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 5 Mar 2018]	"Native Africa Southern Africa: South Africa Cape Province"
	Vorster, P., & van der Walt, J. J. (1983). Two new species of <i>Pelargonium</i> L'Hérit.(Geraniaceae) from South Africa. <i>South African Journal of Botany</i> , 2(1), 76-81	"P. citronellum is apparently confined to the one-degree square which includes the village of Ladismith in the southern Cape." [Latitude: -33° 29' 22.19" S]

202	Quality of climate match data	High
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 5 Mar 2018]	

203	Broad climate suitability (environmental versatility)	n
	Source(s)	Notes

Qsn #	Question	Answer
	Dave's Garden. 2018. Scented Geranium - <i>Pelargonium citronellum</i> . https://davesgarden.com/guides/pf/go/76753/ . [Accessed 5 Mar 2018]	"Hardiness: USDA Zone 9b: to -3.8 °C (25 °F) USDA Zone 10a: to -1.1 °C (30 °F) USDA Zone 10b: to 1.7 °C (35 °F) USDA Zone 11: above 4.5 °C (40 °F)"
	Mbambezeli, G. & Notten, A. 2002. <i>Halleria lucida</i> L. PlantZAfrica. SANBI. http://pza.sanbi.org/pelargonium-citronellum . [Accessed 5 Mar 2018]	"Horticultural zones Zone 1 Coastal summer rainfall, frost free Zone 2 Coastal winter rainfall, frost free Zone 3 Winter rainfall Karoo, light frost"

204	Native or naturalized in regions with tropical or subtropical climates	n
	Source(s)	Notes
	Vorster, P., & van der Walt, J. J. (1983). Two new species of <i>Pelargonium</i> L'Hérit. (Geraniaceae) from South Africa. <i>South African Journal of Botany</i> , 2(1), 76-81	" <i>P. citronellum</i> is apparently confined to the one-degree square which includes the village of Ladismith in the southern Cape. It is common on the northern foothills of the Langeberg range between Muiskraal and Herbertsdale. As is the case with many other species of the section <i>Pelargonium</i> , it is usually found near streams in well-drained sandy soil. The distribution area of <i>P. citronellum</i> receives most of its rainfall during the winter months."
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

205	Does the species have a history of repeated introductions outside its natural range?	?
	Source(s)	Notes
	Dave's Garden. 2018. Scented Geranium - <i>Pelargonium citronellum</i> . https://davesgarden.com/guides/pf/go/76753/ . [Accessed 5 Mar 2018]	"This plant has been said to grow in the following regions: San Diego, California Deer Park, Texas"

301	Naturalized beyond native range	n
	Source(s)	Notes
	Wagner, W.L., Herbst, D.R. & Lorence, D.H. 2018. <i>Flora of the Hawaiian Islands</i> . Smithsonian Institution, Washington, D.C. http://botany.si.edu/ . [Accessed 5 Mar 2018]	" <i>Pelargonium capitatum</i> (L.) L'Her. ex Aiton Status: Naturalized Distribution: EM (Wai'ale & Kalia) [To date, this is the only <i>Pelargonium</i> species naturalized in the Hawaiian Islands]"
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

302	Garden/amenity/disturbance weed	n
	Source(s)	Notes
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

303	Agricultural/forestry/horticultural weed	n
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Qsn #	Question	Answer
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

304	Environmental weed	n
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

305	Congeneric weed	y
	Source(s)	Notes
	Queensland Government. (2018). Weeds of Australia. <i>Pelargonium alchemilloides</i> . https://keyserver.lucidcentral.org/weeds ... pelargonium_alchemilloides.htm . [Accessed 5 Mar 2018]	"Garden geranium (<i>Pelargonium alchemilloides</i>) is regarded as an environmental weed in Western Australia and is also on the Alert List for Environmental Weeds, a list of 28 non-native plants that threaten biodiversity and cause other environmental damage. Although only in the early stages of establishment, it is thought to have the potential to seriously degrade native ecosystems."
	Queensland Government. (2018). Weeds of Australia. <i>Pelargonium quercifolium</i> . https://keyserver.lucidcentral.org/weeds ... pelargonium_quercifolium.htm . [Accessed 5 Mar 2018]	"Oak-leaved geranium (<i>Pelargonium quercifolium</i>) is regarded as a minor environmental weed in Victoria. This species is occasionally grown as a garden ornamental and has become naturalised on coastal sand dunes in southern Victoria (e.g. at Anglesea). It was first recorded as naturalised in 1983, and is currently ranked as a minor environmental weed in the Angahook-Otways region."
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	" <i>Pelargonium alchemilloides</i> ... Dispersed by: Humans, Animals, Water, Wind Weed of: Pastures"
	Queensland Government. (2018). Weeds of Australia. <i>Pelargonium capitatum</i> . https://keyserver.lucidcentral.org/weeds ... pelargonium_capitatum.htm . [Accessed 5 Mar 2018]	"Rose pelargonium (<i>Pelargonium capitatum</i>) is regarded as a significant environmental weed in Western Australia and as a minor environmental weed in Victoria."

401	Produces spines, thorns or burrs	n
	Source(s)	Notes
	Vorster, P., & van der Walt, J. J. (1983). Two new species of <i>Pelargonium</i> L'Hérit. (Geraniaceae) from South Africa. <i>South African Journal of Botany</i> , 2(1), 76-81	[No evidence] "A much-branched, evergreen, strongly lemon-scented shrub, up to 2 m high and 1 m in diameter. Stems herbaceous when young, woody at base, hirsute and with numerous glandular hairs. Leaves simple, conspicuously veined abaxially, sparsely hirsute to hispid and with numerous shorter glandular hairs interspersed, green, lamina palmatifid to palmatisect with lobes sometimes irregularly incised, base cuneate to cordately incised, apices of lobes acute, margins irregularly serrate-dentate, (35) - 50 - (110) mm long and (25) - 55 - (J 30) mm wide; petiole (15) - 35 - (60) mm long; stipules narrowly triangular to triangular, 6 - 10 mm long and 3 - 6 mm wide, hirsute and with shorter glandular hairs."

402	Allelopathic	

Qsn #	Question	Answer
	Source(s)	Notes
	Fujii, Y., Parvez, S. S., Parvez, M., Ohmae, Y., & Iida, O. 2003. Screening of 239 medicinal plant species for allelopathic activity using the sandwich method. <i>Weed Biology and Management</i> , 3(4): 233-241	Unknown. <i>Pelargonium roseum</i> demonstrates allelopathic properties

403	Parasitic	n
	Source(s)	Notes
	Vorster, P., & van der Walt, J. J. (1983). Two new species of <i>Pelargonium</i> L'Hérit. (Geraniaceae) from South Africa. <i>South African Journal of Botany</i> , 2(1), 76-81	"A much-branched, evergreen, strongly lemon-scented shrub, up to 2 m high and 1 m in diameter." [Geraniaceae. No evidence]

404	Unpalatable to grazing animals	n
	Source(s)	Notes
	Mbambezeli, G. & Notten, A. 2002. <i>Halleria lucida</i> L. PlantZAfrica. SANBI. http://pza.sanbi.org/pelargonium-citronellum . [Accessed 5 Mar 2018]	[Unspecified. Aromatic foliage may deter browsing] "The attractive and fragrant foliage makes this species an interesting subject for the garden. It can also be grown as a culinary herb or to flavour puddings. Although the foliage is fragrant all the time, it is during the warmer weather that you'll notice it, because the citronella (lemon-scented chemical in the leaf) is volatile at high temperatures."

405	Toxic to animals	n
	Source(s)	Notes
	Lis-Balchin, M. (ed.). (2002). <i>Geranium and Pelargonium. The genera Geranium and Pelargonium</i> . Taylor & Francis, London	"Toxicity of <i>Pelargonium</i> is usually found under the heading of 'geranium' toxicity. There are very few, scattered, references to any toxicity, and all references are due to contact dermatitis and sensitisation. Most of the references are to the Geranium oil and the main components geraniol (Lovell, 1993)."
	Quattrocchi, U. 2012. <i>CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology</i> . CRC Press, Boca Raton, FL	No evidence

406	Host for recognized pests and pathogens	n
	Source(s)	Notes
	Select Seeds. (2018). <i>Geranium 'Mabel Grey'</i> . https://www.selectseeds.com/Products/geranium_mabel_grey_plants.aspx . [Accessed 5 Mar 2018]	"Diseases & Pests: Aphids and mealybugs can be troublesome; if detected, treat with an insecticidal soap or neem oil. Avoid botrytis by spacing properly, not wetting the foliage when watering, and keeping dead plant material, such as spent flowers and leaves, cleaned up."

407	Causes allergies or is otherwise toxic to humans	n
	Source(s)	Notes

Qsn #	Question	Answer
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	"Insecticidal, used to repel pests."
	Lis-Balchin, M. (ed.). (2002). Geranium and Pelargonium. The genera Geranium and Pelargonium. Taylor & Francis, London	"Toxicity of Pelargonium is usually found under the heading of 'geranium' toxicity. There are very few, scattered, references to any toxicity, and all references are due to contact dermatitis and sensitisation. Most of the references are to the Geranium oil and the main components geraniol (Lovell, 1993)."
	Mbambezeli, G. & Notten, A. 2002. Halleria lucida L. PlantZAfrica. SANBI. http://pza.sanbi.org/pelargonium-citronellum . [Accessed 5 Mar 2018]	[No evidence] "The attractive and fragrant foliage makes this species an interesting subject for the garden. It can also be grown as a culinary herb or to flavour puddings. Although the foliage is fragrant all the time, it is during the warmer weather that you'll notice it, because the citronella (lemon scented chemical in the leaf) is volatile at high temperatures. This plant can be used as a companion plant to repel pests, as the lemon scent has natural insecticidal properties. The leaves can also be used in potpourri and finger bowls."

408	Creates a fire hazard in natural ecosystems	n
	Source(s)	Notes
	Vorster, P., & van der Walt, J. J. (1983). Two new species of Pelargonium L'Hérit.(Geraniaceae) from South Africa. South African Journal of Botany, 2(1), 76-81	[No evidence] "P. citronellum is apparently confined to the one-degree square which includes the village of Ladismith in the southern Cape. It is common on the northern foothills of the Langeberg range between Muiskraal and Herbertsdale. As is the case with many other species of the section Pelargonium, it is usually found near streams in well-drained sandy soil. The distribution area of P. citronellum receives most of its rainfall during the winter months."

409	Is a shade tolerant plant at some stage of its life cycle	y
	Source(s)	Notes
	Mbambezeli, G. & Notten, A. 2002. Halleria lucida L. PlantZAfrica. SANBI. http://pza.sanbi.org/pelargonium-citronellum . [Accessed 5 Mar 2018]	[Light shade] "Pelargonium citronellum does best in full sun, in well-drained, sandy soil with water all year round, although it will withstand drought." ... "It can also be grown in light shade, where it's foliage is decorative but it will flower less."

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y
	Source(s)	Notes
	Mbambezeli, G. & Notten, A. 2002. Halleria lucida L. PlantZAfrica. SANBI. http://pza.sanbi.org/pelargonium-citronellum . [Accessed 5 Mar 2018]	"Pelargonium citronellum does best in full sun, in well-drained, sandy soil with water all year round, although it will withstand drought." ... "Soil type: Sandy, Loam"

Qsn #	Question	Answer
411	Climbing or smothering growth habit	n
	Source(s)	Notes
	Vorster, P., & van der Walt, J. J. (1983). Two new species of <i>Pelargonium</i> L'Hérit.(Geraniaceae) from South Africa. <i>South African Journal of Botany</i> , 2(1), 76-81	"A much-branched, evergreen, strongly lemon-scented shrub, up to 2 m high and 1 m in diameter."

412	Forms dense thickets	n
	Source(s)	Notes
	Vorster, P., & van der Walt, J. J. (1983). Two new species of <i>Pelargonium</i> L'Hérit.(Geraniaceae) from South Africa. <i>South African Journal of Botany</i> , 2(1), 76-81	[No evidence from native range] " <i>P. citronellum</i> is apparently confined to the one-degree square which includes the village of Ladismith in the southern Cape. It is common on the northern foothills of the Langeberg range between Muiskraal and Herbertsdale. As is the case with many other species of the section <i>Pelargonium</i> , it is usually found near streams in well-drained sandy soil. The distribution area of <i>P. citronellum</i> receives most of its rainfall during the winter months."
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence of naturalization. No evidence of dense thickets from introduced range

501	Aquatic	n
	Source(s)	Notes
	Vorster, P., & van der Walt, J. J. (1983). Two new species of <i>Pelargonium</i> L'Hérit.(Geraniaceae) from South Africa. <i>South African Journal of Botany</i> , 2(1), 76-81	[Terrestrial] "A much-branched, evergreen, strongly lemon-scented shrub, up to 2 m high and 1 m in diameter." ... "As is the case with many other species of the section <i>Pelargonium</i> , it is usually found near streams in well-drained sandy soil."

502	Grass	n
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 1 Mar 2018]	Family: Geraniaceae

503	Nitrogen fixing woody plant	n
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 1 Mar 2018]	Family: Geraniaceae

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	Notes

Qsn #	Question	Answer
	Vorster, P., & van der Walt, J. J. (1983). Two new species of <i>Pelargonium</i> L'Hérit.(Geraniaceae) from South Africa. <i>South African Journal of Botany</i> , 2(1), 76-81	" <i>P. citronellum</i> is a much-branched and strongly lemon-scented shrub. Its leaves are palmately incised and conspicuously veined on the lower side. Both the young stems and leaves have numerous glandular hairs with rather rigid hairs in between. The unbranched peduncle bears 5 to 8 relatively large pinkish-purple flowers. Conspicuous dark-purple markings occur on the two large posterior petals."

601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	Notes
	Mbambezeli, G. & Notten, A. 2002. <i>Halleria lucida</i> L. PlantZAfrica. SANBI. http://pza.sanbi.org/pelargonium-citronellum . [Accessed 5 Mar 2018]	" <i>Pelargonium citronellum</i> is not listed on the Interim Red Data List of 2006."

602	Produces viable seed	y
	Source(s)	Notes
	Mbambezeli, G. & Notten, A. 2002. <i>Halleria lucida</i> L. PlantZAfrica. SANBI. http://pza.sanbi.org/pelargonium-citronellum . [Accessed 1 Mar 2018]	" <i>Pelargonium citronellum</i> can be propagated from both seeds and cuttings." ... "Sow seeds in late summer to early autumn. The seed should be sown in a light, well-drained potting mix. Sprinkle the seeds evenly in the seed tray and cover them with fine white sand or fine-milled pine bark. Water the seeds gently but thoroughly with a fine rose spray and place them in light shade with no direct sun. Seed germinates in 2-3 weeks."

603	Hybridizes naturally	y
	Source(s)	Notes
	Lis-Balchin, M. (ed.). (2002). <i>Geranium and Pelargonium</i> . The genera <i>Geranium</i> and <i>Pelargonium</i> . Taylor & Francis, London	" <i>Pelargoniums</i> became popular subjects for hybridising, because cross-pollination was not difficult, and they have the advantage of growing all the year round, so there was no dormancy to interrupt the work."
	Vorster, P., & van der Walt, J. J. (1983). Two new species of <i>Pelargonium</i> L'Hérit.(Geraniaceae) from South Africa. <i>South African Journal of Botany</i> , 2(1), 76-81	"The southern Cape form of <i>P. scabrum</i> resembles <i>P. citronellum</i> much more than the western Cape form, and it is possible that <i>P. citronellum</i> evolved from this form. <i>P. scabrum</i> is also known as a species which hybridizes easily with other species, and it is therefore also possible that <i>P. citronellum</i> originated as a natural hybrid between <i>P. scabrum</i> and <i>P. hispidum</i> . A natural hybrid between <i>P. citronellum</i> and <i>P. hispidum</i> has been collected (Van der Walt 1124 (STEU))."

604	Self-compatible or apomictic	
	Source(s)	Notes
	Lis-Balchin, M. (ed.). (2002). <i>Geranium and Pelargonium</i> . The genera <i>Geranium</i> and <i>Pelargonium</i> . Taylor & Francis, London	"The flowers of <i>Pelargonium</i> are arranged in an umbel-like inflorescence of one to about 50 individual flowers." ... "The style divides into five stigmas, which open after the anthers have dehisced, thus avoiding self pollination. Once the flower is fertilised, the mericarps develop and the plumed seeds are dispersed."

Qsn #	Question	Answer
	Zietsman, P. C. (1993). Pollination in <i>Pelargonium dolomiticum</i> Knuth (Geraniaceae). <i>South African Journal of Botany</i> , 59(2), 259-264	[Other taxa in genus are self-compatible] "Anthesis in the self-compatible, dichogamous flower of <i>Pelargonium dolomiticum</i> Knuth can be divided into three different phases. The male phase precedes the female phase, indicating protandry. Dichogamy is complete and asynchronous. The activity pattern of <i>Apis mellifera</i> , the pollinator of this species, does not correlate with the rewards offered by the flower but is intrinsic to the behaviour of the pollinators. In <i>P. dolomiticum</i> cross-pollination is favoured by the behavioural pattern of the honeybees." ... "Although <i>P. dolomiticum</i> is self-compatible, the binding of cross-pollinated grains is stronger than that of self-pollinated grains."

605	Requires specialist pollinators	n
	Source(s)	Notes
	Zietsman, P. C. (1993). Pollination in <i>Pelargonium dolomiticum</i> Knuth (Geraniaceae). <i>South African Journal of Botany</i> , 59(2), 259-264	[Members of genus capable of being pollinated by honeybees] "Even though honeybees may not be the most effective pollinators of the majority of <i>Pelargonium</i> species (Van der Walt et al. 1990), it is apparent that <i>A. mellifera</i> is the most important pollinator of "

606	Reproduction by vegetative fragmentation	n
	Source(s)	Notes
	Vorster, P., & van der Walt, J. J. (1983). Two new species of <i>Pelargonium</i> L'Hérit.(Geraniaceae) from South Africa. <i>South African Journal of Botany</i> , 2(1), 76-81	"A much-branched, evergreen, strongly lemon-scented shrub, up to 2 m high and 1 m in diameter. Stems herbaceous when young, woody at base, hirsute and with numerous glandular hairs." [Growth form gives no evidence of vegetative spread]
	Mbambezeli, G. & Notten, A. 2002. <i>Halleria lucida</i> L. PlantZAfrica. SANBI. http://pza.sanbi.org/pelargonium-citronellum . [Accessed 5 Mar 2018]	[No evidence of natural vegetative spread] " <i>Pelargonium citronellum</i> can be propagated from both seeds and cuttings. Cuttings can be taken at any time of the year from a healthy vigorous plant, from softwood or herbaceous growth. Using a rooting hormone powder will speed up the rooting process, especially for the softwood cuttings. Place the cuttings in river sand in cold frames and keep them damp. The cuttings should root in 2-4 weeks. Give the rooted cuttings a 2-4 week weaning period and transplant them into a well-drained potting soil mix and place them in a sunny position. When they have formed a strong root-ball they can be planted out into the garden."

607	Minimum generative time (years)	
	Source(s)	Notes
	Vorster, P., & van der Walt, J. J. (1983). Two new species of <i>Pelargonium</i> L'Hérit.(Geraniaceae) from South Africa. <i>South African Journal of Botany</i> , 2(1), 76-81	[Time to maturity unknown] "A much-branched, evergreen, strongly lemon-scented shrub, up to 2 m high and 1 m in diameter. Stems herbaceous when young, woody at base, hirsute and with numerous glandular hairs."

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	n

Qsn #	Question	Answer
	Source(s)	Notes
	Mbambezeli, G. & Notten, A. 2002. <i>Halleria lucida</i> L. PlantZAfrica. SANBI. http://pza.sanbi.org/pelargonium-citronellum . [Accessed 5 Mar 2018]	"The seed is adapted to wind dispersal — it is light in weight and has a feathered, spiral, tail-like attachment. When the seed lands and if there is sufficient water in the soil, the tail becomes like a drill, twisting the seed into the soil so that the seed can anchor itself in the ground and avoid being blown away, or carried away on moving animals." [No evidence]

702	Propagules dispersed intentionally by people	y
	Source(s)	Notes
	Mbambezeli, G. & Notten, A. 2002. <i>Halleria lucida</i> L. PlantZAfrica. SANBI. http://pza.sanbi.org/pelargonium-citronellum . [Accessed 5 Mar 2018]	"The attractive and fragrant foliage makes this species an interesting subject for the garden. It can also be grown as a culinary herb or to flavour puddings. Although the foliage is fragrant all the time, it is during the warmer weather that you'll notice it, because the citronella (lemon-scented chemical in the leaf) is volatile at high temperatures."

703	Propagules likely to disperse as a produce contaminant	n
	Source(s)	Notes
	Mbambezeli, G. & Notten, A. 2002. <i>Halleria lucida</i> L. PlantZAfrica. SANBI. http://pza.sanbi.org/pelargonium-citronellum . [Accessed 5 Mar 2018]	"The seed is adapted to wind dispersal — it is light in weight and has a feathered, spiral, tail-like attachment. When the seed lands and if there is sufficient water in the soil, the tail becomes like a drill, twisting the seed into the soil so that the seed can anchor itself in the ground and avoid being blown away, or carried away on moving animals."
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

704	Propagules adapted to wind dispersal	y
	Source(s)	Notes
	Mbambezeli, G. & Notten, A. 2002. <i>Halleria lucida</i> L. PlantZAfrica. SANBI. http://pza.sanbi.org/pelargonium-citronellum . [Accessed 1 Mar 2018]	"The seed is adapted to wind dispersal — it is light in weight and has a feathered, spiral, tail-like attachment. When the seed lands and if there is sufficient water in the soil, the tail becomes like a drill, twisting the seed into the soil so that the seed can anchor itself in the ground and avoid being blown away, or carried away on moving animals."

Qsn #	Question	Answer
705	Propagules water dispersed	
	Source(s)	Notes
	Mbambezeli, G. & Notten, A. 2002. <i>Halleria lucida</i> L. PlantZAfrica. SANBI. http://pza.sanbi.org/pelargonium-citronellum . [Accessed 5 Mar 2018]	[Wind-dispersed seeds may be secondarily dispersed by water] "It grows well near streams in well-drained soil." ... "The seed is adapted to wind dispersal — it is light in weight and has a feathered, spiral, tail-like attachment. When the seed lands and if there is sufficient water in the soil, the tail becomes like a drill, twisting the seed into the soil so that the seed can anchor itself in the ground and avoid being blown away, or carried away on moving animals."

706	Propagules bird dispersed	n
	Source(s)	Notes
	Mbambezeli, G. & Notten, A. 2002. <i>Halleria lucida</i> L. PlantZAfrica. SANBI. http://pza.sanbi.org/pelargonium-citronellum . [Accessed 5 Mar 2018]	[No evidence] "The seed is adapted to wind dispersal — it is light in weight and has a feathered, spiral, tail-like attachment. When the seed lands and if there is sufficient water in the soil, the tail becomes like a drill, twisting the seed into the soil so that the seed can anchor itself in the ground and avoid being blown away, or carried away on moving animals."

707	Propagules dispersed by other animals (externally)	n
	Source(s)	Notes
	Mbambezeli, G. & Notten, A. 2002. <i>Halleria lucida</i> L. PlantZAfrica. SANBI. http://pza.sanbi.org/pelargonium-citronellum . [Accessed 5 Mar 2018]	"The seed is adapted to wind dispersal — it is light in weight and has a feathered, spiral, tail-like attachment. When the seed lands and if there is sufficient water in the soil, the tail becomes like a drill, twisting the seed into the soil so that the seed can anchor itself in the ground and avoid being blown away, or carried away on moving animals." [Possibly, if not anchored in the soil]

708	Propagules survive passage through the gut	n
	Source(s)	Notes
	Mbambezeli, G. & Notten, A. 2002. <i>Halleria lucida</i> L. PlantZAfrica. SANBI. http://pza.sanbi.org/pelargonium-citronellum . [Accessed 5 Mar 2018]	[No evidence that seeds are consumed or internally dispersed] "The seed is adapted to wind dispersal — it is light in weight and has a feathered, spiral, tail-like attachment. When the seed lands and if there is sufficient water in the soil, the tail becomes like a drill, twisting the seed into the soil so that the seed can anchor itself in the ground and avoid being blown away, or carried away on moving animals."

801	Prolific seed production (>1000/m ²)	
	Source(s)	Notes
	Mbambezeli, G. & Notten, A. 2002. <i>Halleria lucida</i> L. PlantZAfrica. SANBI. http://pza.sanbi.org/pelargonium-citronellum . [Accessed 6 Mar 2018]	[Densities unknown] "The flowers are pink-purple with a conspicuous dark marking on the two larger upper petals, the three smaller lower petals have no markings. The plant flowers during spring and summer (August to January) and is at its best in early summer (between September and October)."

Qsn #	Question	Answer
802	Evidence that a persistent propagule bank is formed (>1 yr)	
	Source(s)	Notes
	Baskin, C.C. & Baskin, J.M. 2014. <i>Seeds Ecology, Biogeography, and Evolution of Dormancy and Germination</i> . Second Edition. Academic Press, San Francisco, CA	Unknown. <i>Pelargonium candidans</i> & <i>Pelargonium auritum</i> reported to have physical dormancy [Water-impermeability of seed or fruit coats prevents germination, and this is known as physical dormancy.]
	Royal Botanic Gardens Kew. (2018) Seed Information Database (SID). Version 7.1. Available from: http://data.kew.org/sid/ . [Accessed]	Unknown. Several <i>Pelargonium</i> species have orthodox seeds

803	Well controlled by herbicides	
	Source(s)	Notes
	WRA Specialist. 2018. Personal Communication	Unknown. No information on herbicide efficacy or chemical control of this species

804	Tolerates, or benefits from, mutilation, cultivation, or fire	
	Source(s)	Notes
	Mbambezeli, G. & Notten, A. 2002. <i>Halleria lucida</i> L. PlantZAfrica. SANBI. http://pza.sanbi.org/pelargonium-citronellum . [Accessed 5 Mar 2018]	[Unknown] " <i>Pelargonium citronellum</i> can be propagated from both seeds and cuttings. Cuttings can be taken at any time of the year from a healthy vigorous plant, from softwood or herbaceous growth. Using a rooting hormone powder will speed up the rooting process, especially for the softwood cuttings. Place the cuttings in river sand in cold frames and keep them damp. The cuttings should root in 2-4 weeks. Give the rooted cuttings a 2-4 week weaning period and transplant them into a well-drained potting soil mix and place them in a sunny position. When they have formed a strong root-ball they can be planted out into the garden."

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	Source(s)	Notes
	WRA Specialist. 2018. Personal Communication	Unknown

Summary of Risk Traits:

High Risk / Undesirable Traits

- Other *Pelargonium* species are invasive
- Tolerates shade
- Tolerates many soil types
- Hybridizes with other *Pelargonium* species
- Reproduces by seeds
- Seeds dispersed by wind, & intentionally by people
- Limited ecological information reduces accuracy of risk prediction

Low Risk Traits

- No reports of invasiveness or naturalization
- Unarmed (no spines, thorns, or burrs)
- Non-toxic
- Not reported to spread vegetatively