Taxon: Virgilia divaricata Adamson **Family:** Fabaceae

Common Name(s): blossom tree
Cape lilac
keurboom
tree-in-a-hurry

Synonym(s):

Assessor: Chuck Chimera **Status:** Assessor Approved **End Date:** 2 May 2017

WRA Score: 0.0 **Designation:** L **Rating:** Low Risk

Keywords: Fast-Growing Tree, Pioneer, N-Fixing, Dense Stands, Seed Bank

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	y
301	Naturalized beyond native range		
302	Garden/amenity/disturbance weed		
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		
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		
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		

Qsn #	Question	Answer Option	Answer
409	Is a shade tolerant plant at some stage of its life cycle		
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	y
501	Aquatic	y=5, n=0	n
502	Grass	y=1, n=0	n
503	Nitrogen fixing woody plant	y=1, n=0	y
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		
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		
704	Propagules adapted to wind dispersal	y=1, n=-1	n
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	y
801	Prolific seed production (>1000/m2)	y=1, n=-1	n
802	Evidence that a persistent propagule bank is formed (>1 yr)	y=1, n=-1	y
803	Well controlled by herbicides		
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y=1, n=-1	n
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**
	Van Wyk, B. E. (1986). A revision of the genus Virgilia (Fabaceae). South African Journal of Botany, 52(4), 347-353	No evidence of domestication

102	**Has the species become naturalized where grown?**	
	Source(s)	**Notes**
	WRA Specialist. 2017. Personal Communication	NA

103	**Does the species have weedy races?**	
	Source(s)	**Notes**
	WRA Specialist. 2017. 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. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 1 May 2017]	"Native: Africa Southern Africa: South Africa - Cape Province" [In contrast to the rest of the South Africa, most of the Western Cape experiences a maritime Mediterranean climate*, with the winter months wet and cool, the summer hot and dry.]

202	**Quality of climate match data**	**High**
	Source(s)	**Notes**
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 1 May 2017]	

Qsn #	Question	Answer
203	**Broad climate suitability (environmental versatility)**	**n**
	Source(s)	**Notes**
	Dave's Garden. 2017. Cape Lilac, Tree-in-a-Hurry - Virgilia divaricate. http://davesgarden.com/guides/pf/go/112642/. [Accessed 1 May 2017]	"Hardiness: 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. 2003. Virgilia divaricate & Virgilia oroboides. PlantZAfrica. SANBI. https://www.plantzafrica.com/planttuv/virgilia.htm. [Accessed 1 May 2017]	"V. divaricata also occurs below 1 200 m but from Klein Swartberg Mountains to George to Van Staden's Pass near Port Elizabeth in Eastern Cape."

204	**Native or naturalized in regions with tropical or subtropical climates**	**n**
	Source(s)	**Notes**
	Van Wyk, B. E. (1986). A revision of the genus Virgilia (Fabaceae). South African Journal of Botany, 52(4), 347-353	"Natural distribution Limited to the eastern part of the distribution area of the genus, from George to Port Elizabeth (Figure 2) and very frequent along the southern Cape- and Tsitsikamma coastal plain and mountains. The population at Ladismith (type locality) is rather isolated, but similar forms of the species occur in the northern (drier) localities, e.g. the Langkloof area. The species is extremely variable, and at least two other forms may be distinguished: around Baviaanskloof and Port Elizabeth (pale pink flower with dark purplish-red pollen guide) and the widespread Tsitsikamma and southern Cape form (rose-violet or violet-p'urple flower, with dark purple pollen guide)."

205	**Does the species have a history of repeated introductions outside its natural range?**	**y**
	Source(s)	**Notes**
	Mbambezeli, G. & Notten, A. 2003. Virgilia divaricate & Virgilia oroboides. PlantZAfrica. SANBI. https://www.plantzafrica.com/planttuv/virgilia.htm. [Accessed 1 May 2017]	"Keurboom trees were cultivated in England as long ago as 1767 and are grown in Australia and in the USA today where they are also known as tree-in-a-hurry or Cape lilac."
	Skolmen, R.G. 1980. Plantings on the forest reserves of Hawaii: 1910–1960. Institute of Pacific Islands Forestry, Pacific Southwest Forest & Range Experiment Station, US Forest Service, Honolulu, HI	No evidence of Virgilia divaricata plantings. 270 Virgilia capensis trees planted on Oahu between 1933-1934 [Virgilia capensis (L.) Poir. (=Virgilia oroboides (P. J. Bergius) T. M. Salter)]

301	**Naturalized beyond native range**	
	Source(s)	**Notes**
	Wagner, W.L., Herbst, D.R.& Lorence, D.H. 2017. Flora of the Hawaiian Islands. Smithsonian Institution, Washington, D.C. http://botany.si.edu/. [Accessed 1 May 2017]	No evidence to date
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	Reported as naturalized and as a weed, but investigation of sources cited are inconclusive

Qsn #	Question	Answer
302	**Garden/amenity/disturbance weed**	
	Source(s)	**Notes**
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	Reported as naturalized and as a weed, but investigation of sources cited are inconclusive

303	Agricultural/forestry/horticultural weed	n
	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	
	Source(s)	**Notes**
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	Virgilia oroboides listed as naturalized or a weed, but evidence of impacts unverified.

401	Produces spines, thorns or burrs	n
	Source(s)	**Notes**
	Van Wyk, B. E. (1986). A revision of the genus Virgilia (Fabaceae). South African Journal of Botany, 52(4), 347-353	[No evidence] "Small tree, 4- 8(-16) m tall, basal diameter of trunk up to 0,6 m. Bark smooth. Young parts glabrescent. Pinnae in (2-)7- 9(- 16) pairs, linear to narrowly ovate; glabrescent at maturity or pubescent along the abaxial midrib only; apex rounded, truncate or emarginate; mucro very small, up to 1 mm long. Stipules (2-)4- 6(-10) mm long, (0,5-)1 (- 2) mm wide."

402	Allelopathic	n
	Source(s)	**Notes**

Qsn #	Question	Answer
	Coetsee, C., & Wigley, B. J. (2013). Virgilia divaricata may facilitate forest expansion in the afrotemperate forests of the southern Cape, South Africa. Koedoe, 55(1) dx.doi.org/10.4102/ koedoe.v55i1.1128	[No evidence of allelopathy. Enhances soil fertility] "Virgilia divaricata is a fast-growing nitrogen-fixing tree species often found on the margins of forest in the southern Cape of South Africa and is particularly abundant after fire. However, V. divaricata may invade fynbos even in the absence of fire and it has been described as a forest precursor. We investigated whether V. divaricata enriches soil fertility after its invasion into fynbos areas adjacent to forests. We measured soil organic carbon and soil nutrients at four sites. At each site, three vegetation types (forest, V. divaricata and fynbos) were examined on the same soil type and at the same elevation. Our results showed that, on average, soils taken from V. divaricata stands had higher nitrogen and phosphorus values than the adjacent fynbos soils, with either lower or similar values to the adjacent forest soils. Higher soil fertility under V. divaricata, together with their shading effect, may create conditions favourable for shadeloving forest species dependent on an efficient nutrient cycle in the topsoil layers, and less favourable for shade-hating fynbos species, which are generally adapted to low soil fertility. We suggest that the restoration of the nutrient cycle found in association with forest may be accelerated under V. divaricata compared with other forest precursor species, which has important consequences for the use of V. divaricata in ecosystem restoration."

403	Parasitic	n
	Source(s)	**Notes**
	Van Wyk, B. E. (1986). A revision of the genus Virgilia (Fabaceae). South African Journal of Botany, 52(4), 347-353	"Small tree, 4- 8(-16) m tall, basal diameter of trunk up to 0,6 m." [Fabaceae. No evidence]

404	Unpalatable to grazing animals	
	Source(s)	**Notes**
	WRA Specialist. 2017. Personal Communication	Unknown

405	Toxic to animals	n
	Source(s)	**Notes**
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	No evidence
	Wagstaff, D.J. 2008. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	No evidence

406	Host for recognized pests and pathogens	
	Source(s)	**Notes**

Qsn #	Question	Answer
	Van der Colff, D., Dreyer, L. L., Valentine, A., & Roets, F. (2017). Differences in physiological responses to infection by Ceratocystis tsitsikammensis, a native ophiostomatoid pathogen, between a native forest and an exotic forestry tree in South Africa. Fungal Ecology 27(A): 107–115	"The native forest-tree pathogen Ceratocystis tsitsikammensis infects native trees (e.g. Virgilia divaricata) and Acacia mearnsii, an invasive alien and important forestry tree in South Africa. We explored the physiological effects of infection by this fungus on these two tree species, within the context of the Biotic Resistance Hypothesis (BRH). The effects of infection on physiological and resource capture parameters were measured, in conjunction with lesion length. Infected V. divaricata trees changed their N economy by relying more on soil derived N and less on biological nitrogen fixation. Infected A. mearnsii trees altered their biomass allocation into below ground investments. The species responded differently to infection, hence it was not clear which was most negatively affected. Results do support numerous studies that base tests of pathogenicity on lesion length. These results hold important conservation and economic relevance as A. mearnsii is both an invasive tree species and a forestry tree."
	Machingambi, N. (2013). An investigation into the death of native Virgilia trees in the Cape Floristic Region of South Africa. MSc Thesis. Stellenbosch University, Stellenbosch	"Virgilia oroboides subsp. ferruginea and V. divaricata from Knysna and the Tsitsikamma area often showed symptoms of rapid wilting and death. The Virgilia stems were damaged by the tunnelling larvae of the ghost moth and those of an unidentified cerambycid beetle. Galleries and the surrounding wood tissues often housed the ophiostomatoid fungi Ceratocystis tsitsikammensis and Ophiostoma plurianulatum. These seem to originate from nitidulid beetles found feeding on gum exudate. Pathogenicity trials confirmed the virulence of the undescribed Phomopsis species, the F. acuminatum-like fungus, S. commune and C. tsitsikammensis to Virgilia. All four morpho-species of bark beetles found in this study, together with phoretic mites on two of the beetle morphospecies, were only collected from dead and dying Virgilia hosts and were classified as secondary pests. Both beetle taxa and mites commonly carried spores of various Geosmithia spp. These are not pathogenic to Virgilia trees, but may be an important food source for the bark beetles, as it dominated the fungal community in galleries. The phoretic mites were unable to feed on their Geosmithia associates, but have been observed to feed on dead bark beetle larvae within galleries. This suggests that the relationship of bark beetles, mites and their associated Geosmithia species in this system is complex and in need of further study. Our results show that natural populations of Virgilia play host to numerous destructive pathogens, some of which are non-native (e.g. A. mellea) and a cause for special concern. Additionally, the isolation of the undescribed Phomopsis species and A. mellea from botanical gardens, with A. mellea now spreading to natural areas, calls for stricter control over the movement of organic material from these areas."

Qsn #	Question	Answer
407	**Causes allergies or is otherwise toxic to humans**	**n**
	Source(s)	**Notes**
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	No evidence
	Wagstaff, D.J. 2008. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	No evidence

408	**Creates a fire hazard in natural ecosystems**	
	Source(s)	**Notes**
	Goldammer, J. G. & De Ronde, C. (2004). Wildland Fire Management Handbook for Sub-Sahara Africa. Global Fire Monitoring Center	[Part of a fire prone ecosystem. Develops thick stands following fires. Unknown if dense stands increase fire risk, but development could increase fuel load] "Fires in the forest environment cause the establishment of typical layer communities. On the forest margin and even inside the forest, with large gaps or parts of the forest destroyed, pure stands of the legume tree Virgilia divaricata develop. They gradually nurse the establishment of more shade-tolerant forest species, and eventually the pioneer stand disappears, leaving a soil stored seed bank (Geldenhuys, 1994)."

409	**Is a shade tolerant plant at some stage of its life cycle**	
	Source(s)	**Notes**
	Mbambezeli, G. & Notten, A. 2003. Virgilia divaricate & Virgilia oroboides. PlantZAfrica. SANBI. https://www.plantzafrica.com/planttuv/virgilia.htm. [Accessed 1 May 2017]	"Plant the young trees into a permanent location in full sun or semi-shade."
	Kumbula Indigenous Nursery. 2017. A database of Indigenous South African Flora. Virgilia divaricata. http://kumbulanursery.co.za/plants/virgilia-divaricata. [Accessed 1 May 2017]	"Position Partial Shade Sun"
	Sun Trees. 2017. Virgilia divaricata– Cape lilac/Blossom tree – Keurboom. http://suntrees.co.za/virgilia-divaricata-cape-lilacblossom-tree-keurboom/. [Accessed 1 May 2017]	"This is an adaptable tree which will grow best in an open, sunny position with well-drained soil. The Keurboom creates shade in a short space of time and can be used as a screening tree."

410	**Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)**	**y**
	Source(s)	**Notes**
	Georgia Vines. 2017. Virgilia divaricata or Cape Lilac Tree. http://www.georgiavines.com/Seeds/shrubtreeseeds/shrubtreeseeds-v-.html. [Accessed 2 May 2017]	"Keep in full sun and tolerates a range of soil types."
	Kumbula Indigenous Nursery. 2017. A database of Indigenous South African Flora. Virgilia divaricata. http://kumbulanursery.co.za/plants/virgilia-divaricata. [Accessed 2 May 2017]	"Plant young trees in full sun or semi-shade. They need good garden soil and plenty of water, especially during the first 2 to 6 years."

Qsn #	Question	Answer
	Dave's Garden. 2017. Cape Lilac, Tree-in-a-Hurry - Virgilia divaricate. http://davesgarden.com/guides/pf/go/112642/. [Accessed 2 May 2017]	"Soil pH requirements: 5.6 to 6.0 (acidic) 6.1 to 6.5 (mildly acidic) 6.6 to 7.5 (neutral)"

411	Climbing or smothering growth habit	n
	Source(s)	**Notes**
	Van Wyk, B. E. (1986). A revision of the genus Virgilia (Fabaceae). South African Journal of Botany, 52(4), 347-353	"Small tree, 4- 8(-16) m tall, basal diameter of trunk up to 0,6 m."

412	Forms dense thickets	y
	Source(s)	**Notes**
	Goldammer, J. G. & De Ronde, C. (2004). Wildland Fire Management Handbook for Sub-Sahara Africa. Global Fire Monitoring Center	"Fires in the forest environment cause the establishment of typical layer communities. On the forest margin and even inside the forest, with large gaps or parts of the forest destroyed, pure stands of the legume tree Virgilia divaricata develop. They gradually nurse the establishment of more shade-tolerant forest species, and eventually the pioneer stand disappears, leaving a soil-stored seed bank (Geldenhuys, 1994)."
	Grubb, P. J., Bellingham, P. J., Kohyama, T. S., Piper, F. I., & Valido, A. (2013). Disturbance regimes, gap-demanding trees and seed mass related to tree height in warm temperate rain forests worldwide. Biological Reviews, 88 (3), 701-744	[Forms dense stands from seed bank after fires] "However, exceptional fires fanned by 'bergwinds' do burn into forests, as happened in 1996 and 1998, and the legume Virgilia divaricata can then form dense stands, recruited from the soil seed bank (c. 160–250 seedsm−2), much of it at depth and responding only to very high soil-surface temperatures; the other WTRF species re-establish in these stands (C.J. Geldenhuys, personal communication). The Virgilia is common at the forest-fynbos margin, but it seems likely that where the soil seed bank inside the forest is dense it results from a previous incursion of fire and subsequent dense stands of the Virgilia, perhaps >200 years earlier (Geldenhuys, 1994)."

501	Aquatic	n
	Source(s)	**Notes**
	Mbambezeli, G. & Notten, A. 2003. Virgilia divaricate & Virgilia oroboides. PlantZAfrica. SANBI. https://www.plantzafrica.com/planttuv/virgilia.htm. [Accessed 1 May 2017]	[Terrestrial] "V. divaricata also occurs below 1 200 m but from Klein Swartberg Mountains to George to Van Staden's Pass near Port Elizabeth in Eastern Cape. Both occur in forest margins, most often beside streams or on river banks but also on hillsides and thickets. V. divaricata is found in abundance in the Knysna and Plettenberg Bay area, particularly along the Keurbooms River, which takes its name from this tree."

Qsn #	Question	Answer
502	**Grass**	**n**
	Source(s)	**Notes**
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 1 May 2017]	Family: Fabaceae (alt.Leguminosae) Subfamily: Papilionoideae Tribe: Podalyrieae

503	**Nitrogen fixing woody plant**	**y**
	Source(s)	**Notes**
	Coetsee, C., & Wigley, B. J. (2013). Virgilia divaricata may facilitate forest expansion in the afrotemperate forests of the southern Cape, South Africa. Koedoe, 55(1) dx.doi.org/10.4102/ koedoe.v55i1.1128	"Virgilia divaricata is a fast-growing nitrogen-fixing tree species often found on the margins of forest in the southern Cape of South Africa and is particularly abundant after fire."
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 1 May 2017]	Family: Fabaceae (alt.Leguminosae) Subfamily: Papilionoideae Tribe: Podalyrieae

504	**Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)**	**n**
	Source(s)	**Notes**
	Van Wyk, B. E. (1986). A revision of the genus Virgilia (Fabaceae). South African Journal of Botany, 52(4), 347-353	"Small tree, 4- 8(-16) m tall, basal diameter of trunk up to 0,6 m."

601	**Evidence of substantial reproductive failure in native habitat**	**n**
	Source(s)	**Notes**
	Van Wyk, B. E. (1986). A revision of the genus Virgilia (Fabaceae). South African Journal of Botany, 52(4), 347-353	"Limited to the eastern part of the distribution area of the genus, from George to Port Elizabeth (Figure 2) and very frequent along the southern Cape- and Tsitsikamma coastal plain and mountains. The population at Ladismith (type locality) is rather isolated, but similar forms of the species occur in the northern (drier) localities, e.g. the Langkloof area. The species is extremely variable, and at least two other forms may be distinguished: around Baviaanskloof and Port Elizabeth (pale pink flower with dark purplish-red pollen guide) and the widespread Tsitsikamma and southern Cape form (rose-violet or violet-p'urple flower, with dark purple pollen guide)."
	Mbambezeli, G. & Notten, A. 2003. Virgilia divaricate & Virgilia oroboides. PlantZAfrica. SANBI. https://www.plantzafrica.com/planttuv/virgilia.htm. [Accessed 1 May 2017]	[No evidence] "V. divaricata also occurs below 1 200 m but from Klein Swartberg Mountains to George to Van Staden's Pass near Port Elizabeth in Eastern Cape. Both occur in forest margins, most often beside streams or on river banks but also on hillsides and thickets. V. divaricata is found in abundance in the Knysna and Plettenberg Bay area, particularly along the Keurbooms River, which takes its name from this tree."

Qsn #	Question	Answer
602	**Produces viable seed**	**y**
	Source(s)	**Notes**
	Van Wyk, B. E. (1986). A revision of the genus Virgilia (Fabaceae). South African Journal of Botany, 52(4), 347-353	"Pods up to 12 mm wide. Seeds small, (30-)35- 45(- 55) mg each."
	Mbambezeli, G. & Notten, A. 2003. Virgilia divaricate & Virgilia oroboides. PlantZAfrica. SANBI. https://www.plantzafrica.com/planttuv/virgilia.htm. [Accessed 1 May 2017]	"Virgilia is propagated from seed. The seed coat is hard and requires some stimulation to initiate germination. Seeds can be soaked in hot water before sowing, or the seed coat can be cracked artificially. They also respond to stimulation by fire and can be treated with the Kirstenbosch Instant Smoke Plus Seed Primer. Seed should be sown in autumn or spring, in well-drained soil at a depth of 0.5 - 1 cm and covered with the sowing medium or milled bark and then watered."

603	**Hybridizes naturally**	
	Source(s)	**Notes**
	Van Wyk, B. E. (1986). A revision of the genus Virgilia (Fabaceae). South African Journal of Botany, 52(4), 347-353	[Possibly Yes] "Virgilia oroboides subsp. ferruginea ... This taxon probably originated as a hybrid between V. oroboides subsp. oroboides and V. divaricata." ... "It is this rather intermediate group of populations that previously led to uncertainty regarding the status of the two species of Virgilia . The delimitation of the two species is further complicated by cultivated trees, which may show a confusing combination of characters, indicating that hybridization is possible when the two species are grown in close proximity."

604	**Self-compatible or apomictic**	
	Source(s)	**Notes**
	Van Wyk, B. E. (1986). A revision of the genus Virgilia (Fabaceae). South African Journal of Botany, 52(4), 347-353	[Unknown] "Inflorescence a raceme, often congested and umbel-like, all flowers opening ± simultaneously. Bracts small, acicular, linear or lanceolate, 2 - 5 x 0,5- 3 mm, falling before buds are 5 mm long. Flowers rose-violet or violet-purple (rarely pale pink but then the beak dark purple); pedicels (4-)8 - 12(- 21) mm long, velvety, bracteoles inconspicuous or absent. Nectar guide at base of vexillum prominent. Pollen guide on beak dark purple."

605	**Requires specialist pollinators**	**n**
	Source(s)	**Notes**
	Mbambezeli, G. & Notten, A. 2003. Virgilia divaricate & Virgilia oroboides. PlantZAfrica. SANBI. https://www.plantzafrica.com/planttuv/virgilia.htm. [Accessed 1 May 2017]	"The flowers of both species are rich in nectar and attract many insects and birds, such as sunbirds, carpenter bees, honey bees and ants. Also, many birds such as doves and white-eyes nest in them."

Qsn #	Question	Answer
606	**Reproduction by vegetative fragmentation**	**n**
	Source(s)	**Notes**
	Mbambezeli, G. & Notten, A. 2003. Virgilia divaricate & Virgilia oroboides. PlantZAfrica. SANBI. https://www.plantzafrica.com/planttuv/virgilia.htm. [Accessed 2 May 2017]	"Virgilia is propagated from seed." [No evidence of vegetative spread]

607	**Minimum generative time (years)**	
	Source(s)	**Notes**
	Mbambezeli, G. & Notten, A. 2003. Virgilia divaricate & Virgilia oroboides. PlantZAfrica. SANBI. https://www.plantzafrica.com/planttuv/virgilia.htm. [Accessed 2 May 2017]	"The attractive fragrant flowers and the fast growth rate make the keurboom a popular tree for the garden."

701	**Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)**	**n**
	Source(s)	**Notes**
	Geldenhuys, C. (1994). Bergwind Fires and the Location Pattern of Forest Patches in the Southern Cape Landscape, South Africa. Journal of Biogeography, 21(1), 49-62	[Not readily dispersed] "Trees of V. divaricata (Phillips 1926) and Widdringtonia schwarzii (Liickhoff 1963) are killed by fires and depend on reseeding for regeneration. All except Smelophyllum capense have dry seeds which do not appear to be readily dispersed. It is assumed that these species have evolved in this region. It is suspected that they formed part of specific vegetation units but became separated and isolated to a lesser or greater degree as a result of their poor dispersability and sensitivity to frequent fires."
	Van Wyk, B. E. (1986). A revision of the genus Virgilia (Fabaceae). South African Journal of Botany, 52(4), 347-353	[Seeds small, but otherwise lack means of external attachment] "Pods up to 12 mm wide. Seeds small, (30-)35- 45(- 55) mg each."

702	**Propagules dispersed intentionally by people**	**y**
	Source(s)	**Notes**
	Mbambezeli, G. & Notten, A. 2003. Virgilia divaricate & Virgilia oroboides. PlantZAfrica. SANBI. https://www.plantzafrica.com/planttuv/virgilia.htm. [Accessed 1 May 2017]	"Gardeners need not hesitate on the choice of tree if the keurboom is on the list; it is a beautiful tree, suitable for both the domestic garden and big landscapes. It is fast-growing, beautiful in flower and has an attractive growth form." ... "The attractive fragrant flowers and the fast growth rate make the keurboom a popular tree for the garden. Of the two, Virgilia divaricata is the better choice as its foliage is more luxuriant, and its growth more compact and it is amazingly beautiful when in full flower."
	Dave's Garden. 2017. Cape Lilac, Tree-in-a-Hurry - Virgilia divaricate. http://davesgarden.com/guides/pf/go/112642/. [Accessed 1 May 2017]	Cultivated as an ornamental

703	**Propagules likely to disperse as a produce contaminant**	

Qsn #	Question	Answer
	Source(s)	**Notes**
	Mbambezeli, G. & Notten, A. 2003. Virgilia divaricate & Virgilia oroboides. PlantZAfrica. SANBI. https://www.plantzafrica.com/planttuv/virgilia.htm. [Accessed 2 May 2017]	"Seed can also be sown in situ, e.g. for forest rehabilitation projects. The seeds are highly fertile and can remain alive for many years after they have fallen, even after as many as 30 years they will germinate if conditions are favourable." [Unlikely. No evidence, although long-lived seeds could potentially contaminate soil and become inadvertently dispersed]

704	Propagules adapted to wind dispersal	n
	Source(s)	**Notes**
	Geldenhuys, C. (1994). Bergwind Fires and the Location Pattern of Forest Patches in the Southern Cape Landscape, South Africa. Journal of Biogeography, 21(1), 49-62	[Not readily dispersed] "Trees of V. divaricata (Phillips 1926) and Widdringtonia schwarzii (Liickhoff 1963) are killed by fires and depend on reseeding for regeneration. All except Smelophyllum capense have dry seeds which do not appear to be readily dispersed. It is assumed that these species have evolved in this region. It is suspected that they formed part of specific vegetation units but became separated and isolated to a lesser or greater degree as a result of their poor dispersability and sensitivity to frequent fires."

705	Propagules water dispersed	
	Source(s)	**Notes**
	Mbambezeli, G. & Notten, A. 2003. Virgilia divaricate & Virgilia oroboides. PlantZAfrica. SANBI. https://www.plantzafrica.com/planttuv/virgilia.htm. [Accessed 1 May 2017]	"Both occur in forest margins, most often beside streams or on river banks but also on hillsides and thickets."
	Manning, J. 2007. Field Guide to Fynbos. Struik Publishers, Cape Town, South Africa	[Occurrence along streams suggests water dispersal may be possible] "Forest margins and streamsides in the southern Cape east of George, and in the Swartberg."

706	Propagules bird dispersed	n
	Source(s)	**Notes**
	Van Wyk, B. E. (1986). A revision of the genus Virgilia (Fabaceae). South African Journal of Botany, 52(4), 347-353	"Pods up to 12 mm wide. Seeds small, (30-)35- 45(- 55) mg each."
	Geldenhuys, C. J. (1997). Composition and biogeography of forest patches on the inland mountains of the southern Cape. Bothalia, 27 (1), 57-74	[No evidence] "Trees of V. divaricata (Phillips 1926) and Widdringtonia schwarzii (Liickhoff 1963) are killed by fires and depend on reseeding for regeneration. All except Smelophyllum capense have dry seeds which do not appear to be readily dispersed. It is assumed that these species have evolved in this region. It is suspected that they formed part of specific vegetation units but became separated and isolated to a lesser or greater degree as a result of their poor dispersability and sensitivity to frequent fires."

707	Propagules dispersed by other animals (externally)	n
	Source(s)	**Notes**

Qsn #	Question	Answer
	Van Wyk, B. E. (1986). A revision of the genus Virgilia (Fabaceae). South African Journal of Botany, 52(4), 347-353	"Pods up to 12 mm wide. Seeds small, (30-)35- 45(- 55) mg each." [No means of external attachment]
	Midgley, J. J., & Bond, W. J. (1995). Relative attractiveness of seeds of myrme-cochorous Australian and South African plants to ants, and the chemical basis of this attraction. South African Journal of Botany, 61(4): 230-232	[Not dispersed by ants] "We obtained oleic acid and some oleic acid derivatives (from Sigma Chemical Co., U.S.A.) and used seeds of a local non-myrmecochorous legume (Virgilia divaricata) for experimental manipulations. Seeds of this species are small enough (length 3.5 mm) to be transported by Anoplolepis. Removal rates of seeds of this species that had been soaked in oleic acid derivatives were compared with removal rates of untreated control seeds." ... "Dipping seeds of Virgilia divaricata in oleic acid and its derivatives did not enhance attractiveness (Table 4) relative to controls. Ants which encountered seeds soaked in various chemicals, did not respond in a negative (sudden retreat) or positive (move) fashion."

708	Propagules survive passage through the gut	y
	Source(s)	**Notes**
	Geldenhuys, C. J. (1997). Composition and biogeography of forest patches on the inland mountains of the southern Cape. Bothalia, 27 (1), 57-74	[Survives passage through guts of primates] "Its crossing of the gap north of the Keurbooms River towards the Kamanassie can perhaps be explained by dispersal of the resistant seeds by primates, particularly the baboon (Papio ursinus) and Vervet monkey (Cercopithecus aethiops). Both these primates have been seen in stands of Acacia karroo and the alien wattle A. mearnsii which have seeds very similar to V. divaricata. Seeds of V. divaricata have been found in the faeces of the baboon in the coastal mountains."

801	Prolific seed production (>1000/m2)	n
	Source(s)	**Notes**
	Grubb, P. J., Bellingham, P. J., Kohyama, T. S., Piper, F. I., & Valido, A. (2013). Disturbance regimes, gap-demanding trees and seed mass related to tree height in warm temperate rain forests worldwide. Biological Reviews, 88 (3), 701-744	"exceptional fires fanned by 'bergwinds' do burn into forests, as happened in 1996 and 1998, and the legume Virgilia divaricata can then form dense stands, recruited from the soil seed bank (c. 160–250 seeds m-2),"
	Geldenhuys, C. (1994). Bergwind Fires and the Location Pattern of Forest Patches in the Southern Cape Landscape, South Africa. Journal of Biogeography, 21(1), 49-62	"In the regrowth forest charcoal (one to seventy five pieces per 0.135 m2) and seeds (318 seeds/m2; CV = 61.6%) of the pioneer legume tree Virgilia divaricata Adamson are present in all the soil samples taken from the upper 5 cm of the soil"

802	Evidence that a persistent propagule bank is formed (>1 yr)	y
	Source(s)	**Notes**
	Geldenhuys, C. (1994). Bergwind Fires and the Location Pattern of Forest Patches in the Southern Cape Landscape, South Africa. Journal of Biogeography, 21(1), 49-62	"Most of the forest canopy species can recover from fire by root, stem, or crown coppices (unpublished data). How- ever, the two Podocarpus species cannot coppice and are killed by fire. The age of the older Podocarpus trees therefore provide a reliable estimate of the minimum period since the fire, i.e at least 230 years. This suggest that the age of the viable V. divaricata seed is about the same."

Qsn #	Question	Answer
	Mbambezeli, G. & Notten, A. 2003. Virgilia divaricate & Virgilia oroboides. PlantZAfrica. SANBI. https://www.plantzafrica.com/planttuv/virgilia.htm. [Accessed 1 May 2017]	"Seed can also be sown in situ, e.g. for forest rehabilitation projects. The seeds are highly fertile and can remain alive for many years after they have fallen, even after as many as 30 years they will germinate if conditions are favourable. "

803	Well controlled by herbicides	
	Source(s)	**Notes**
	WRA Specialist. 2017. Personal Communication	Unknown. No information on herbicide efficacy or chemical control of this species

804	Tolerates, or benefits from, mutilation, cultivation, or fire	n
	Source(s)	**Notes**
	Geldenhuys, C. J. (1997). Composition and biogeography of forest patches on the inland mountains of the southern Cape. Bothalia, 27 (1), 57-74	"Trees of V. divaricata (Phillips 1926) and Widdringtonia schwarzii (Liickhoff 1963) are killed by fires and depend on reseeding for regeneration. All except Smelophyllum capense have dry seeds which do not appear to be readily dispersed. It is assumed that these species have evolved in this region. It is suspected that they formed part of specific vegetation units but became separated and isolated to a lesser or greater degree as a result of their poor dispersability and sensitivity to frequent fires."

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	Source(s)	**Notes**
	WRA Specialist. 2017. Personal Communication	Unknown

Summary of Risk Traits:

High Risk / Undesirable Traits
• Grows in maritime, Mediterranean climates
• Reported to be naturalized and/or a weed but evidence is inconclusive
• From fire-prone ecosystem. May increase fire risk in introduced range.
• Tolerates many soil types
• Forms dense stands (following fires) in native range
• N-Fixing tree (may alter soil chemistry & facilitate invasion of other plants)
• Reproduces by seeds
• Seeds dispersed by gravity, internally by primates, people & possibly by water
• Seeds form a persistent, long-lived seed bank (up to 230 years)

Low Risk Traits
• Unarmed (no spines, thorns, or burrs)
• Non-toxic
• Ornamental
• Not reported to spread vegetatively
• Seeds with limited dispersal ability