

**Family:** *Amaryllidaceae*

**Taxon:** *Tulbaghia violacea*

**Synonym:** *Omentaria violacea* (Harv.) Kuntze  
*Omentaria cepacea* (L.f.) Salisb. [Invalid]  
*Tulbaghia cepacea* auct.

**Common Name:**  
 sweet garlic  
 society garlic  
 pink agapanthus

**Questionnaire :** current 20090513      **Assessor:** Assessor      **Designation: L**  
**Status:** Assessor Approved      **Data Entry Person:** Assessor      **WRA Score 4**

|     |   |  |              |
|-----|---|--|--------------|
| 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)   | 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   | y = 1*multiplier (see Appendix 2), n= question 205 | y            |
| 302 | Garden/amenity/disturbance weed   | n=0, y = 1*multiplier (see Appendix 2)             | n            |
| 303 | Agricultural/forestry/horticultural weed  | n=0, y = 2*multiplier (see Appendix 2)             | n            |
| 304 | Environmental weed  | n=0, y = 2*multiplier (see Appendix 2)             | n            |
| 305 | Congeneric weed   | n=0, y = 1*multiplier (see Appendix 2)             | n            |
| 401 | Produces spines, thorns or burrs  | y=1, n=0   | n            |
| 402 | Allelopathic  | y=1, n=0   |              |
| 403 | Parasitic   | y=1, n=0   | n            |
| 404 | Unpalatable to grazing animals  | y=1, n=-1  | 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   | n            |
| 410 | Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)  | y=1, n=0   | y            |

|     |  |   |   |
|-----|--|---|---|
| 411 | Climbing or smothering growth habit  | y=1, n=0                                    | n |
| 412 | Forms dense thickets   | y=1, n=0                                    |   |
| 501 | Aquatic  | y=5, n=0                                    | n |
| 502 | Grass  | y=1, n=0                                    | n |
| 503 | Nitrogen fixing woody plant  | y=1, n=0                                    | n |
| 504 | Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)               | y=1, n=0                                    | y |
| 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                                   | n |
| 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                                   | y |
| 607 | Minimum generative time (years)  | 1 year = 1, 2 or 3 years = 0, 4+ years = -1 | 2 |
| 701 | Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas) | y=1, n=-1                                   |   |
| 702 | Propagules dispersed intentionally by people   | y=1, n=-1                                   | y |
| 703 | Propagules likely to disperse as a produce contaminant   | y=1, n=-1                                   | n |
| 704 | Propagules adapted to wind dispersal   | y=1, n=-1                                   | n |
| 705 | Propagules water dispersed   | y=1, n=-1                                   | y |
| 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                                   |   |
| 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: L

WRA Score 4

## Supporting Data:

|     |  |  |
|-----|--|--|
| 101 | 2000. Vosa, C.G.. A revised cytotaxonomy of the genus <i>Tulbaghia</i> . <i>Caryologia</i> . 53: 83-112.   | [Is the species highly domesticated? No] "All the populations of <i>Tulbaghia violacea</i> , object of the present study, show a kind of uninterrupted variability and include a number of forms which reasonably might be given the rank of varieties. However, field experience and careful observations during a number of flowering seasons, all over the range of the species and also on cultivated plants, have shown that considerable differences exist even between plants of the same population. Such differences include, besides the dimension of the plants, also the size of the flowers and the length and shape of the lobes of the corona." |
| 102 | 2013. WRA Specialist. Personal Communication.  | NA   |
| 103 | 2013. WRA Specialist. Personal Communication.  | NA   |
| 201 | 2005. Burke, D.. The complete Burke's backyard: the ultimate book of fact sheets. Murdoch Books, Millers Point, Australia  | [Species suited to tropical or subtropical climate(s) 1-intermediate] "A native of South Africa, this plant will grow in all but the hottest, tropical parts of Australia (such as far north Queensland and the north of the Northern Territory)."   |
| 201 | 2013. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). <a href="http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl">http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl</a>   | [Species suited to tropical or subtropical climate(s) 1-intermediate] "Native: AFRICA. Southern Africa: South Africa - Cape Province, KwaZulu-Natal"   |
| 202 | 2013. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). <a href="http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl">http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl</a>   | [Garden/amenity/disturbance weed 2-High]   |
| 203 | 2013. Missouri Botanical Gardens. <i>Tulbaghia violacea</i> . <a href="http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/c559/tulbaghia-violacea.aspx">http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/c559/tulbaghia-violacea.aspx</a> [Accessed 12 May 2013] | [Broad climate suitability (environmental versatility)? No] "Zone: 7 to 10"  |
| 204 | 2013. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). <a href="http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl">http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl</a>   | [Native or naturalized in regions with tropical or subtropical climates? No] "Native: AFRICA. Southern Africa: South Africa - Cape Province, KwaZulu-Natal"  |
| 205 | 2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia  | [Does the species have a history of repeated introductions outside its natural range? Yes]   |
| 301 | 2000. Allan Herbarium. Ngā Tipu o Aotearoa - New Zealand Plant Names Database. Landcare Research, New Zealand <a href="http://nzflora.landcareresearch.co.nz/">http://nzflora.landcareresearch.co.nz/</a>  | [Naturalized beyond native range? Yes] "New Zealand (Political Region): Wild, Exotic (Fully naturalised)"  |
| 301 | 2003. Smith, S./Stansbie, J.. Flora of Tropical East Africa - Alliaceae. A.A. Balkema, Rotterdam, Netherlands  | [Naturalized beyond native range?] "This is a cultivated plant that may have become naturalised: 2100 m"   |
| 301 | 2010. Marco, A./Lavergne, S./Dutoit, T./Bertaudiere-Montes, V.. From the backyard to the backcountry: how ecological and biological traits explain the escape of garden plants into Mediterranean old fields. <i>Biological Invasions</i> . 12: 761–779.   | [Naturalized beyond native range?] "Table 5 List of the perennial alien plant species escaped (=1) and not escaped (=0) in abandoned agricultural lands of Lauris village" [ <i>Tulbaghia violacea</i> = 0 (not escaped)]  |
| 301 | 2011. Richardson, F.J./Richardson, R.G./Shepherd, R.C.H.. Weeds of the South-East: An Identification Guide for Australia. Second Edition. RG and FJ Richardson, Victoria, Australia  | [Naturalized beyond native range?] "An occasional garden escape."  |
| 302 | 2011. Richardson, F.J./Richardson, R.G./Shepherd, R.C.H.. Weeds of the South-East: An Identification Guide for Australia. Second Edition. RG and FJ Richardson, Victoria, Australia  | [Garden/amenity/disturbance weed? No] "An occasional garden escape." [No evidence that this garden escape is undesirable or considered a weed]   |
| 303 | 2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia  | [Agricultural/forestry/horticultural weed? No] No evidence   |
| 304 | 2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia  | [Environmental weed? No] No evidence   |

|     |  |  |
|-----|--|--|
| 305 | 2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia  | [Congeneric weed? No] <i>Tulbaghia natalensis</i> listed as a Cultivation Escape   |
| 401 | 2003. Smith, S./Stansbie, J.. Flora of Tropical East Africa - Alliaceae. A.A. Balkema, Rotterdam, Netherlands  | [Produces spines, thorns or burrs? No] "Plant to 70 cm high. Rootstock a corm with rhizomatous base, ovoid, 1.5-2.7 cm long, 1-1.5 cm in diameter. Leaves 8-10. linear, 17-50 cm long, 0.35--0.7 cm wide, apex obtuse, base sheathing. Scape 39-70 cm long."   |
| 402 | 2002. Shiraishi, S./Watanabe, I./Kuno, K./Fujii, Y.. Allelopathic activity of leaching from dry leaves and exudate from roots of ground cover plants assayed on agar. Weed Biology and Management. 2(3): 133-142.  | [Allelopathic? Possibly] "Table 1. Radicle and hypocotyl elongation of lettuce grown on agar gel containing cover plants leaves tested by the Sandwich Method." [Tulbaghia violacea extracts reduce radicle and hypocotyl elongation of lettuce in field trials]   |
| 403 | 2013. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). <a href="http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl">http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl</a>   | [Parasitic? No] Amaryllidaceae   |
| 404 | 1999. Main, M.B./Schaefer, J./Allen, G.M.. Ornamental plant susceptibility to damage by deer in Florida. WEC138. University of Florida, IFAS, Gainesville, FL <a href="http://edis.ifas.ufl.edu">http://edis.ifas.ufl.edu</a>  | [Unpalatable to grazing animals? Yes] "Table 3. Vines & Ground Cover listed by susceptibility to damage from deer in Florida" [T. violacea = Rare or Minor Damage. Comments = Resistant]   |
| 404 | 2010. Wade, G.L./Mengak, M.T.. Deer-Tolerant Ornamental Plants. Circular 985. University of Georgia Cooperative Extension, Athens, Georgia   | [Unpalatable to grazing animals? Yes] "Herbaceous Perennials and Bulbs Deer Rarely Browse" [Includes T. violacea]  |
| 405 | 2008. Wagstaff, D.J.. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL   | [Toxic to animals? No] No evidence   |
| 406 | 2004. South African National Biodiversity Institute. PlantzAfrica.com - Tulbaghia violacea. <a href="http://www.plantzafrika.com/planttuv/tulbaghviol.htm">http://www.plantzafrika.com/planttuv/tulbaghviol.htm</a> [Accessed 10 May 2013]   | [Host for recognized pests and pathogens? No] "Tulbaghias seldom fall prey to pests and diseases, but slugs and snails can cause considerable damage to the foliage."  |
| 406 | 2013. Missouri Botanical Gardens. Tulbaghia violacea. <a href="http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/c559/tulbaghia-violacea.aspx">http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/c559/tulbaghia-violacea.aspx</a> [Accessed 12 May 2013] | [Host for recognized pests and pathogens? No] "No serious insect or disease problem. Slugs and snails may damage the foliage."   |
| 407 | 2004. South African National Biodiversity Institute. PlantzAfrica.com - Tulbaghia violacea. <a href="http://www.plantzafrika.com/planttuv/tulbaghviol.htm">http://www.plantzafrika.com/planttuv/tulbaghviol.htm</a> [Accessed 10 May 2013]   | [Causes allergies or is otherwise toxic to humans? No] "This attractive plant is ideal for the herb garden, as both the leaves and flowers can be used in salads and other dishes. The crushed leaves may be used to help cure sinus headaches and to discourage moles from the garden (by their strong smell). The smell repels fleas, ticks and mosquitoes when crushed on the skin."  |
| 407 | 2008. Wagstaff, D.J.. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL   | [Causes allergies or is otherwise toxic to humans? No] No evidence   |
| 407 | 2013. Floridata. Tulbaghia violacea. <a href="http://www.floridata.com/ref/t/tulb_vio.cfm">http://www.floridata.com/ref/t/tulb_vio.cfm</a> [Accessed 12 May 2013]  | [Causes allergies or is otherwise toxic to humans? No] "The bulbs and leaves are edible and can be used like garlic and garlic chives. It is reported that society garlic, planted in a row or border, will deter moles. "   |
| 408 | 2003. Behm, A.L.. Flammability of native understory species in pine flatwood and hardwood hammock ecosystems. MSc Thesis. University of Florida, Gainesville, FL   | [Creates a fire hazard in natural ecosystems? No] "Table 1-1. Common and scientific names of plants listed as appropriate for firewise landscaping according to two extension publications in Florida." [Includes T. violacea]   |
| 408 | 2007. Skelly, J./Smith, E.. Choosing the Right Plants for Northern Nevada's High Fire Hazard Areas. University of Nevada Cooperative Extension, Reno, NV   | [Creates a fire hazard in natural ecosystems? No] "Home survival during wildfire is greatly influenced by the characteristics of the vegetation growing adjacent to the house. Consequently, the selection and maintenance of plants in the residential landscape should be an important consideration for Nevadans living in high fire hazard areas. Ideally, the area within at least 30 feet of the house should emphasize landscape plants that are difficult to ignite by burning embers, and if ignited, do not produce sufficient heat to ignite the house. These plants should be routinely maintained to keep them healthy, vigorous, and free of the dead material." [T. violacea among the plants recommended to reduce fire risk to homes] |
| 409 | 2011. The Royal Horticultural Society. Tulbaghia violacea. <a href="http://apps.rhs.org.uk/plantselector/plant?plantid=1959">http://apps.rhs.org.uk/plantselector/plant?plantid=1959</a> [Accessed 10 May 2013]  | [Is a shade tolerant plant at some stage of its life cycle? No] "Sunlight - Full Sun"  |

|     |  |   |
|-----|--|---|
| 409 | 2013. Plants for a Future Database. Tulbaghia violacea. <a href="http://www.pfaf.org/user/Plant.aspx?LatinName=Tulbaghia+violacea">http://www.pfaf.org/user/Plant.aspx?LatinName=Tulbaghia+violacea</a> [Accessed 12 May 2013]             | [Is a shade tolerant plant at some stage of its life cycle? No] "It cannot grow in the shade."  |
| 410 | 2004. South African National Biodiversity Institute. PlantzAfrica.com - Tulbaghia violacea. <a href="http://www.plantzafrika.com/planttuv/tulbaghviol.htm">http://www.plantzafrika.com/planttuv/tulbaghviol.htm</a> [Accessed 10 May 2013] | [Tolerates a wide range of soil conditions? Yes] "Tulbaghia violacea grows very easily in most soils. It can be used as an edging plant, along a pathway, are displayed to great advantage in a rockery and can also be mass planted to form a groundcover, in sunny or partially shaded positions. It thrives in well-drained soil containing plenty of compost."  |
| 411 | 2003. Smith, S./Stansbie, J.. Flora of Tropical East Africa - Alliaceae. A.A. Balkema, Rotterdam, Netherlands  | [Climbing or smothering growth habit? No] "Plant to 70 cm high. Rootstock a corm with rhizomatous base, ovoid, 1.5-2.7 cm long, 1 1.5 cm in diameter."  |
| 412 | 2000. Vosa, C.G.. A revised cytotaxonomy of the genus Tulbaghia. Caryologia. 53: 83-112.   | [Forms dense thickets? Possibly] "In optimal conditions, all the species with highly coloured or white flower, such a T. violacea, T. cominsii, T. natalensis and T. coddii, occur often in dense populations especially along water courses or in vleis..."  |
| 501 | 2013. Floridata. Tulbaghia violacea. <a href="http://www.floridata.com/ref/t/tulb_vio.cfm">http://www.floridata.com/ref/t/tulb_vio.cfm</a> [Accessed 12 May 2013]  | [Aquatic? No] "Society garlic is native to Natal, Transvaal and the eastern Cape region in South Africa where it grows in rocky grasslands."  |
| 502 | 2013. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). <a href="http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl">http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl</a>                   | [Grass? No] Amaryllidaceae  |
| 503 | 2013. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). <a href="http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl">http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl</a>                   | [Nitrogen fixing woody plant? No] Amaryllidaceae  |
| 504 | 2003. Smith, S./Stansbie, J.. Flora of Tropical East Africa - Alliaceae. A.A. Balkema, Rotterdam, Netherlands  | [Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? Yes] "Plant to 70 cm high. Rootstock a corm with rhizomatous base, ovoid, 1.5-2.7 cm long, 1 1.5 cm in diameter."  |
| 601 | 2004. South African National Biodiversity Institute. PlantzAfrica.com - Tulbaghia violacea. <a href="http://www.plantzafrika.com/planttuv/tulbaghviol.htm">http://www.plantzafrika.com/planttuv/tulbaghviol.htm</a> [Accessed 10 May 2013] | [Evidence of substantial reproductive failure in native habitat? No] No evidence  |
| 602 | 2004. South African National Biodiversity Institute. PlantzAfrica.com - Tulbaghia violacea. <a href="http://www.plantzafrika.com/planttuv/tulbaghviol.htm">http://www.plantzafrika.com/planttuv/tulbaghviol.htm</a> [Accessed 10 May 2013] | [Produces viable seed? Yes] "The fruit, triangular capsules, are grouped into a head, and when ripe they split to release the flattened, hard black seeds." ... "Propagate from seed or by dividing larger clumps. The hard black seeds are best sown in spring in deep seed trays and can be planted out during their second year. Once the clumps that have been divided are planted, they should be left undisturbed for as long as possible." |
| 603 | 2000. Vosa, C.G.. A revised cytotaxonomy of the genus Tulbaghia. Caryologia. 53: 83-112.   | [Hybridizes naturally? No] No evidence of natural hybrids reported from genus   |
| 604 | 2000. Vosa, C.G.. A revised cytotaxonomy of the genus Tulbaghia. Caryologia. 53: 83-112.   | [Self-compatible or apomictic? Yes] "All the collections are very similar to one another and self-fertile."   |
| 605 | 2004. South African National Biodiversity Institute. PlantzAfrica.com - Tulbaghia violacea. <a href="http://www.plantzafrika.com/planttuv/tulbaghviol.htm">http://www.plantzafrika.com/planttuv/tulbaghviol.htm</a> [Accessed 10 May 2013] | [Requires specialist pollinators? No] "Most of the species of Tulbaghia are adapted for moth pollination and have dull flowers that become sweetly scented at night. T. violacea seems likely to be pollinated by butterflies and bees as they are scented during the day."   |
| 606 | 2004. South African National Biodiversity Institute. PlantzAfrica.com - Tulbaghia violacea. <a href="http://www.plantzafrika.com/planttuv/tulbaghviol.htm">http://www.plantzafrika.com/planttuv/tulbaghviol.htm</a> [Accessed 10 May 2013] | [Reproduction by vegetative fragmentation? Yes] "Tulbaghia violacea is a fast-growing, bulbous plant that reaches a height of 0.5 m. The leaves are long, narrow, strap-like, slightly fleshy and smell strongly of garlic when bruised. They grow from fat, tuberous roots which spread to form clumps of plants."   |
| 606 | 2013. Floridata. Tulbaghia violacea. <a href="http://www.floridata.com/ref/t/tulb_vio.cfm">http://www.floridata.com/ref/t/tulb_vio.cfm</a> [Accessed 12 May 2013]  | [Reproduction by vegetative fragmentation? Yes] "This is a perennial that will spread slowly by its rhizomes, but will not become aggressive."  |
| 607 | 2004. South African National Biodiversity Institute. PlantzAfrica.com - Tulbaghia violacea. <a href="http://www.plantzafrika.com/planttuv/tulbaghviol.htm">http://www.plantzafrika.com/planttuv/tulbaghviol.htm</a> [Accessed 10 May 2013] | [Minimum generative time (years)? 2-3] "First flowering can generally be expected in the second or third year."   |
| 701 | 2013. WRA Specialist. Personal Communication.  | [Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)? Unknown] Fairly small seeds could be inadvertently dispersed if moved in soil stuck to boots, tires or fur of animals  |

|     |  |   |
|-----|--|---|
| 702 | 2013. Missouri Botanical Gardens. <i>Tulbaghia violacea</i> .<br><a href="http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/c559/tulbaghia-violacea.aspx">http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/c559/tulbaghia-violacea.aspx</a><br>[Accessed 12 May 2013] | [Propagules dispersed intentionally by people? Yes] "Garden Uses - Rock gardens. Sunny borders. Herb gardens. Edging. Containers."  |
| 703 | 2013. WRA Specialist. Personal Communication.  | [Propagules likely to disperse as a produce contaminant? No] No evidence  |
| 704 | 1998. Kubitzki, K. (ed.). The Families and genera of vascular plants. Volume IV. Flowering plants, Monocotyledons: Alismatanae and Commelinanae (except Gramineae). Springer-Verlag, Berlin, Heidelberg, New York  | [Propagules adapted to wind dispersal? No] "The fruit is a loculicidal capsule, with 2-several seeds in each of the 3 locules. Seeds are flat and elongate with a straight embryo in <i>Tulbaghia</i> ." [Seeds presumably drop to ground and are carried short distances by water. See Vosa (2003)]  |
| 705 | 2003. Vosa, C.G.. On the ecological significance of seed-coat patterns in the genus <i>Tulbaghia</i> (Alliaceae). <i>Caryologia</i> . 56(2): 139-141.  | [Propagules water dispersed? Yes. However, seeds take up water quickly and don't float as far as other species] "... <i>T. violacea</i> which has a type A seed-coat patterns and it is found in dry bush veld over quite a large area of the Eastern Cape region. The permeability experiments have been made on large samples of seeds from 5 to 10 plants of each species. The results show that type A seeds take up water rather quickly and, in fact, sink in a short time and that type B seeds tend to float usually for a few hours before sinking while type C seeds behave in an intermediate way, taking up water more slowly than type A seeds (Table 1)." ... "The areas inhabited by most of the type A species, with the exception of <i>T. capensis</i> , receive their rain usually in the way of heavy showers, interrupted by longish spells of hot and dry weather during the summer. Since the ground dries up in a short time between the showers, it is perhaps indispensable for the seed to take up water as quickly as possible to ensure successful germination." |
| 706 | 2004. South African National Biodiversity Institute. PlantzAfrica.com - <i>Tulbaghia violacea</i> .<br><a href="http://www.plantzafrika.com/plantuv/tulbaghviol.htm">http://www.plantzafrika.com/plantuv/tulbaghviol.htm</a><br>[Accessed 10 May 2013]   | [Propagules bird dispersed? No] "The fruit, triangular capsules, are grouped into a head, and when ripe they split to release the flattened, hard black seeds." [Not fleshy-fruited]  |
| 707 | 2013. WRA Specialist. Personal Communication.  | [Propagules dispersed by other animals (externally)? No] Unlikely, as seeds lack means of external attachment.  |
| 708 | 2013. WRA Specialist. Personal Communication.  | [Propagules survive passage through the gut? Unknown] Unlikely to be consumed or internally dispersed.  |
| 801 | 2013. WRA Specialist. Personal Communication.  | [Prolific seed production (>1000/m <sup>2</sup> )? Unknown]   |
| 802 | 2008. Royal Botanic Gardens Kew. Seed Information Database (SID). Version 7.1.<br><a href="http://data.kew.org/sid/">http://data.kew.org/sid/</a>  | [Evidence that a persistent propagule bank is formed (>1 yr)? Unknown] "Storage Behaviour: Orthodox p Storage Conditions: 75% viability following drying to mc's in equilibrium with 15% RH and freezing for 2 months at -20°C at RBG Kew, WP" [Orthodox seeds, but longevity in field conditions unknown]  |
| 803 | 2013. WRA Specialist. Personal Communication.  | [Well controlled by herbicides? Unknown] No information on herbicide efficacy or chemical control of this species   |
| 804 | 2003. Smith, S./Stansbie, J.. Flora of Tropical East Africa - Alliaceae. A.A. Balkema, Rotterdam, Netherlands  | [Tolerates, or benefits from, mutilation, cultivation, or fire? Unknown] "Plant to 70 cm high. Rootstock a corm with rhizomatous base, ovoid, 1.5-2.7 cm long, 1 1.5 cm in diameter." [Corms and rhizomes may enable plant to tolerate repeated cutting, or fires]  |
| 805 | 2013. WRA Specialist. Personal Communication.  | [Effective natural enemies present locally (e.g. introduced biocontrol agents)? Unknown]  |

## **Summary of Risk Traits**

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

- Naturalized in New Zealand and escaped in Australia
- Unpalatable to deer (could provide a competitive advantage against more palatable species)
- Tolerates many soil conditions (and potentially able to exploit many different habitat types)
- A geophyte that can resprout from corms and spread vegetatively by rhizomes
- Self-compatible
- Reaches maturity in 2-3 years
- Seeds dispersed by water

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

- Despite ability to spread, no negative impacts have been documented
- Non-toxic
- Edible
- Require full sun to thrive and flower
- Used ornamentally