Taxon: Strophanthus amboensis (Schinz) Engl. & Pax **Family:** Apocynaceae

Common Name(s): elephant vine
knob-stemmed poisonrope

Synonym(s): Strophanthus gossweileri H. Hess
Strophanthus hirsutus H. Hess
Strophanthus intermedius Pax
Strophanthus longicalyx H. Hess
Strophanthus paxii H. Hess
Strophanthus schuchardtii Pax

Assessor: Chuck Chimera **Status:** Assessor Approved **End Date:** 4 Sep 2019

WRA Score: 1.0 **Designation:** EVALUATE **Rating:** Evaluate

Keywords: Shrub/Liana, Tropical, Toxic, Full Sun, 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)	High
202	Quality of climate match data	(0-low; 1-intermediate; 2-high) (See Appendix 2)	High
203	Broad climate suitability (environmental versatility)	y=1, n=0	n
204	Native or naturalized in regions with tropical or subtropical climates	y=1, n=0	y
205	Does the species have a history of repeated introductions outside its natural range?	y=-2, ?=-1, n=0	n
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		
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	y
406	Host for recognized pests and pathogens		

Qsn #	Question	Answer Option	Answer
407	Causes allergies or is otherwise toxic to humans	y=1, n=0	y
408	Creates a fire hazard in natural ecosystems		
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	y
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		
604	Self-compatible or apomictic		
605	Requires specialist pollinators		
606	Reproduction by vegetative fragmentation	y=1, n=-1	n
607	Minimum generative time (years)	1 year = 1, 2 or 3 years = 0, 4+ years = -1	>3
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**
	de Ruijter, A. (2006). Strophanthus amboensis (Schinz) Engl. & Pax. [Internet] Record from PROTA4U. Schmelzer, G.H. & Gurib-Fakim, A. (Editors). PROTA (Plant Resources of Tropical Africa, Wageningen, Netherlands. http://www.prota4u.org/search.asp. [Accessed 30 Aug 2019]	[No evidence of domestication] "Uses: In Angola a decoction of the roots or leaves of Strophanthus amboensis is taken against rheumatism. The Luvale people use an enema of the root to treat venereal diseases. The Luchazi people mix the pounded root with oil and apply the ointment to treat scabies. In Namibia the seeds are used in the preparation of arrow poison."

102	Has the species become naturalized where grown?	
	Source(s)	**Notes**
	WRA Specialist. (2019). Personal Communication	NA

103	Does the species have weedy races?	
	Source(s)	**Notes**
	WRA Specialist. (2019). 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"	High
	Source(s)	**Notes**
	USDA, ARS, Germplasm Resources Information Network. 2019. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 30 Aug 2019]	"Native Africa WEST-CENTRAL TROPICAL AFRICA: Democratic Republic of the Congo SOUTH TROPICAL AFRICA: Angola SOUTHERN AFRICA: Namibia"
	de Ruijter, A. (2006). Strophanthus amboensis (Schinz) Engl. & Pax. [Internet] Record from PROTA4U. Schmelzer, G.H. & Gurib-Fakim, A. (Editors). PROTA (Plant Resources of Tropical Africa, Wageningen, Netherlands. http://www.prota4u.org/search.asp. [Accessed 30 Aug 2019]	"Origin and geographic distribution: Strophanthus amboensis occurs from western DR Congo to Angola and Namibia."

202	Quality of climate match data	High
	Source(s)	**Notes**
	USDA, ARS, Germplasm Resources Information Network. 2019. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 30 Aug 2019]	

203	Broad climate suitability (environmental versatility)	n

Qsn #	Question	Answer
	Source(s)	**Notes**
	Bruyns, P. V. (2014). The Apocynaceae of Namibia. Strelitzia 34. South African National Biodiversity Institute, Pretoria	"Habitat: Rocky hillsides in woodland, 800–1 600 m." … "Distribution: Namibia to the Democratic Republic of the Congo."
	Bester, S. P. (2018). Strophanthus amboensis. PlantZAfrica. SANBI. http://pza.sanbi.org/strophanthus-amboensis. [Accessed 30 Aug 2019]	"Horticultural zones: Zone 1 Coastal summer rainfall, frost free Zone 4 Summer rainfall Karoo and Highveld, Frost in winter Zone 5 Bushveld summer rainfall, Light frost"

204	**Native or naturalized in regions with tropical or subtropical climates**	**y**
	Source(s)	**Notes**
	Omino, E. (2001). Apocynaceae (part 1). CRC Press. Boca Raton, FL	"A glabrous liana from Angola."
	Bruyns, P. V. (2014). The Apocynaceae of Namibia. Strelitzia 34. South African National Biodiversity Institute, Pretoria	"Distribution: Namibia to the Democratic Republic of the Congo."
	USDA, ARS, Germplasm Resources Information Network. 2019. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed]	"Native Africa WEST-CENTRAL TROPICAL AFRICA: Democratic Republic of the Congo SOUTH TROPICAL AFRICA: Angola SOUTHERN AFRICA: Namibia"

205	**Does the species have a history of repeated introductions outside its natural range?**	**n**
	Source(s)	**Notes**
	de Ruijter, A. (2006). Strophanthus amboensis (Schinz) Engl. & Pax. [Internet] Record from PROTA4U. Schmelzer, G.H. & Gurib-Fakim, A. (Editors). PROTA (Plant Resources of Tropical Africa, Wageningen, Netherlands. http://www.prota4u.org/search.asp. [Accessed 2 Sep 2019]	[Used within native range. No evidence of repeated introduction outside native range] "In Angola a decoction of the roots or leaves of Strophanthus amboensis is taken against rheumatism. The Luvale people use an enema of the root to treat venereal diseases. The Luchazi people mix the pounded root with oil and apply the ointment to treat scabies. In Namibia the seeds are used in the preparation of arrow poison."
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

301	**Naturalized beyond native range**	**n**
	Source(s)	**Notes**
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence
	Wagner, W.L., Herbst, D.R.& Lorence, D.H. (2019). Flora of the Hawaiian Islands. Smithsonian Institution, Washington, D.C. http://botany.si.edu/. [Accessed 2 Sep 2019]	No evidence to date

302	**Garden/amenity/disturbance weed**	**n**

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

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**
	Mulvaney, M. J. (1991). Far from the Garden Path: An Identikit Picture of Woody Ornamanetal Plants Invading South-Eastern Australian Bushland. PhD Dissertation. Dept. Australian National University, Canberra ACT	"Appendix 7: Plant Attributes and the Invasive Species Model Score" [Strophanthus speciosus classified as 0 = Non-intrusive]
	Essandoh, P. K., Armah, F. A., Odoi, J. O., Yawson, D. O., & Afrifa, E. K. (2011). Floristic composition and abundance of weeds in an oil palm plantation in Ghana. ARPN Journal of Agricultural and Biological Science, 6(1), 20-31	"Table-4. Floristic composition of weeds in the oil palm plantation near Assin Edubiase." [Inclludes Strophantus gratus. Impacts unspecified]
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	[Possibly, but impacts, if any, in cited references unspecified] Strophanthus boivinii - N - Naturalised Strophanthus gratus - W - Weed (but see Essandoh et al. 2011) Strophanthus hispidus - N - Naturalised Strophanthus sarmentosus - N - Naturalised Strophanthus speciosus - E - Environmental Weed (but see Mulvaney 1991)

401	Produces spines, thorns or burrs	n
	Source(s)	**Notes**
	Bruyns, P. V. (2014). The Apocynaceae of Namibia. Strelitzia 34. South African National Biodiversity Institute, Pretoria	[No evidence] "Shrub 1–4 m tall (rarely climbing to 10 m), branches brown and lenticillate. Leaves on petiole –19 mm long, ovate, 20–120 × 12–60 mm, thinly coriaceous, glabrous to pubescent. Inflorescences several, terminal on shoots, 1- to 12-flowered usually with several flowers open at once, glabrous to pubescent. Corolla usually pubescent, orange-yellow turning dark purple outside, inside with white streaks, tube 15–27 mm long, widening after a third into cylindrical to slightly funnel-shaped upper part, coronal teeth 2–7 mm long; lobes 25–75 mm long, spreading, 3–7 mm broad at base narrowing gradually into slender spreading tails. Follicles glabrous to pubescent, 120–270 × 15–25 mm, spreading at 180–270°."

Qsn #	Question	Answer
402	**Allelopathic**	
	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. Weed Biology and Management, 3(4): 233-241	[Allelopathy documented on lettuce (Lactuca sativa) in laboratory experiment] "Table 1. Screening of leaf litter of 239 medicinal plant species under different families using the sandwich method" [Strophanthus amboensis - * Indicates stronger inhibitory activity greater than the mean + 1 SD]

403	**Parasitic**	**n**
	Source(s)	**Notes**
	Bruyns, P. V. (2014). The Apocynaceae of Namibia. Strelitzia 34. South African National Biodiversity Institute, Pretoria	"Shrub 1–4 m tall (rarely climbing to 10 m), branches brown and lenticillate." [Apocynaceae. No evidence]

404	**Unpalatable to grazing animals**	
	Source(s)	**Notes**
	Curtis, B. & Mannheimer, C. 2005. Tree Atlas of Namibia. National Botanical Research Institute, Windhoek	[Potentially unpalatable, but toxicity to browsers suggests plants may be browsed at least occasionally] "The seeds contain glucosides and, due to the presence of strophanthin, the plant is lethal if browsed. The plant is used medicinally."
	Bester, S.P. & Condy, G. (2019). Strophanthus amboensis Apocynaceae: Apocynoideae. Flowering Plants of Africa 66: 102–114	[Probably unpalatable to animals due to toxicity] "Numerous chemical studies have been done on the cardiac glycosides present in the seed in Strophanthus (Bisset 1953, 1955; Heftmann et al. 1954; Watt & Breyer-Brandwijk 1962; Martindale 1967; Oliver- Bever 1986; Moll & Moll 1989) and based on the results, S. amboensis falls in one of the four groups that contain sarmentogenin or sarverogenins (Beentje 1982). These glycosides are highly toxic (De Ruijter 2008) and plants are also lethal if browsed (Curtis & Mannheimer 2005)."

405	**Toxic to animals**	**y**
	Source(s)	**Notes**

Qsn #	Question	Answer
	Bester, S.P. & Condy, G. (2019). Strophanthus amboensis Apocynaceae: Apocynoideae. Flowering Plants of Africa 66: 102–114	"Beentje (1982) list the active component of the poison to be one of a group of glycosides: ouabain, sarmentogenin, strophantidin and divaricoside. Numerous chemical studies have been done on the cardiac glycosides present in the seed in Strophanthus (Bisset 1953, 1955; Heftmann et al. 1954; Watt & Breyer-Brandwijk 1962; Martindale 1967; Oliver- Bever 1986; Moll & Moll 1989) and based on the results, S. amboensis falls in one of the four groups that contain sarmentogenin or sarverogenins (Beentje 1982). These glycosides are highly toxic (De Ruijter 2008) and plants are also lethal if browsed (Curtis & Mannheimer 2005). The glycosides affect muscle fibres (especially those of the heart) causing the heartbeat to slow down, followed by convulsions until the heart eventually stops (Hutchings 1996). As an antidote, tannic acid, vinegar or a decoction of the bark of the baobab (Adansonia digitata L.) may be employed by smearing it into the wound – presumably any strong acid will serve as an antidote (Beentje 1982). Despite the seed containing these very poisonous glycosides, Wink & Van Wyk (2008) note that very few cases of poisoning have been reported and due to the low rate of absorption it would only be lethal if taken in large quantities, in which case it would rather induce vomiting."
	Curtis, B. & Mannheimer, C. 2005. Tree Atlas of Namibia. National Botanical Research Institute, Windhoek	"The seeds contain glucosides and, due to the presence of strophanthin, the plant is lethal if browsed. The plant is used medicinally."

406	Host for recognized pests and pathogens	
	Source(s)	**Notes**
	Bester, S. P. (2018). Strophanthus amboensis. PlantZAfrica. SANBI. http://pza.sanbi.org/strophanthus-amboensis. [Accessed 4 Sep 2019]	"The only pests observed in young plants, are attached to the roots by mealy bugs."

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

Qsn #	Question	Answer
	Bester, S.P. & Condy, G. (2019). Strophanthus amboensis Apocynaceae: Apocynoideae. Flowering Plants of Africa 66: 102–114	"Beentje (1982) list the active component of the poison to be one of a group of glycosides: ouabain, sarmentogenin, strophantidin and divaricoside. Numerous chemical studies have been done on the cardiac glycosides present in the seed in Strophanthus (Bisset 1953, 1955; Heftmann et al. 1954; Watt & Breyer-Brandwijk 1962; Martindale 1967; Oliver- Bever 1986; Moll & Moll 1989) and based on the results, S. amboensis falls in one of the four groups that contain sarmentogenin or sarverogenins (Beentje 1982). These glycosides are highly toxic (De Ruijter 2008) and plants are also lethal if browsed (Curtis & Mannheimer 2005). The glycosides affect muscle fibres (especially those of the heart) causing the heartbeat to slow down, followed by convulsions until the heart eventually stops (Hutchings 1996). As an antidote, tannic acid, vinegar or a decoction of the bark of the baobab (Adansonia digitata L.) may be employed by smearing it into the wound – presumably any strong acid will serve as an antidote (Beentje 1982). Despite the seed containing these very poisonous glycosides, Wink & Van Wyk (2008) note that very few cases of poisoning have been reported and due to the low rate of absorption it would only be lethal if taken in large quantities, in which case it would rather induce vomiting."
	Yaniv, Z. & Bachrach, U. (2005). Handbook of Medicinal Plants. Haworth Press, Binghamton, NY	"Strophanthus is one of the widest spread, best documented, most traded, and most rapidly working poisons."

408	Creates a fire hazard in natural ecosystems	
	Source(s)	**Notes**
	de Ruijter, A. (2006). Strophanthus amboensis (Schinz) Engl. & Pax. [Internet] Record from PROTA4U. Schmelzer, G.H. & Gurib-Fakim, A. (Editors). PROTA (Plant Resources of Tropical Africa, Wageningen, Netherlands. http://www.prota4u.org/search.asp. [Accessed 4 Sep 2019]	"Strophanthus amboensis occurs in forest margins, woodland and thorn scrub, often in rock fissures, at 450–2000 m altitude." [Fire ecology unknown]

409	Is a shade tolerant plant at some stage of its life cycle	n
	Source(s)	**Notes**
	Bester, S. P. (2018). Strophanthus amboensis. PlantZAfrica. SANBI. http://pza.sanbi.org/strophanthus-amboensis. [Accessed 4 Sep 2019]	"Aspect: Full Sun" … "The habitat is usually amongst boulders or in rock fissures on outcrops in savanna woodland, but in the western Caprivi, it is also found on sandy plains." [Tolerance to shade unspecified, but habitat suggests plants occur in high light environments]

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y
	Source(s)	**Notes**
	Bester, S. P. (2018). Strophanthus amboensis. PlantZAfrica. SANBI. http://pza.sanbi.org/strophanthus-amboensis. [Accessed 4 Sep 2019]	"Soil type: Sandy, Loam"

411	Climbing or smothering growth habit	y

Qsn #	Question	Answer
	Source(s)	**Notes**
	de Ruijter, A. (2006). Strophanthus amboensis (Schinz) Engl. & Pax. [Internet] Record from PROTA4U. Schmelzer, G.H. & Gurib-Fakim, A. (Editors). PROTA (Plant Resources of Tropical Africa, Wageningen, Netherlands. http://www.prota4u.org/search.asp. [Accessed 2 Sep 2019]	[Shrub or liana] "Deciduous shrub up to 4 m tall or liana up to 20 m long"

412	Forms dense thickets	n
	Source(s)	**Notes**
	Bruyns, P. V. (2014). The Apocynaceae of Namibia. Strelitzia 34. South African National Biodiversity Institute, Pretoria	"Habitat: Rocky hillsides in woodland, 800– 1 600 m." [No evidence]
	de Ruijter, A. (2006). Strophanthus amboensis (Schinz) Engl. & Pax. [Internet] Record from PROTA4U. Schmelzer, G.H. & Gurib-Fakim, A. (Editors). PROTA (Plant Resources of Tropical Africa, Wageningen, Netherlands. http://www.prota4u.org/search.asp. [Accessed]	"Strophanthus amboensis occurs in forest margins, woodland and thorn scrub, o f ten i n rock fissures, a t 450-2000 m altitude." [No evidence]
	Curtis, B. & Mannheimer, C. 2005. Tree Atlas of Namibia. National Botanical Research Institute, Windhoek	"Uncommon in scattered localities in the north-west and on the north-central plateau" [No evidence]

501	Aquatic	n
	Source(s)	**Notes**
	Bruyns, P. V. (2014). The Apocynaceae of Namibia. Strelitzia 34. South African National Biodiversity Institute, Pretoria	[Terrestrial] "Habitat: Rocky hillsides in woodland, 800–1 600 m."

502	Grass	n
	Source(s)	**Notes**
	USDA, ARS, Germplasm Resources Information Network. 2019. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 2 Sep 2019]	Family: Apocynaceae Subfamily: Apocynoideae Tribe: Wrightieae

503	Nitrogen fixing woody plant	n
	Source(s)	**Notes**
	USDA, ARS, Germplasm Resources Information Network. 2019. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 2 Sep 2019]	Family: Apocynaceae Subfamily: Apocynoideae Tribe: Wrightieae

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

Qsn #	Question	Answer
	Bruyns, P. V. (2014). The Apocynaceae of Namibia. Strelitzia 34. South African National Biodiversity Institute, Pretoria	"Shrub 1–4 m tall (rarely climbing to 10 m), branches brown and lenticillate."

601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	**Notes**
	Bester, S. P. (2018). Strophanthus amboensis. PlantZAfrica. SANBI. http://pza.sanbi.org/strophanthus-amboensis. [Accessed 2 Sep 2019]	[No evidence] "Plants occur naturally from the southern parts of the Democratic Republic of the Congo (DRC), southwards through Angola, to central Namibia. The habitat is usually amongst boulders or in rock fissures on outcrops in savanna woodland, but in the western Caprivi, it is also found on sandy plains."

602	Produces viable seed	y
	Source(s)	**Notes**
	de Ruijter, A. (2006). Strophanthus amboensis (Schinz) Engl. & Pax. [Internet] Record from PROTA4U. Schmelzer, G.H. & Gurib-Fakim, A. (Editors). PROTA (Plant Resources of Tropical Africa, Wageningen, Netherlands. http://www.prota4u.org/search.asp. [Accessed]	"It flowers towards the end of the dry and the beginning of the rainy season; flowers appear before or with the leaves. Fruits mature at the beginning of the dry season."
	Bester, S. P. (2018). Strophanthus amboensis. PlantZAfrica. SANBI. http://pza.sanbi.org/strophanthus-amboensis. [Accessed 4 Sep 2019]	"Plants easily grow from seed. Sow seed with the onset of the rainy season in loam to sandy soils and keep moist. Preferably use larger containers as the roots are sensitive and easily get damaged when transplanting, which lead to the death of seedlings. Seed germinate within 1 to 2 weeks. "
	Bester, S.P. & Condy, G. (2019). Strophanthus amboensis Apocynaceae: Apocynoideae. Flowering Plants of Africa 66: 102–114	"Seed: grain narrowly ovate, 8–16 × 2–5 × 1–2 mm, densely pubescent with golden hairs, apex rounded, neck narrowing acutely into beak; beak glabrous for 22–50 mm and then with a coma from 22–70 mm; coma fibres 13–70 mm long. Flowering time: September–February."

603	Hybridizes naturally	
	Source(s)	**Notes**
	WRA Specialist. (2019). Personal Communication	Unknown. No evidence found

604	Self-compatible or apomictic	
	Source(s)	**Notes**
	Bester, S.P. & Condy, G. (2019). Strophanthus amboensis Apocynaceae: Apocynoideae. Flowering Plants of Africa 66: 102–114	[Unknown, but isolated plants produced fertile seeds without pollinators being observed] "Despite being planted far from its natural distribution, the plant produces many follicles each year. No pollinators have been observed and very little is known of the pollination biology of Strophanthus."

Qsn #	Question	Answer
	East, E. M. 1940. The distribution of self-sterility in the flowering plants. Proceedings of the American Philosophical Society 82: 449-518	[Unknown. Genus may be self-fertile, but flower structure may prevent self-pollination] "Natural pollination has been studied carefully in many genera by Darwin, Miiller, Delpino, and others. The details are interesting but cannot be considered here, except to say that there are numerous arrangements whereby self-pollination is practically excluded. The plants are most of them self-fertile, however, even where this is the case. I have studied species of Allamanda, Carissa, Echites, Funtumia, Kopsia, Plumeria, Rauwolfia, Strophanthus, Tabernaemontana, Thevetia, and Vinca."

605	Requires specialist pollinators	
	Source(s)	**Notes**
	Bester, S.P. & Condy, G. (2019). Strophanthus amboensis Apocynaceae: Apocynoideae. Flowering Plants of Africa 66: 102–114	[Unknown] "As with almost all species in Strophanthus, almost no information exists on the pollination and very little on the biology of this group as a whole. The fragrance reported for many species, predominant colour-patterns and streaks leading from the corona lobes to the cone of the anthers on the inside of the tube, might hint at butterfly pollination. Movement of especially the corolla-tails in the wind could also perhaps be attractive to pollinators (Faegri & Van der Pijl 1979)."

606	Reproduction by vegetative fragmentation	n
	Source(s)	**Notes**
	Bester, S. P. (2018). Strophanthus amboensis. PlantZAfrica. SANBI. http://pza.sanbi.org/strophanthus-amboensis. [Accessed 4 Sep 2019]	[No evidence] "Plants easily grow from seed. Sow seed with the onset of the rainy season in loam to sandy soils and keep moist. Preferably use larger containers as the roots are sensitive and easily get damaged when transplanting, which lead to the death of seedlings. Seed germinate within 1 to 2 weeks. Young plants grow very slowly, especially in the first 3 years or so, producing only about 3–6 pairs of leaves in a year. As the plant gets well-established, its growth rate increases. It is long-lived, known to grow for more than fifty years."

607	Minimum generative time (years)	>3
	Source(s)	**Notes**
	Bester, S. P. (2018). Strophanthus amboensis. PlantZAfrica. SANBI. http://pza.sanbi.org/strophanthus-amboensis. [Accessed 4 Sep 2019]	[Presumably does not reproduce in first three years of slow growth] "Young plants grow very slowly, especially in the first 3 years or so, producing only about 3–6 pairs of leaves in a year. As the plant gets well-established, its growth rate increases. It is long lived, known to grow for more than fifty years."

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

Qsn #	Question	Answer
	Bester, S.P. & Condy, G. (2019). Strophanthus amboensis Apocynaceae: Apocynoideae. Flowering Plants of Africa 66: 102–114	"In spring the follicles burst open to disperse hundreds of seeds." … "The follicles are held with the slit along which they dehisce facing up. When the follicles open, the decrease in humidity causes the coma fibres that are attached to the seeds to unfold and they are carried off by the slightest breeze." [Seeds adapted for wind dispersal and not for attachment to dispersal agent]

702	Propagules dispersed intentionally by people	y
	Source(s)	**Notes**
	Bester, S.P. & Condy, G. (2019). Strophanthus amboensis Apocynaceae: Apocynoideae. Flowering Plants of Africa 66: 102–114	"As it is long-lived, it may well be considered for development as an ornamental."

703	Propagules likely to disperse as a produce contaminant	n
	Source(s)	**Notes**
	Bester, S.P. & Condy, G. (2019). Strophanthus amboensis Apocynaceae: Apocynoideae. Flowering Plants of Africa 66: 102–114	"The follicles are held with the slit along which they dehisce facing up. When the follicles open, the decrease in humidity causes the coma fibres that are attached to the seeds to unfold and they are carried off by the slightest breeze. No juvenile plants have been located in the vicinity of the mother plant, but the seeds are fertile – some were collected and germinated easily" [No evidence that plant is grown with produce]

704	Propagules adapted to wind dispersal	y
	Source(s)	**Notes**
	Bester, S.P. & Condy, G. (2019). Strophanthus amboensis Apocynaceae: Apocynoideae. Flowering Plants of Africa 66: 102–114	"The follicles are held with the slit along which they dehisce facing up. When the follicles open, the decrease in humidity causes the coma fibres that are attached to the seeds to unfold and they are carried off by the slightest breeze. No juvenile plants have been located in the vicinity of the mother plant, but the seeds are fertile – some were collected and germinated easily"

705	Propagules water dispersed	
	Source(s)	**Notes**
	Gerstner, J. (1949). The Arrow-Poison Strophanthus in Southern Africa. S.A. Medical Journal 14 May 1949: 390	"Strophanthus amboensis (Schinz) Engl. & Pax occurs in the gallery forests along the Kunene River. Its leaves suggest a near relationship to Strophanthus grandiflorus." [Distribution along river suggests seeds or pods may float]
	Bester, S.P. & Condy, G. (2019). Strophanthus amboensis Apocynaceae: Apocynoideae. Flowering Plants of Africa 66: 102–114	"The follicles are held with the slit along which they dehisce facing up. When the follicles open, the decrease in humidity causes the coma fibres that are attached to the seeds to unfold and they are carried off by the slightest breeze." [Buoyancy of seeds unknown]

706	Propagules bird dispersed	n

Qsn #	Question	Answer
	Source(s)	**Notes**
	Bester, S.P. & Condy, G. (2019). Strophanthus amboensis Apocynaceae: Apocynoideae. Flowering Plants of Africa 66: 102–114	"The follicles are held with the slit along which they dehisce facing up. When the follicles open, the decrease in humidity causes the coma fibres that are attached to the seeds to unfold and they are carried off by the slightest breeze."

707	Propagules dispersed by other animals (externally)	n
	Source(s)	**Notes**
	Bester, S.P. & Condy, G. (2019). Strophanthus amboensis Apocynaceae: Apocynoideae. Flowering Plants of Africa 66: 102–114	"The follicles are held with the slit along which they dehisce facing up. When the follicles open, the decrease in humidity causes the coma fibres that are attached to the seeds to unfold and they are carried off by the slightest breeze." [Seeds adapted for wind dispersal and not for attachment to dispersal agent].

708	Propagules survive passage through the gut	n
	Source(s)	**Notes**
	Bester, S.P. & Condy, G. (2019). Strophanthus amboensis Apocynaceae: Apocynoideae. Flowering Plants of Africa 66: 102–114	"The follicles are held with the slit along which they dehisce facing up. When the follicles open, the decrease in humidity causes the coma fibres that are attached to the seeds to unfold and they are carried off by the slightest breeze." [Seeds not adapted for internal animal dispersal, and unlikely to be consumed by legitimate dispersers]

801	Prolific seed production (>1000/m2)	
	Source(s)	**Notes**
	Bester, S. P. (2018). Strophanthus amboensis. PlantZAfrica. SANBI. http://pza.sanbi.org/strophanthus-amboensis. [Accessed]	"In spring the follicles burst open to disperse hundreds of seeds. Due to the sporadic flowering of the depicted plant, fruit may be present on the plant all year round." [Unknown, but probably not likely to reach densities in excess of 1000 per m2]

802	Evidence that a persistent propagule bank is formed (>1 yr)	
	Source(s)	**Notes**
	Royal Botanic Gardens Kew. (2019) Seed Information Database (SID). Version 7.1. Available from: http://data.kew.org/sid/. [Accessed 4 Sep 2019]	"Storage Behaviour: Orthodox Storage Conditions: 100 % viability following drying to mc's in equilibrium with 15 % RH and freezing for 32 days at -20°C at RBG Kew, WP"

803	Well controlled by herbicides	
	Source(s)	**Notes**
	WRA Specialist. (2019). Personal Communication	Unknown. No information on herbicide efficacy or chemical control of this species

804	Tolerates, or benefits from, mutilation, cultivation, or fire	

Qsn #	Question	Answer
	Source(s)	**Notes**
	WRA Specialist. (2019). Personal Communication	Unknown

805	**Effective natural enemies present locally (e.g. introduced biocontrol agents)**	
	Source(s)	**Notes**
	WRA Specialist. (2019). Personal Communication	Unknown

Summary of Risk Traits:

High Risk / Undesirable Traits
• Grows in tropical climates
• Seeds toxic to animals and people
• Tolerates many soil types
• Shrub or liana (and potentially capable of climbing and possibly smothering other vegetation)
• Reproduces by wind-dispersed seeds
• Gaps in biological and ecological information may reduce accuracy of risk prediction

Low Risk Traits
• No reports of invasiveness or naturalization, but no evidence of widespread introduction outside native range
• Unarmed (no spines, thorns, or burrs)
• Grows in full sun, which may limit ability to spread into dense forest
• Not reported to spread vegetatively
• Slow growing when young, reaching maturity after 3+ years

Second Screening Results for Vines & Lianas

(A) Reported as a weed of cultivated lands?> No
(B) Unpalatable to grazers Or known to form dense stands?> Palatability unknown.
Outcome = Evaluate further