

Rubber vine

Cryptostegia grandiflora



Rubber vine's ability to quickly spread and colonise areas makes it a threat to many areas of northern Australia. Due to this ability, rubber vine is listed as a Weed of National Significance.

Rubber vine generally invades waterways first, where the seeds germinate in moist silt layers after rain. The plant smothers riparian vegetation and forms dense, sometimes impenetrable, thickets.

This decreases biodiversity and prevents access to both stock and native animals. It also creates habitat for feral animals. Infestations expand outward from waterways, hillsides and pastures, resulting in loss of grazing land and increased difficulty in mustering stock.

Rubber vine is poisonous to stock, though seldom eaten. Most deaths due to rubber vine occur after stock have been stressed, or when other feed is scarce.



Declaration details

Rubber vine is a declared Class 2 plant under the *Land Protection (Pest and Stock Route Management) Act 2002*. Declaration requires landholders to control declared pests on the land and waters under their control. A local government may serve a notice upon a landholder requiring control of declared pests.

Description and general information

Rubber vine is a vigorous climber with twining, whip-like shoots that can grow unsupported as an untidy, multi-stemmed shrub 1–2 m high, or it can scramble up to 30 m high in trees. The stems, leaves and unripe pods exude a white, milky sap when broken or cut.

Leaves are dark green and somewhat glossy, 6–10 cm long, 3–5 cm wide, and in opposite pairs.

Flowers are large and showy, with five white to light purple petals arranged in a funnel shape.

The seed pods are rigid and grow in pairs at the end of a short stalk. The pods are 10–12 cm long, 3–4 cm wide and each can contain up to 450 brown seeds. Each seed has a tuft of long, white, silky hairs, which enable easy dispersal by wind and water.

Life cycle

Rubber vine flowers at any time of year if sufficient moisture is available. Usually, June and July are the only non-flowering months. Plant stem diameter must be approximately 20 mm before flowering can occur.

Seed pod formation occurs from spring to late autumn, with peak seed production corresponding to maximum flowering. Eventually, pods dry out and split open, with pod-splitting occurring approximately 200 days after formation.

Seeds are scattered by wind, but also carried downstream by water. Approximately 95% of seed is viable, although germination requires favourable temperature and soil moisture conditions.

Habitat and distribution

Rubber vine is native to Madagascar, but is now widely distributed throughout tropical and subtropical regions of the world.

The plant was introduced to Australia as an ornamental shrub in 1875 or earlier, and was popular in north Queensland mining settlements due to its luxuriant growth even under harsh conditions. Weedy infestations were recorded around Charters Towers early this century.

Rubber vine prefers areas where annual rainfall is 400–1400 mm, and is well adapted to a monsoonal climate.

Infestations of rubber vine are now found throughout river systems of southern Cape York and the Gulf of Carpentaria, south along the coast to the Burnett River, and isolated infestations occur as far south as Gatton and as far west as the Northern Territory border.

Infestations are common throughout central Queensland, while in western Queensland there are infestations in the Mount Isa, Longreach and Aramac areas. Isolated infestations have been reported in Western Australia.

Control

Effective control of rubber vine can be achieved by a number of methods, alone or in combination depending on the situation and the severity of infestation. All areas treated must be periodically checked and any regrowth treated or the initial treatment efforts will be wasted.

Management strategies

Rubber vine seed is most commonly spread by wind and running water.

It is thus difficult to prevent seed coming onto uninfested land if there is rubber vine anywhere in the area. Your goal should be to prevent rubber vine from establishing and forming dense infestations. It is essential to regularly inspect all areas of your property, paying particular attention to creeks and gullies.

This is most important where prevailing winds are known to blow from infested areas, or where infestations occur upstream.

Any isolated plants located should be treated promptly.

All control of rubber vine will require follow-up treatments to keep your property clean. As rubber vine spreads quickly, small infestations should be controlled first to prevent them from becoming major problem areas. Dense infestations are difficult and costly to treat.

Follow-up treatment must be budgeted for within the overall control program. Techniques need to be integrated for successful rubber vine management. Consideration should be given to coordinating control over a catchment area.

Five suggested strategies for controlling rubber vine in scattered, medium, and dense infestations are outlined in Table 1 (overleaf).

Fire

Rubber vine infestations can be very effectively controlled by burning. Preparing and managing fuel load prior to burning, and following up in a timely manner after the fires, are critical to the overall success of the program.

It is recommended that you perform two successive annual burns. The first fire will open up the infestation to increase grass growth (fuel load) while killing rubber vine plants. The second fire will clean up the regrowth that occurs after the first fire.

An appropriate fire regime is an effective tool for managing rubber vine over the long term, as well as being an effective follow-up to other control methods.

For further information contact 13 25 23.

Biological control

Two biological control agents are successfully established, and their impact depends on abundance. Both agents cause abnormal defoliation, creating an 'energy sink', which appears to reduce seed production. These agents usually do not kill established rubber vine plants.

Diseases

Rubber vine rust (*Maravalia cryptostegiae*) is established over a wide area. Yellow spores form under the leaves and are spread mainly by the wind.

It is most active over summer, abundance being directly related to leaf wetness, which is dependent on rainfall and dew. Over summer, a generation is completed every seven days. Rust activity is reduced over the dry season.

Continued heavy infection causes defoliation, appears to reduce seed production, can kill small seedlings and causes dieback of the whip-like stems. Established plants are not killed.

Insects

Also established is the moth *Euclasta whalleyi*, whose larvae are leaf feeders. Observation indicates the moth prefers stressed plants, either from limited soil moisture or high levels of rust infection.

The moth's period of activity is the dry season. A native fly parasite and a disease can reduce the localised abundance of the *Euclasta* larvae.

The larvae are tapered at both ends, grow up to 30 mm long, and are grey-brown with orange dots along their sides. Fine silken threads and black, bead-like droppings are often found near the larval feeding damage.

The creamy-brown moths are active at night and rest at a 45° angle from a surface, with their wings folded. The life cycle from egg to adult takes 21–28 days.

Defoliation reduces the smothering effect on other vegetation and causes an increase in leaf litter and promotes increased grass growth amongst rubber vine, increasing fuel loads required for fire management. Decreased flower and pod production should reduce the ability of rubber vine to spread.

Biological control is also important because it impacts on other control methods.

Mechanical control

Several mechanical techniques are effective in controlling rubber vine. The type of infestation will determine the technique required.

- Scattered or medium-density infestations: Where possible, repeated slashing close to ground level is recommended.
- Dense infestations: During winter, stick-raking or blade-ploughing reduces the bulk of the infestation. Pasture should be sown and windrows burned to kill residual seed. Follow-up treatment is essential. It is important to comply with the relevant state and/or local government native vegetation legislation, and it should be noted that causing even accidental death of vegetation can be a breach of this legislation.

Herbicide control

Herbicides recommended for use on rubber vine are listed in Table 2 (overleaf). Preference ratings (taking account of effectiveness and cost) are shown.

Aerial application

Three herbicides are currently registered for aerial application (refer to Table 2). Two of these are foliar herbicides and the other is a soil-applied herbicide. As a result, the necessary conditions that apply to foliar and soil applications is also applicable to the respective chemical when aurally applied.

People considering aerial application are advised to contact 13 25 23 for current advice on use of this technique.

Foliar spray

The following points should be followed carefully:

- There must be little to no rust present as it affects the health of the plant and its ability to take chemical up through its leaves.
- It is critical that plants be actively growing and NOT water-stressed, yellowing or bearing pods.

- A wetting agent should be used with foliar herbicides.
- Thoroughly spray bushes to the point of run-off, wetting every leaf.
- Avoid spraying when hot and dry (e.g. over 35 °C), or when windy—especially with Agricrop Rubber Vine Spray.
- Foliar spraying is most effective on plants less than 2 m high; large plants with a stem diameter greater than 8 cm may not be killed.

Basal bark spray

This method gives a high level of control although it is not as effective on multi-stemmed plants as it is difficult to spray each stem completely around the base.

Thoroughly spray around the base of the plant to a height of 20–100 cm above ground level, spraying higher on larger plants.

Optimum results are attained when the plant is actively growing.

Cut stump treatment

This is the most successful method of chemical control, but also the most labour intensive. The following points should be followed carefully:

- Cut the stem off as close to the ground (within 15 cm) as possible; for smaller plants use a machete or similar; larger plants may require a chainsaw.
- Make sure the cut is horizontal.
- Immediately spray or swab the cut surface.
- A cost-effective method for scattered to medium-density infestations is the use of a brush-cutter.

Soil application

Because of the high risk of killing non-target vegetation, including trees and pasture plants, soil-applied herbicides play a role in controlling rubber vine only in specific situations.

It is important to comply with the relevant state and/or local government native vegetation legislation, and it should be noted that causing even accidental death of vegetation can be a breach of this legislation.

The following points should be followed carefully:

- Do not use residual herbicides within a distance of two or three times the height of desirable trees.
- Do not use Graslán along waterways or land with greater than a 20° slope.
- A minimum of 50–80 mm of rainfall is required before residual herbicides are taken up by the plant.

Further information

Further information is available from your local government office, or by contacting Biosecurity Queensland (call 13 25 23 or visit our website at www.biosecurity.qld.gov.au).

Figure 1 Rubber vine containment line and distribution map



Table 1 Suggested strategies for the control of rubber vine

Situation	Initial treatment	Follow-up	Comments
Scattered infestations	Basal bark/cut stump	Follow-up with basal bark/cut stump as necessary	Cut stump method preferred where possible.
	Foliar spray	Follow-up basal bark/cut stump/foliar spray as necessary	Only foliar spray when there is nil to little rust on the leaves of the plants.
	Fire	Follow-up basal bark/cut stump/foliar spray as necessary	For scattered infestations usually recommended only if herbicides not desired, or if have other weeds can be controlled by fire or if fire is utilised to improve pastures.
	Repeated slashing	As above	
Medium infestations	Foliar spray	Treat regrowth, seedlings with basal bark/cut stump/foliar spray	Fire and follow-up with basal bark/cut stump/foliar spray as necessary.
	Fire	Fire 1 year later and follow-up basal bark/cut stump/foliar spray as necessary	If fuel load is sufficient. CAUTION: There are some native tree species which are susceptible to fire. Check before burning.
	Repeated slashing	As above	
Dense infestations—previously cleared areas	Stick rake or blade plough	Sow pasture ► basal bark/foliar spray ► fire and basal bark/cut stump/foliar spray as necessary	First treatment clears bulk of rubber vine and kills roots; any regrowth or seedlings can then be treated; when grass growth allows fuel build up, fire used as control and individual plants later treated.
	Fire	Fire 1 year later and follow-up basal bark/cut stump/foliar spray as necessary	If fuel load is sufficient. CAUTION: There are some native tree species which are susceptible to fire. Check before burning.
	Aerial spray	Fire 1–2 years later OR follow-up with basal bark spray	Bulk of rubber vine killed with aerial spray; allow build up of fuel for fire or treat remaining plants with basal bark spray. Contact 13 25 23 before use of method.
	Graslan		Where situation and soil type are suitable.
Dense infestations—along creeks and rivers	Basal bark/cut stump	Fire OR basal bark/cut stump/foliar spray	When bulk of rubber vine killed, allow fuel build up for fire or treat remaining plants individually.
	Fire and sow pasture	Fire 1 year later and follow-up basal bark/cut stump/foliar spray as necessary	If there is a sufficient fuel load to carry a fire, it can open up dense infestations. CAUTION: There are some native tree species which are susceptible to fire. Check before burning.

Fact sheets are available from Department of Employment, Economic Development and Innovation (DEEDI) service centres and our Customer Service Centre (telephone 13 25 23). Check our website at www.biosecurity.qld.gov.au to ensure you have the latest version of this fact sheet. The control methods referred to in this fact sheet should be used in accordance with the restrictions (federal and state legislation, and local government laws) directly or indirectly related to each control method. These restrictions may prevent the use of one or more of the methods referred to, depending on individual circumstances. While every care is taken to ensure the accuracy of this information, DEEDI does not invite reliance upon it, nor accept responsibility for any loss or damage caused by actions based on it.

Table 2 Herbicides registered for the control of rubber vine

Situation	Herbicide	Pref. *	Rate	Optimum stage and time	Comments
1. Foliar (overall) spray (ground)	Triclopyr + picloram (Grazon DS, Grass-up, etc.)	1	0.35–0.5 L /100 L water	During active growth	May damage pasture legumes.
	Dicamba (200 g/L) + 2,4-D Ester 800 g/L	1	0.35–0.7 L /100 L water + 175 ml 2, 4-D Ester	As above	As above. Apply in autumn during active growth.
	Metsulfuron methyl (e.g. Brush-off®, Brushkiller™ 600, etc.)	1	15 g/100 L water	As above	Wetting agent is critical. Complete coverage is essential. May damage pasture legumes.
	2,4 D + picloram (Tordon 75-D)	2	1.3 L/100 L water	As above	Thoroughly wet leaves and soil around base of plant.
	2,4-D Ester (Agricrop Rubber Vine Spray)	3	0.5 L/100 L water + activator	As above	May damage pasture legumes; less effective than other treatments, but also much cheaper.
2. Basal bark	2,4-D Ester (Agricrop Rubber vine spray)	1	2.5 L/100 L diesel	Plants actively growing	Thoroughly spray around base of plant.
	Triclopyr + picloram (Access)	1	1 L/60 L diesel	Anytime	
	Triclopyr (eg Garlon 600, Invader 600®, etc.)	1	1 L/60 L diesel	Anytime	
3. Cut stump	2,4-D Ester (Agricrop Rubber Vine Spray)	1	2.5 L/100 L diesel	Anytime	Immediately swab/spray cut surface and base of stem.
	Triclopyr + picloram (Access)	1	1 L/60 L diesel	As above	As above.
	Triclopyr (e.g. Garlon 600, Invader 600®, etc.)	1	1 L/60 L diesel	Anytime	
	2,4 D + picloram (Tordon 75-D)	2	1.3 L/100 L water	As above	As above.
	2,4-D Amine (500 g/L)	2	2 L/100 L water	As above	As above. Less effective than other treatments. Repeat applications may be required.
	Hexazinone# (Bobcat® SL, Velpar® L)	1	1–4 ml/spot or 6 ml/vine or bush	Prior to rain	See warning below.# Must place spots around bush. Less effective on sandy soils.
4. Soil application#	Tebuthiuron# (Graslan)	1	1.5 g/m ²	As above	As above; application by hand or backpack spreader.
	Triclopyr + picloram (Grazon DS, Grass-up, etc.)	1	3–5 L/ha	Plants actively growing	Before aerial application contact 13 25 23.
5. Aerial application	Tebuthiuron# (Graslan)	1	7.5–15 kg/ha	Prior to rain	As above.
	2,4-D Ester (Agricrop Rubber Vine Spray)	3	0.5 L/100 L water + activator	Plants actively growing	As above.

* Preference rating— takes account of effectiveness and cost

WARNING: Soil testing is highly recommended prior to application of these herbicides, as rate and efficacy are dependant on soil type.

DO NOT USE SOIL APPLIED HERBICIDES (HEXAZINONE AND GRASLAN) WITHIN A DISTANCE OF TWO TO THREE TIMES THE HEIGHT OF DESIRABLE TREES. DO NOT USE GRASLAN NEAR WATERWAYS OR LAND WITH GREATER THAN A 20° SLOPE.