

Madeira vine

Anredera cordifolia



Madeira vine is an invasive, South American vine that blankets and smothers trees, shrubs and understory species. It grows prolifically at rates of up to one metre per week and the weight of the vine can cause canopy collapse of mature native trees. It produces large numbers of subterranean and aerial reproductive tubers that persist in the environment and make effective management difficult.

The impacts of Madeira vine can be so severe that it causes irreversible damage to the invaded ecosystem, leading to its categorisation as a transformer species.

Madeira vine is considered one of Australia's worst environmental weeds and has been listed as a Weed of National Significance.

Declaration details

Maderia vine is a Class 3 declared pest plant under the *Land Protection (Pest and Stock Route Management) Act*

2002. Landholders are not required to control a Class 3 declared pest plant on their land unless a pest control notice is issued by a local government because the pest is causing or has potential to cause a negative impact on an adjacent environmentally significant area.

It is an offence to supply a Class 3 pest. A permit for specific purposes may be issued by Biosecurity Queensland.

Description and general information

Madeira vine is also known as potato vine or lambs tail vine. It has fleshy, waxy green, heart-shaped leaves which are usually 4–5 cm in length. The stems are slender and hairless, initially herbaceous but becoming woody with age.

Clusters of 5 mm to 25 cm aerial tubers are produced along the length of the stem. These are light brown or green, and ‘warty’ in appearance. The vine also produces potato-like subterranean tubers which can grow up to 20 cm in diameter and at depths of up to one metre.

Madeira vine produces dense blankets of creamy flower spikes from December to April. The flower spikes are approximately 10 cm long and are made up of numerous small flowers along a drooping, central stem.

Distribution and habitat

Madeira vine is common in urban areas where it has been introduced as a garden plant. It typically invades riparian vegetation, the edges of rainforests, tall open forests and damp sclerophyll forests.

In Queensland, Madeira vine infestations are most highly concentrated in the coastal and hinterland regions of south east Queensland. However it has also invaded regions of central Queensland and is found as far north as Cairns and the Atherton Tablelands (see Map 1).

Potential distribution modelling suggests the possibility of significant range increases in Queensland if spread is not actively contained (see Map 2).

Management strategies

Successful management of Madeira vine requires exhaustion of the tuber bank. Tubers can remain viable for up to 15 years and can be easily spread through poor green waste management or via gravity and water movement from ridges and watersheds or during floods.

A management plan should be carefully designed and include a commitment to regular, long-term follow-up control. The disturbance caused by control work stimulates particularly vigorous vine growth and if management isn’t carried out appropriately may lead to an even greater problem. Plan to:

1. Prevent Madeira vine spread

Identify isolated plants or sparse populations and control these first. Also consider the topography of the landscape and prioritise isolated infestations on high ground or at the top of catchments.

2. Reduce established infestations

Weed strategically, protecting the better quality native vegetation first e.g. treat Madeira vine infesting trees that are still living. Where possible, work from the edge of the infestation toward the core – the exception may be where you need to protect isolated areas of high biodiversity value.

3. Follow-up, rehabilitate and monitor

The size of the area targeted at each stage should be manageable enough to enable thorough follow-up control two to three times a year. Ensure activities do not spread the tubers.

Monitor the site to ensure effective native plant regeneration (highly degraded sites may require active replanting) and early detection of invasion by other weed species.

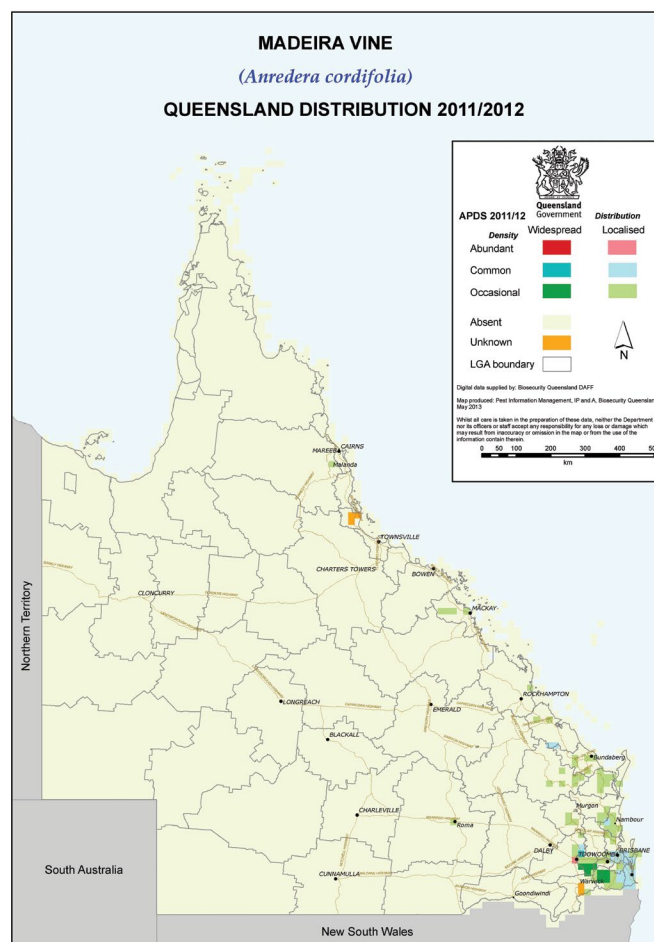
Physical removal

Physical removal of Madeira vine is difficult because of the extent of underground tubers and ease of fragmentation of the vine and root system. However, it may be practical for smaller or immature infestation sites or as a follow-up to remove persistent tubers.

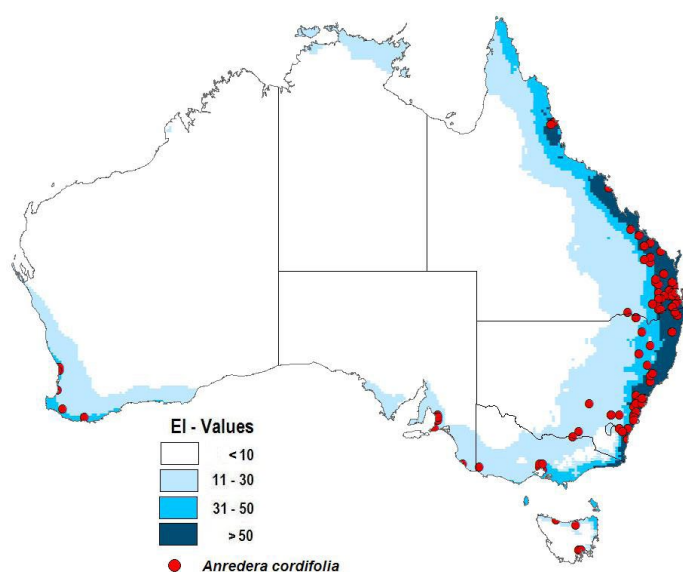
Cutting and pulling the vines from the canopy is not generally recommended because it results in a rain of viable tubers and may be dangerous if dead and dying branches are pulled down with the vine. However, this may be necessary where there is extreme stress on the host plant. In this case, tarpaulins should first be laid on the ground to collect as many of the aerial tubers as possible.

Tubers and vegetative material must be disposed of appropriately as they will shoot in contact with moist soil. Ideally tubers and vines should be composted on-site to reduce the risk of further spread. Compost sites should be established away from other vegetation where they can be easily and frequently foliar sprayed. Alternately, double bag the plants and tubers in non-biodegradable plastic bags and dispose of them in landfill waste. **Do not** dispose of Madeira vine in council green waste bins as this may spread the weed.

Map 1. Distribution of Madeira vine in Queensland



Map 2. Current and potential distribution of madeira vine in Australia – CLIMEX



Herbicide control

Herbicides can be effective if they are carefully chosen and selectively applied. The main application techniques are scrape and paint and foliar spray, although basal barking and cut stump are also used.

A range of selective, non-selective; residual and non-residual herbicides are available for spot spraying madeira vine regrowth and seedlings. There are pros and cons associated with each of these that must be considered on a site by site basis:

• Non-selective and non-residual herbicides

These are herbicides like glyphosate which will affect most plant species they come in contact with but don't remain active in the soil. In most instances glyphosate is the preferred herbicide for madeira vine management because there are few restrictions on who can use it and where it can be used (frog friendly versions like Roundup® Biactive are available for areas adjacent to waterways). However, care must be taken to avoid contact with desirable species as in-discriminate spraying will open up bare ground for opportunistic weed invasion.

• Selective and residual herbicides

Residual herbicides are more effective at controlling Madeira vine tubers – enabling more rapid management of infestations; and selective herbicides, if used correctly, allow non-susceptible species to persist, providing competition to future weed invasion.

For example, research indicates that foliar sprays of triclopyr (300 g/L) + picloram (100 g/L) ± aminopyralid (e.g. Grazon Extra®), even at sub-label mix rates of 20–40 mL/10 L of water is particularly effective for the management of regrowth, juveniles and tubers. At these

rates non-susceptible species like grasses, ferns, rushes and sedges should be unaffected. However, it may impact other woody plants and vines, particularly in the immature stages and the use these herbicides should be avoided at more sensitive sites. In degraded and heavily infested sites where native species recolonisation from adjacent areas or active revegetation will be required, these selective and residual herbicides should provide a better control option.

Application techniques

Scrape-paint application

This approach is suitable for medium to large basal stem sizes and provides the safest management option in sensitive environments. It is however extremely labour intensive as every vine must be treated individually.

Scrape 10–20 cm sections of the vine down to the white fibrous layer and immediately paint the exposed areas with concentrated herbicide (see Table 1 for recommended chemicals and rates). Repeat the process as high up the stem as can be reached, and where possible, scrape areas on both sides of the stem. Be careful not to ring bark the stem as this will halt the spread of the herbicide.

Foliar spray

Traditionally, foliar spray has been used as a secondary treatment to manage prostrate growth and seedlings once the primary stems have been treated using scrape and paint techniques. However, some practitioners now recommend the use of foliar spray as a stand alone treatment. This approach has been developed to increase the cost effectiveness of management but does carry the risk of off-target damage. Decisions on the applicability of this management approach should be made on a site-by-site basis, considering the vegetation composition and sensitivity of the site, as well as the skills of those applying the herbicide.

Handheld equipment (handgun and hose or knapsack) is useful to spot spray prostrate stems, seedlings and regrowth.

Some selective herbicides can be used to treat vines climbing over non-susceptible (or weedy) host plants; however extreme care must be taken.

Biological control

The leaf feeding beetle *Plectonycha correntina* was first released in Queensland in 2011.

Further releases of this beetle for biological control continue to be made in Queensland and New South Wales.

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).

Table 1 Herbicides registered for the control of Madeira vine

Method	Herbicide	Rate	Registration status	Comments
Scrape and paint	Picloram gel ^R (45 g/kg) e.g. Vigilant [®] herbicide gel	Neat – 3–5mm layer of gel applied to scraped surface	Registered Australia wide (rhizomatous plants)	Appropriate for medium sized to well established vines with tubers.
	Glyphosate (360 g/L) e.g. Roundup [®] 360, Roundup [®] Biactive, Weedmaster Duo [®]	667 mL/1 L water (1:1.5)	PERMIT 9907 (New South Wales)	Apply herbicide to scraped section of vine within 15 seconds.
Basal bark	Fluroxypyr ^S (333 g/L) e.g. Starane Advanced [®]	21 mL / 1 L diesel/ kerosene	Registered Australia wide	Appropriate for medium sized to well established vines with tubers.
	Fluroxypyr ^S (200 g/L) e.g. Flagship [®] 200, Comet [®] 200	35 mL/1 L diesel/ kerosene	PERMIT 11463 (Queensland)	Always treat vines away from the host tree.
Cut stump	Picloram gel ^R (45 g/kg) e.g. Vigilant [®] herbicide gel	Neat – 3–5mm layer of gel applied to scraped surface	Registered Australia wide (rhizomatous plants)	Appropriate for young vines without aerial tubers; or vines with immature tubers.
	Glyphosate (360 g/L) e.g. Roundup [®] 360, Roundup [®] Biactive, Weedmaster Duo [®]	500 mL/1 L water (1:2)	PERMIT 11463 (Queensland)	Only use for mature vines where prompt follow-up treatment of new growth arising from fallen tubers is possible.
	Fluroxypyr ^S (333 g/L) e.g. Starane Advanced [®]	30 mL/10 L water	Registered Australia wide	Where possible, apply in spring before new tubers proliferate. Apply herbicide to the cut surface of stem within 15 seconds.
Foliar application	Fluroxypyr ^S (200 g/L) e.g. Flagship [®] 200, Comet [®] 200	50 mL/10 L water	Registered Queensland and New South Wales	Appropriate for madeira vine treatment in disturbed areas of native vegetation or spot spraying of seedlings and prostrate growth.
	Fluroxypyr ^S (400 g/L) e.g. Nufarm Comet 400, Decoy 400	25 mL/10 L water	Registered Queensland and New South Wales	Apply to healthy actively growing vines only.
	Glyphosate (360 g/L) e.g. Roundup [®] 360, Roundup [®] Biactive, Weedmaster Duo [®]	100 mL/10 L water	PERMIT 11463 (Queensland)	Apply only when supporting plant and understory is dead or weedy.
	Metsulfuron-methyl ^{SR} (600 g/kg) e.g. Brush-off [®] , Brushkiller [®] 600, Lynx [®] 600	1–2 g/10 L water + non-ionic surfactant	Permit 9907 (New South Wales)	Apply early autumn (March–April). Do not spray beyond the point of runoff.
	Glyphosate (360 g/L) + Metsulfuron-methyl ^{SR} (600 g/kg)	200 mL glyphosate + 1.5g metsulfuron-methyl /10 L water	Permit 9907 (New South Wales)	
	Triclopyr (300 g/L) + Picloram (100 g/L) +/- Aminopyralid (8 g/L) ^{SR} e.g. Grazon Extra [®] , Farmoz Fightback [®] , Nufarm Conqueror [®]	35–50 mL/10 L water	PERMIT 11463 (Queensland)	

^SSelective herbicide

^RResidual herbicide

It is a requirement that all persons using the products covered by the listed minor use permits comply with the details and conditions identified in the permit and on the herbicide label. In most instances, herbicides under minor-use permits can be used by pest control operations, members of environmental groups such as Bushcare, Catchment Care, Coast Care and people employed as or working under supervision of local and state government officers.

Read the label carefully before use. Always use the herbicide in accordance with the directions on the label.



This fact sheet is developed with funding support from the Land Protection Fund.

Fact sheets are available from Department of Agriculture, Fisheries and Forestry (DAFF) 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, DAFF does not invite reliance upon it, nor accept responsibility for any loss or damage caused by actions based on it.