

Siam weed

Chromolaena odorata and *Chromolaena squalida*



Siam weed is considered one of the world's most invasive weeds. It has the potential to spread across northern Australia and down the eastern and western coastlines.

Siam weed is a perennial that can out-compete and smother crops and native vegetation because of its phenomenal growth rate (20 mm per day or 5 m per year) and ability to scramble up taller plants to a height of 20 m.

Siam weed threatens the grazing industry, agricultural production systems (particularly horticultural crops such as bananas, pawpaw and sugarcane) and forestry plantations.

Siam weed also has the potential to seriously degrade large areas of the wet tropics, dry tropic savannah grasslands, subtropical and coastal regions, and ecologically important conservation areas.



Legal requirements

Siam weed is a category 3 restricted invasive plant under the *Biosecurity Act 2014*. It must not be given away, sold, or released into the environment. The Act requires everyone to take all reasonable and practical measures to minimise the biosecurity risks associated with invasive plants under their control. This is called a general biosecurity obligation (GBO). This fact sheet gives examples of how you can meet your GBO.

All other Siam species are prohibited invasive plants under the *Biosecurity Act 2014*. The Act requires that all sightings must be reported to Biosecurity Queensland within 24 hours.

At a local level, each local government must have a biosecurity plan that covers invasive plants in its area. This plan may include actions to be taken on certain species. Some of these actions may be required under local laws. Contact your local government for more information.

Description

Young Siam weed looks similar to blue top or Billy goat weed (*Ageratum* spp.), but mature plants have a growth habit similar to lantana (*Lantana camara*). Some graziers have referred to Siam weed as 'white lantana'.

In the open, Siam weed grows as a dense tangling bush to 2–3 m. However, it can scramble up trees to a height of 20 m. Several stems develop from the crown of the plant. The stems are smooth, round and fairly brittle, becoming woody at the base when old.

Leaves are soft, green, hairy and triangular in shape, 5–12 cm long with a distinctive three-vein 'pitchfork' pattern. New growth exhibits a purple colouration. They emit a pungent odour when crushed.

Flowers are in clusters of 10–35 pale pink-mauve tubular flowers, 10 mm long, found at the ends of branches. The colour is pale lilac but appear white from a distance and turn a darker lilac when mature.

Seeds are brown to black, 4–5 mm long, with parachute like tuft of white hairs at the top of the seed and fine barbs.

The root system is fibrous and shallow in most soils, and develops an enlargement at the junction of the stem and root, which is referred to as the basal ball.

Life cycle

Flowering is triggered by the shorter day lengths in winter. The most common form of Siam weed flowers from May to July and again in September to October. A variation of Siam weed exists in a small area in the upper catchment of the Tully/Murray Rivers. The flowers look the same, however this variation flowers in February/March.

Siam weed produces huge numbers of windborne seeds within 8–10 weeks after flowering (more than 80 000 seeds per plant per season).

Most seeds germinate immediately after rain, though some appear to remain dormant for several years. Seed longevity research is continuing.

Siam weed dies back in the dry season but re-shoots after rain. Due to the presence of the basal ball, regrowth also occurs rapidly after fire, slashing and inadequate or ineffective herbicide application.

Methods of spread

Each seed has a tuft of white hairs that allow it to be transported by wind and water. Seeds will also attach to vehicles, machinery, clothing, footwear and animals.

Impacts

Health issues and toxicity

Siam weed may also cause skin complaints and asthma in allergy-prone people.

Siam weed contains very high nitrate levels. In other tropical countries it has caused cattle deaths and abortions where stock have been fed contaminated fodder.

Fire hazard

In the dry season, dense thickets of Siam weed can cause frequent and intense bushfires. Dry Siam weed stalks burn hotter and flames reach higher into trees compared to a grassfire.

Habitat and distribution

A native of Central and South America, Siam weed has spread throughout the tropical and subtropical areas of the world and is now a major weed in central and western Africa, tropical America, India and South-East Asia.

Siam weed is spreading rapidly through the Philippines, south-west China and South Africa. It is under control in Papua New Guinea and most of Indonesia.

Siam weed was first identified in Australia in 1994 as several large infestations along the Tully River and at Bingil Bay in Far North Queensland. Siam weed infestations have also be found in the Townsville, Mossman, Innot Hot Springs, Mount Garnet areas, and an isolated infestation of Siam weed has also been found near Rockhampton.

Siam weed will grow in disturbed areas and also readily invades creeks, riverbanks and remnant patches of rainforests. It can also grow under dense rainforest canopies. Siam weed has been found across a wide variety of environments in Australia, ranging from granite hill slopes through to saline and coastal environments.

Siam weed is generally found in areas where rainfall exceeds 600 mm per annum. In Australia, this would be throughout coastal Queensland, northern New South Wales, the Northern Territory, northern Western Australia and along the west Australian coast.

Control

Managing Siam weed

The GBO requires a person to take reasonable and practical measures to minimise the biosecurity risks posed by Siam weed. This fact sheet provides information and some options for controlling Siam weed. Be prepared to control Siam weed before the flowers mature and set seed and that flowering times can vary depending on location.

Prevention and early detection

Preventing Siam weed spreading into new areas can be achieved by:

- ensuring control of Siam weed is completed every year before flowering begins in winter
- restricting entry to Siam weed infestations through fencing or other means
- cleaning down vehicles, machinery and equipment (if restricting entry is not possible)
- cleaning all clothing, shoes and camping gear before leaving an area known to have been infested with Siam weed
- quarantine of livestock for at least one week before they leave a Siam-infested property
- not moving sand or soil that may be contaminated with Siam weed material
- requesting a weed hygiene declaration when buying anything that may be contaminated with Siam weed seed
- use of signage to alert visitors to the presence of Siam weed infestations.

Mechanical control

Physical removal of the basal/root ball is very effective and recommended for smaller infestations. However, it is extremely important to make sure the removed plant does not remain in contact with soil, as any contact will result in the plant re-shooting.

Biological control

Cecidochares connexa (stem-galling fly) from South America was introduced in late 2019. The gall fly causes galls along the stems and growing points which acts as a nutrient sink to weaken the plant, resulting in a reduction in flowering and seeding.

Herbicide control

Herbicide application at the correct rates, and before flowering, will provide effective control if carried out regularly (see Table 1 for approved herbicides and spray rates). Incorrect application can lead to herbicide pruning, which will allow the plant to re-shoot. Always read the label before using any herbicide.

All control efforts should initially be aimed at halting the production of seeds.

Further information

Further information is available from your local government office, or by contacting Biosecurity Queensland on 13 25 23 or visit biosecurity.qld.gov.au.



Table 1. Herbicides for the control of Siam weed

Situation	Herbicide	Rate	Comments	
Agricultural non-crop areas, commercial and industrial areas, forests, pastures and rights-of-way	Triclopyr 300 g/L + Picloram 100 g/L (e.g. Conqueror) or Triclopyr 300 g/L + Picloram 100 g/L + Aminopyralid 8 g/L (Grazon Extra)	350 mL/100 L water + BS-1000 or compatible wetting agent at 100 mL/100 L water (consult label)	Registered High volume foliar spray, spraying to point of run-off	
Agricultural non-crop areas, commercial and industrial areas, forests, pastures and rights-of-way PERMIT 11833 (expires 30/06/2024)	Fluroxypyr 333 g/L (e.g. Starane Advanced, Fluroken 333)	300 mL per 100 L water plus wetter	High volume ground-based foliar spray (consult label)	
	Metsulfuron-methyl 600 g/kg (e.g. Associate, Ken-Met 600)	15 g per 100 L water plus wetter		
	Fluroxypyr 333 g/L (e.g. Starane Advanced, Fluroken 333)	1:16 with water plus wetter	Low volume/high concentration foliar spray, e.g. splatter gun, drench, sprinkler sprayer ¹ or gas powered gun (consult label)	
	Fluroxypyr 140 g/L + Aminopyralid 10 g/L (e.g. Hotshot)	1:9 with water plus wetter		
	Triclopyr 300 g/L + Picloram 100 g/L + Aminopyralid 8 g/L (e.g. Grazon Extra)	1:20 with water plus wetter		
	Metsulfuron-methyl 600 g/kg (e.g. Associate, Ken-Met 600)	2 g/L water plus wetter		
	Glyphosate 360 g/L (e.g. Touchdown 360, Ken-Up Aquatic 360)	1:9 with water plus wetter		
	Glyphosate 450 g/L (e.g. Wipe-Out 450)	1:11.5 with water plus wetter		
	Picloram 43 g/kg (e.g. Vigilant Herbicide Gel)	Use undiluted Apply 3.5 mm layer		Cut stem application Apply directly to cut surface of stem
	Fluroxypyr 333 g/L (e.g. Starane Advanced, Fluroken 333)	900 mL per 100 L diesel or 1:110		
	Triclopyr 240 g/L plus Picloram 120 g/L (e.g. Access)	1670 mL per 100 L diesel or 1:60		
		Fluroxypyr 333 g/L (e.g. Starane Advanced, Fluroken 333)	900 mL per 100 L diesel or 1:110	Basal bark
		Triclopyr 240 g/L plus Picloram 120 g/L (e.g. Access)	1670 mL per 100 L diesel or 1:60	
		Fluroxypyr 333 g/L (e.g. Starane Advanced, Fluroken 333)	300 mL per 100 L water plus wetter Aerial spray application rate: <ul style="list-style-type: none"> 250 mL per m² (25 L/100 m² or 2,500 L/ha) 	High volume spot spray from aerial platform Application ONLY by licensed aerial operators (consult label)

Note: *Herbicides used under PERMIT 11833 can only be used in agricultural non-crop areas, commercial and industrial areas, forests, pastures and rights-of-way by people trained and experienced in the use of agricultural herbicides. All users of herbicides listed under this permit must read and follow the directions in the permit (available online at www.apvma.gov.au). Other options for herbicide application, including by licensed aerial operators, are also available under this permit. ¹A sprinkler sprayer consists of a micro sprinkler connected to a hollow fibreglass rod attached to a pneumatic knapsack sprayer. It is used at low pressure (50 to 200 kPa) with a slow sweeping action over the top of the plants to ensure an even coverage of the leaves.

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



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Fact sheets are available from Department of Agriculture and Fisheries (DAF) service centres and our Customer Service Centre (telephone 13 25 23). Check our website at 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, DAF does not invite reliance upon it, nor accept responsibility for any loss or damage caused by actions based on it.