



Prickly acacia

Acacia nilotica

DECLARED CLASS 2



Description

Prickly acacia is a thorny shrub or small tree growing 4–5 m high, occasionally to 10 m. The umbrella shape of the prickly acacia tree and the pods are characteristic features.

The young shrubs form dense thorny thickets, while mature trees are usually single stemmed, with spreading branches that have lost most of their thorns.

Bark on saplings have a tinge of orange and/or green. Older trees have dark, rough bark.

Leaves are finely divided and fern-like, with four to ten pairs of leaf branches and ten to twenty pairs of narrow green leaflets on each branch.

Pairs of stout thorns, usually 1–5 cm long, grow at the base of the leaves. Golden-yellow, ball-shaped flowers, about 1 cm across, grow on stems from leaf joints with two to six flowers per group.

Pods are 10–15 cm or longer, flat, with narrow constrictions between the seeds, grey when ripe

The problem

Prickly acacia was introduced into Queensland for shade and fodder early this century. Now it can be found throughout the state, with widespread infestations in areas of north west and central west Queensland. Once established along bore drains and water courses, the trees spread out onto adjacent grassland.

Thorny thickets interfere with mustering, movement of stock and access to water. Trees along bore drains use valuable water, make maintenance of bore drains more costly, and provide seed to further increase the spread of prickly acacia. Pasture decreases as the tree size increases because little grows under the canopy as the tree outcompetes pasture for water.

Prickly acacia causes soil degradation by facilitating erosion. Prickly acacia has also been implicated as a threat to biodiversity through the transformation of natural grasslands into thorny scrub and woodland.

Prickly acacia has been recognised as a Weed of National Significance.

Habitat and distribution

The variety of *Acacia nilotica* found in Australia, subspecies *indica*, is a native of Pakistan. It has been cultivated in many parts of tropical Queensland for its shade and the fodder value of leaves and pods, and is now naturalised in many areas.

Several million hectares of the mitchell grass plains is infested with prickly acacia. Major areas of infestation occur from Barcaldine north to Hughenden and west to Longreach, Winton and Julia Creek.

Prickly acacia is also found at locations along the coast, particularly at Bowen, and along the NSW and NT borders.

Projections based on climatic suitability show that this plant has the potential to grow in most areas of Queensland, and about one-third of the state is well-adapted for prickly acacia growth.

Declaration details

Prickly acacia is a declared Class 2 plant under Queensland legislation. 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.

Management strategies

The following strategies are recommended for landholders to limit the spread of prickly acacia.

1. **Map prickly acacia areas on your property before commencing control:**
 - a coordinated management strategy can then be devised
2. **Try to eliminate all prickly acacia along bore drains, creeks and dams:**
 - these trees will produce seeds in most years
 - one medium sized tree can produce 175,000 viable seeds per year
 - seeds can remain viable in the soil for at least seven years.
3. **Consider replacing open bore drains with piped water:**
 - trees along bore drains are the main seed producers
 - additional advantages of controlled waters are the ability to trap animals on water and administer supplements via water.
4. **Clean up either least infested paddocks or seeding trees first:**
 - preventing the problem is easier than curing it
 - good management involves keeping some paddocks clean.
5. **Do not let cattle or sheep graze where mature pods are available (pods ripen from October onwards):**
 - insects can destroy much of the seed on the ground
 - cattle relish pods and spread the seed throughout paddocks and properties. A large percentage (43%) of undigested seed passes through cattle
 - sheep also spread prickly acacia by regurgitating about 15% of seed eaten, while goats regurgitate about 24%. This seed does not have the associated manure to assist germination (sheep pass only 2% viable seed).
6. **Incorporate strategic fencing to contain prickly acacia:**
 - seeds are primarily spread by stock
7. **Run sheep instead of cattle in prickly acacia infested paddocks, wherever possible:**
 - sheep graze seedlings more heavily than cattle.
8. **Quarantine cattle and sheep when moving them from infested paddocks to clean areas:**
 - prickly acacia seed can take up to 6 days to pass through an animal
 - seed also travels in mud packs on animals' feet.
9. **Do not let trees become thick:**
 - trees reduce grass production
 - as many as six plants per m² may be lying dormant in the soil underneath a moderate to thick prickly acacia stand.

10. **Do not overgraze:**
 - conserve perennial grasses
 - a good stand of grass should reduce establishment of prickly acacia seedlings by competing for soil moisture and nutrients.
11. **Supplement animals with nitrogen at critical stages (eg lambing, weaning or in drought)**
 - dry mitchell grass pastures in most years have inadequate levels of protein for optimum production. This is especially so with pregnant and lactating animals. When prickly acacia is removed, consider providing supplements of non-protein nitrogen such as urea.

Biological control

Prickly acacia is readily attacked by certain native insects associated with Australian native acacias and other native plants. Generally, leaf-feeding, sap-sucking, root, pod and seed feeding insects attack actively growing prickly acacia.

Bark and wood-feeding insects prefer stressed and dying plants. Native insects can weaken prickly acacia and can contribute to the death of plants when other stresses are involved.

Dieback of large areas of prickly acacia has been occurring throughout western Queensland infestations since the 1970's.

A combination of several factors may result in dieback, namely a lack of water, high salt concentrations in soils, root predation by cicada nymphs, and attack by insects and diseases on stressed plants.

A survey of other potential biological control agents commenced in Pakistan in 1979. One of the results of this research was the release and successful establishment of the seed feeding beetle *Bruchidius sahlbergi* (Coleoptera: Bruchidae). The level of predation on seeds by *Bruchidius* can vary from 0% to 80% depending on the availability of mature seed pods.

When pods are scarce due to stock grazing, floodwaters or climatic conditions, *Bruchidius* populations decline. Higher insect populations occur where a permanent reservoir of pods is present.

Further research for biological control agents in Kenya commenced in late 1989. The leaf feeding beetle, *Homicloda barkeri*, was identified from this work, passed testing and was released from late 1996 to 1999. To date, establishment has not been confirmed.

Two leaf-feeding geometrid (looper) caterpillars (*Chiasmia inconspicua* and *Chiasmia assimilis*) also from Kenya, were approved for field release, and have been released since late 1998 and June 1999 respectively.

A field station has been established in South Africa to identify other potential biological control agents. Research will also continue on insects identified by previous studies.

Chemical control

The range of chemical control options available is detailed below:

Basal bark spray

For stems up to 10 cm diameter, carefully spray completely around the base of the plant to a height of about 30 cm above ground level. Thoroughly spray into all crevices. Larger trees may be controlled by spraying to a greater height, up to 100 cm above ground level. The best time for treatment is during autumn when plants are actively growing and soil moisture is good.

Cut stump treatment

At any time of year, cut stems off horizontally as close to the ground as possible and immediately (within 15 seconds) swab or spray the cut surface and associated stem with the herbicide mixture.

Soil applied treatments

Soil applied herbicides are taken up by the roots of plants after rainfall. The major benefit of this method is the speed and ease of application. Prickly acacia is a deep rooted plant with the canopy acting as a funnel for rainfall. It is therefore best to apply these herbicides as close to the trunk as possible. The best time of application is when rainfall is likely to occur within the next few months. October to January is the best application period.

Foliar (overall) spraying

Foliar spraying of seedlings and young plants to 2 metres high may be undertaken with Starane[®] mixed with water and a wetting agent. This method is a useful and relatively cheap follow-up control option.

Irrigation channels

Channels and drains must be empty of water. Spray a 1m wide strip into the mud in the channel or drain. Wait for 2 to 3 days for the diuron to bond to the mud before slowly allowing water in again. Water must not be used as domestic water supply or supplied to desirable shade trees for 7–14 days after reopening the drain.

Mechanical control

Grubbing

Grubbing is ideal for large areas of scattered to medium density infestations. Wheeled tractors are usually used with a scoop or grubbing attachment. This method can be hard on hydraulics and requires a tractor of around 80 hp to be efficient.

Trees greater than 15 cm in diameter can be difficult to grub out. Grubbing is best undertaken from May to September or before pod drop.

The method is comparable in cost to basal spraying but can also provide supplementary fodder, especially in drought conditions.

Pushing

Pushing is useful for large areas of medium-density infestation. Timing of this method should be restricted to May-September to lessen the establishment of seedling regrowth or during drought conditions. Massive seedling emergence may occur in areas around permanent waters and drainage lines.

Stickraking

This technique utilises a stick rake with cutter bars attached to the bottom of the tines. Timing of this method should be restricted to May-September or during drought conditions to reduce the risk of seedling establishment. Costs vary from \$20–40 per hectare depending on the density of plants, terrain and machinery used. This method gives immediate results and clean country.

Double Chain pulling

This method is being quickly adopted by those with high density prickly acacia. It is very effective against established stands but not plants below 40 mm in basal diameter. Timing is important and

the technique is best applied in the second year of drought, or before the first pod drop coming out of drought. Chaining along drainage lines and waterways is not recommended due to the high seed loads and the high probability of re-establishment. If used during drought this method almost pays for itself as drought fodder or if used during better seasons as a protein supplement towards the end of the year. It costs around \$20–\$40 per hectare to double pull country.

Further information

Further information is available from the vegetation management/weed control/environmental staff at your local government.

TABLE 1 – HERBICIDES REGISTERED FOR THE CONTROL OF PRICKLY ACACIA

Application Method	Herbicide/Tradename	Rate	Comments
Basal bark/ cut stump	fluroxypyr eg. Starane 200®, Flagship 200®, Comet 200®	1.5 L/100L diesel	Basal bark only when plant is actively growing; or cut stump at anytime of year (swab or spray stump within 15 seconds of cutting)
	triclopyr eg. Garlon 600®, Invader 600®, Safari 600EC®, Hurricane 600®, Redeem 600®, Triclopyr 600®, Triclon 600®, Melon 600®, Uni-Lon 600®.	0.5 L/60 L diesel	
	triclopyr + picloram eg. Access®	1 L/60 L diesel	Any time of year
	2, 4-D ester eg. AF Rubbervine Spray®	1 L/40 L diesel	Use only between April and July
Soil applied	hexazinone eg. Velpar L®, Bobcat SL®	4 ml/spot. 1 spot for each metre height of tree	For seedlings/bushes/trees up to 5m tall
	tebuthiuron eg. Graslan®	1.5 g/m ²	Refer to product label for critical comments
Foliar (overall) spraying	fluroxypyr eg. Starane 200®	750 ml/100 L water	For seedlings and young plants up to 2m high Add Uptake Spraying Oil
Bore drains, Turkey nest dams	diuron eg. Diuron 500SC®, Diuron 900DF®, Diuron 900WG®, Zee-uron 800WP®, Zee-uron 900WG®.	Refer to product label	Refer to critical comments on label 3 day withholding period

Fact sheets are available from NRW service centres and the NRW Information Centre phone (07 3237 1435). Check our web site <www.nrw.qld.gov.au> to ensure you have the latest version of this fact sheet. The control methods referred to in this Pest Fact 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 utilisation 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, the Department of Natural Resources and Water does not invite reliance upon it, nor accept responsibility for any loss or damage caused by actions based on it.