Controlling weeds

Woody weed invasion is the major problem facing the northern mitchell grasslands, with the most threatening species being prickly acacia. Other woody weeds are algaroba (mesquite), Parkinsonia and mimosa.

In the southern region, the main woody weeds are native eucalypts invading from adjacent woodlands.

There are other important weeds—native and introduced—that may indicate previous management or a type of country. These weeds can:

- cause vegetable fault in wool — feathertop, white speargrass and various burrs.
- poison stock — Georgina gidgee and pimelea (which actually grow on adjacent land types).

Prickly acacia

How useful was prickly acacia?

Many years ago, some graziers in the north planted what appeared to be a useful shade and fodder tree, and for decades there appeared to be little problem and significant benefit. Shade increased lamb survival, while seed, pods and leaf fall provided extra protein.

'Acacia arabica as a fodder'

... the tree will be of great value in the Western country where sheep are depastured, as, should it do well there, it will provide a grateful shade for sheep and afford a useful forage in the pods which are shed in late October, November, and December, when pasturage is usually in poorest supply.

'There is, however, a drawback to this tree in cattle country, in that where cattle consume the pods, the seeds are not masticated and pass whole through the digestive tract, thus causing numbers of young trees to appear where they are not wanted. The expense thereby entailed has caused the Bowen Local Authorities to regard the tree with little favour. Sheep and goats, however, masticate the seeds, and so the danger of too great a spread need not be anticipated in sheep country.'

Queensland Agricultural Journal 1 April 1926

However, after cattle started to replace sheep in the 1970s, the prophesied 'numbers of young trees' did 'appear where they are not wanted'.

Prickly acacia is now a serious weed problem in north Queensland.

As the population of shrubs rises and the canopy closes, the trees use the soil moisture, preventing grass growth. Grass production falls by 1000 kg/ha in return for only 75 kg of leaf and pod per year.

What is the problem?

The problem has been recognising the weed potential of a few scattered trees before it is too late. Individual
trees are not particularly difficult to kill with herbicide—even if it is a prickly job.

It is the scale of the operation with extensive infestations on low-value land that makes for economic problems. One mature tree can drop 175,000 seeds in a year and, although most germinate within a couple of years, some can remain in the soil for up to 10 years, ready to go in a wet year.

**How do I control prickly acacia on the property?**

Weed control always needs an integrated plan to prevent wasted or ineffectual effort.

The Land Protection Board recommends a property management plan to:

- map the prickly acacia areas
- determine the priority areas, the methods of control and the costs
- make a calendar or timetable to allocate your labour.

The plan of action is to:

- eliminate the seed-producing trees along bore drains, dams, creeks and drainage lines. Consider replacing open bore drains with piped water
- clean up the least infested paddocks
- keep cattle out of infested areas after late October when the pods are mature
- run sheep (and goats) rather than cattle in lightly infested paddocks
- quarantine stock moving from infested paddocks to clean areas for 7—10 days.

**Where do I start control?**

Start by controlling the plants that set the most seed—those along the bore drains—then move to the lightly infested paddocks to prevent further spread of seed. Last come the dense infestations which are the most expensive to control.

In light infestations, much time is spent moving from bush to bush. A 4-wheel motor bike fitted with a saddle tank and pressure pump speeds up the job, and has been known to make the job of spraying more attractive to teenagers!

**How do I control prickly acacia in the paddock?**

Big trees can be treated chemically or grubbed out mechanically.

Methods of chemical control of prickly acacia are described in the Lands Department’s PESTFACT on Prickly Acacia and in WOODY WEED ADVISER, a DPI software program. These include:

- putting diuron in bore drains
- spray foliage with Starane in water along densely infested creeks
Spray bore drains with diuron

- basal bark or cut stump spraying with Starane, Garlon 600 or Access in diesel
- spot treatment onto soil with undiluted Velpar
- applying Gridballs of Velpar or pellets of Graslan onto soil.

Because Graslan is absorbed onto clay particles, application rates have to be as high as 10—20 kg/ha on the clay soils of the mitchell grasslands, making broad-area treatment very expensive.

All these herbicides can be applied while stock are in the paddock, but some will also kill adjacent trees that you wanted to keep.

How do I control prickly acacia in bore drains?
Bore drains can be treated economically with the residual herbicide diuron.

Block off the water at least 24 hours before spraying diuron suspension (90% wettable powder at 33.5 kg/ha) in a 1 m wide strip onto the mud in the drain. Since a 1 m strip along 1 km of drain equals 0.1 ha, use 4 kg of wettable powder in 100 L of water per 1 km of drain. Wait 2—3 days before opening the drain again.

What are the mechanical methods of control?
Scattered trees can be killed using a specially designed grubber blade fitted to a front-end loader on a wheeled tractor. This blade cuts the tap root of the prickly acacia about 30 cm below ground level. The leaves of cut and pushed trees can provide protein feed until they drop.

Using the normal brigalow blade plough behind a D8 is usually too expensive (at around $110 per ha) for the potential of this land; it also may damage the deep vertical root system of mitchell grass plants.

Chaining the deep-rooted prickly acacia is difficult and about three times as expensive as chaining gidgee. The swath width has to be reduced to about two-thirds, and it has to be pulled from both directions.

What can I do with a densely infested area?
This will depend on how much money you are willing to spend. You could just fence it off to prevent stock spreading the seed, or you could try to bring it back into production by chaining or aerial spraying. Chaining gives only temporary relief, but can be useful if there is some mitchell grass to recover. Otherwise you will have to try to sow mitchell grass seed into the bare ground.
Once and for all time?
Unfortunately, no. There can be 24 million acacia seeds along every kilometre of bore drain. Although the half-life of this seed is about 18 months, some can remain viable for the next decade, and then germinate in a wet year to produce an overwhelming mass of new seedlings. Sheep will eat some young seedlings, but prefer the abundant herbage available in a wet year.

Diuron may have to be re-applied 3 to 4 times over a 10-year period or until the seed bank is depleted.

You could carry out periodic follow-up spraying before any new plants are big enough to flower (about 2 metres high) and produce seed.

Is there any biological control?
Prickly acacia is attacked by some native insects which may weaken stressed plants. The most effective introduced agent is a seed-feeding beetle, but seed loads are too high for it to have much effect.

The next closest thing to biological control at the moment is using sheep or goats to eat and digest the seeds of prickly acacia, and to eat young germinating seedlings.

Sheep and goats may eat the leaves and strip the bark off larger bushes, but rarely kill them. Cattle and camels have smashed down larger bushes to eat the leaves, but again without any permanent control.

Don’t wait for a miracle cure. Start your own control now.

How do sheep and goats affect prickly acacia?
Sheep and goats eat the seed pods. Sheep may spit out about 15% of the seeds (goats 25%), but spoil the germination of all but 1% of those digested. Cattle pass about 40% of seed undigested.

Sheep and goats will also eat young seedlings, although they prefer grass; and grass is usually plentiful in the wet years that cause mass germination of prickly acacia seeds. Forcing sheep and goats to eat enough seedlings means stocking so heavily that some mitchell grass would be damaged also.

There is generally little or no mitchell grass under dense acacia, and uninfested adjacent areas of good grass may have to be fenced off.

How can goats help in managing the problem?
Goats will browse and weaken prickly acacia plants as high as they can reach—their browse line is about 2 metres.
The best strategy for goats is to use them after a failed wet season (or preferably two) because:
- the large trees have produced no seed
- there is less viable seed and fewer germinating seedlings
- the trees are under stress.

Note however that this is also the time when the mitchell grass is most susceptible to permanent damage.

The trees should be pushed or double pulled in August–September to make them more accessible.

Allow the goats at least three months to browse any remaining or re-suckering foliage, then replant grass seed in October–November.

**How much of a problem is algaroba?**

At present algaroba (mesquite) exists mostly as scattered stands or trees—the same as prickly acacia thirty years ago.

**Algaroba has the potential to be a worse problem than prickly acacia.**

This is because algaroba is not eaten by stock, and is more difficult to kill than acacia—one hybrid type is resistant to most herbicides. It has low hanging branches which make basal bark spraying difficult.

Ranchers in Texas spend millions of dollars every year trying to control mesquite. Learn from their mistakes. Don’t forget—

**by the time you recognise you have a serious algaroba problem, it’s too late.**

**How can I kill Parkinsonia and mimosa?**

Mimosa and Parkinsonia can be spot-treated with Velpar. Parkinsonia can also be given a foliar spray of Grazon DS or Starane in water, or a basal bark spray of Garlon in diesel oil; however, these treatments are effective only when growing conditions are good.

**Other weeds**

Other weeds that can cause serious problems include:

**Feathertop and white speargrass.** Feathertop is wide-spread throughout the mitchell grasslands; white speargrass is more of a problem south of Tambo and east to Roma in the higher rainfall south-east.

Feathertop is more common in the central and northern areas under light grazing with sheep, declining under heavier grazing and with more cattle. It increases in wet years, which are associated with light grazing pressure, but declines in dry years. As feather-top is not strongly rooted and has a leafy crown, cattle can rip out the whole plant.
Potential strategies for control include buying in more cattle in the wet years, crash grazing at the start of the growing season, burning in spring, spraying and baling pastures for hay.

White speargrass in the south is encouraged by overstocking, especially with sheep. White speargrass is more stemmy and unpalatable than feathertop, and so is more difficult to eradicate through grazing management. Heavily infested grasslands can be ploughed out for cropping and subsequent pasture establishment.

Mitchell grass can be strengthened when spelled in autumn as sheep are moved onto forage crops to avoid speargrass seed contamination of the wool.

White speargrass can set massive amounts of seed in a wet autumn, but the seeds are fairly short-lived. Seeds germinate best in spring and autumn, with seedlings frequently suffering from 'damping-off' in wet summers.

Recommended long-term stocking rates, based on 30% utilisation of standing feed at the end of the growing season, may offer the best compromise between control of feathertop and white speargrass and good stability of mitchell grass.

**Burr**s. Bathurst burr often becomes dominant in heavily overgrazed and disturbed areas around water-points and gate ways; Noogoora burr can become a problem on flooded alluvial country.

Both burrs can be removed from strategic areas by spraying with herbicide or even hand-chipping; early action can save a lot of heart-ache later. The Noogoora burr leaf rust is effective only during days with warm summer drizzle.

Daisy burrs (*Calotis* spp.) may provide good feed during and after wet winters, but their seeds contaminate the fleece and make shearing unpleasant.

**Parthenium.** Parthenium could increase dramatically if introduced, for example in bought-in cattle, from migrating headers in cropping areas, or along the highway. Parthenium likes good clay soils, pasture land opened up by heavy grazing or by cropping and summer rainfall.

Any parthenium plants seen should be sprayed or dug out immediately and reported to the local council.

**Rolypoly.** Rolypoly is a common sight after droughts or in overgrazed paddocks. In the north, it is mostly *Amaranthus mitchelli* but *Salsola kali* is found throughout the region especially where cattle are run.

In the south and especially in gidgee areas, black rolypoly (*Sclerolaena muricata*) can be a disturbing sight, but it may be controlled by a period of light grazing during summer.