Little country is cleared normally, but there may be advantages on the best soils

What are the guidelines for clearing trees?

Even if it is worth clearing trees, there are areas that should never be cleared.

Plan to leave all these areas—

- steep hillsides
- intake ridges for potential salting
- useful timber
- dense understorey growth
- silver-leaved ironbark country
- erodible soils
- those with scenic value
- those as a haven for your own nature reserve.

On the land to be developed, keep at least 20% of the original tree population in strips 100 or more metres wide. The strips should connect the water courses and areas of retained timber on your, and neighbouring, land.

- Do not clear on slopes greater than 8%.
- Do not clear free-draining intake areas on ridge-tops.
- Keep clumps for cattle camps at least 3 to 5 ha in area
- Do not clear within 100 metres of 'permanent creeks' (those able to hold waterholes); tree roots prevent bank collapse better than grasses.
- check local guidelines for broadscale clearing.

Check any legislation before you start. On leasehold land, you will need a Tree Clearing Permit from the Department of Lands, and may need to provide a Tree Management Plan.

Develop only an area that you can look after.

Thin the stand or clear the lot?

If you are going to clear, we recommend alternating uncleared forest and cleared grassland on the area to be grazed rather than thinning the whole area. The 'savanna' of scattered trees may look scenic, but you need only 5 mature trees per hectare to reinfest the whole area with seed. Many of the large trees that are left are old and will die sooner or later, although they may provide homes for native birds and small animals.

Alternating forest and cleared land has benefits for both. The forest of mixed species and ages of trees is self-regenerating, can be a source of timber for farm and sale, and provides shelter for stock and wildlife; the grasses in the open space will grow vigorously without being re-infested with tree seeds.

Do not spend so much money on pulling too large an area that you cannot afford to manage the regrowth that is sure to come.

What is the best way to kill trees?

There is no best way. If you have decided that you need to clear some land, you will find that every method has problems.

Pulling. Pulling is usually the fastest and cheapest method where trees are dense. It allows a rapid response from the grass, and legumes can be sown into the disturbed soil. But saplings and seedlings are missed and start growing quickly; also weeds can germinate in the disturbed soil, and gully or tunnel erosion may start on solodic soils.

Stem injection with chemicals. This method is more common in the southern speargrass region than in this region. It is reliable, can be selective, and does not disturb the soil; however, it is labour-intensive, slow and hence fairly expensive on larger properties. Suppressed saplings are usually missed, and some eucalypt species are fairly resistant to herbicide.

Stem injection can give a short-term flush to pastures so that cattle concentrate on the treated area.

Graslan. Pellets of Graslan (tebuthiuron) spread from the air are effective against all stages (seedlings, saplings and mature) of most species for which it is registered, and the effect can last for many years. It can be spread over large areas quickly, but with good accuracy, to leave watercourses, corridors and shelter belts. But Graslan is expensive, the aerial contractors have minimum areas for treatment (250 ha), and many species such as wattles are resistant at the lower application rates.

Because the effect can be long-term, there may be little opportunity for regeneration in the future if you find that you have overcleared.

No clearing should be undertaken until you have prepared a detailed plan

What is the best way to control regrowth?

The cheapest control is to burn the speargrass while the woody weed seedlings are small. Fire will keep saplings up to 2 metres tall under control by destroying the topgrowth.

Fire should become the basis for managing your grazing. If you can burn every three or four years, it means that your stocking rate is about right.

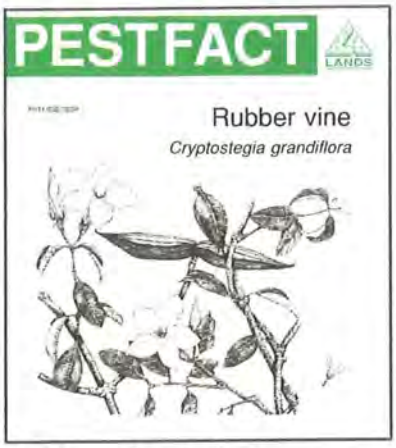
How soon can I graze after killing the trees?

The grass under the trees will start to grow faster as soon as the dying trees stop using water.

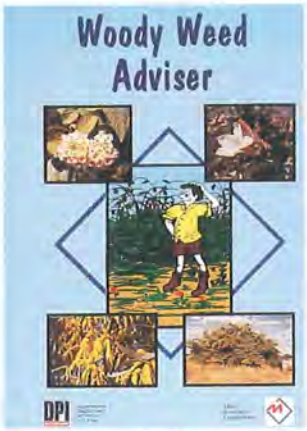
Chaining is the cheapest method of clearing good country

Stem injection and Graslan leave trees standing

Berry bush controlled by fire before stands become too dense



Lands weed control notes



Woody Weed Adviser—weed control information on floppy disk

Rubbervine is one of our most serious problems

Do not try to recover the costs of treatment quickly by putting in more stock right away. If there is an understorey of small trees and shrubs, rest the paddock to build up fuel for a hot fire—or you will just be starting another cycle of regrowth.

If Graslan kills the suppressed understorey, you may be able to start grazing earlier than with other treatments.

What are the other methods to control regrowth?

In this region, eucalypt saplings grow out of reach of fire after about 3 years, become small trees in about 10 years, and mature trees after 20 years.

Dry years favour trees, wet years favour both trees and grass. If the regrowth gets away from you, the young trees and shrubs will have to be killed in some other way besides fire—all will involve major expense.

The DPI decision support program *Woody Weed Adviser* and the Lands Department's Pestfacts can help you to decide the best chemicals and most practical methods for controlling the various woody weeds that you may have.

Broad area regrowth control. Repulling with a light chain can be cheap and fast—if there are no stumps or standing trees. It misses flexible-stemmed seedlings under 5 years old.

Graslan is effective if there are no resistant species present, but it is expensive and may prevent pasture legumes being established in the short term.

Blade ploughing can be effective if the land has already been cleared of tree stumps and roots, but it is generally too expensive for this low value land.

Individual tree treatment. It is usually impractical to treat individual trees over large areas, but this may still be the best method against scattered introduced weeds, such as rubber vine.

Trees aren't my problem, rubbervine is!

Rubbervine has become one of the most serious weeds since it was introduced to the region over 100 years ago. It has invaded and taken over much of the best frontage country, and has spread out along smaller watercourses and open country.

How can I kill rubbervine?

Rubbervine is not difficult to kill when it is a single plant; several herbicides are effective. Rubbervine is a problem because of the scale of the invasion and the logistical difficulty of getting at the plants.

An ecological approach and biological control would be the most cost effective.

Will biological control save me the effort?

Biological control using insects and fungi is being investigated. Rubbervine leaf rust is being field-tested in the Northern Territory and around Charters Towers, but dry conditions have reduced its effectiveness so far. Even when the rust is released, it will only reduce the vigour of rubbervine, not wipe it out.

You will still need to integrate biological and chemical control.

Start treating rubbervine now! Don't wait for a 'miracle' from biological control.

Rubbervine leaf rust is being field tested for biological control

What are the recommended herbicides?

Lands and DPI list a number of herbicides and methods of application for rubbervine on a range of sites. Among these are:

For frontage country

Overall spray with water-based mixtures – Grazon DS (triclopyr with picloram), Brushoff (metsulfuron methyl), Dicamba 200, Tordon 50-D (picloram with 2,4-D), and AF Rubbervine spray (2,4-D ester). Grazon DS and AF Rubbervine spray can be applied from a helicopter where access is difficult.

Basal bark spraying (with distillate-based mixtures) – Garlon 600 (triclopyr), AF Rubbervine spray.

For open country without trees

Aerial application – Graslan, except on cracking clay soils, deep sands or where there is deep leaf mulch.

Spot treatment - Velpar.

Both Graslan and Velpar can kill non-target trees.

Overall spray with water-based herbicide

What are good mechanical methods of control?

Rubbervine and shrubs can be cleared with a dozer. The plants must be cut off below the ground, and then stickraked and burned. Because this soil disturbance leaves a good seedbed, seeds of rubbervine and other weeds can germinate and establish unless a good cover of grass is established as soon as possible.

Smaller plants can be controlled by slashing.

Basal bark spraying with distillate-based herbicide

What is an ecological approach?

The ecological approach is to minimise bare ground by keeping it filled with useful species—grasses.

If there is an open space, and soil moisture, some plant is going to fill it.

Dense rubbervine cut off with a dozer

Managing native pastures to maintain them in good condition without open spaces through control of stocking rates and by periodic burning will keep down woody and vine weeds. This is described later in this booklet.

If it is feasible, frontage country can be fenced with a temporary electric fence to prevent localised overgrazing, to build up a fuel load for a hot fire to prevent weeds spreading.

The ecological approach of establishing a grass is vital after rubbervine has been dozed and the soil disturbed, or after dense growth of rubbervine has been killed with herbicides.

You should aim to prevent rubbervine seedlings from re-establishing or try to control them while they are young and susceptible to treatment.

What is the best way to establish a grass?

Grass seedlings tend to be small and fragile; grass seed tends to be expensive.

The small grass seeds need close contact with moist soil particles. If the land has been stick-raked, there may already be some sort of seed bed, and seed could be broadcast over the surface to be washed in by rain. If the surface has not been disturbed, after chemical treament of rubbervine, a seed bed must be created.

The robust Crocodile seeder digs small pits to hold moisture and silt for better seedling establishment

The Crocodile seeder has been cost-effective, being robust and almost indestructible. The seeder drops seed into small pits which concentrate water and silt to keep the seedlings growing.

What are the best grasses?

Any grazable species that will establish reliably and spread to cover the area.

Running species tend to give best ground cover, and pertusa is well adapted to a range of infertile soils. Pertusa spreads better than buffel or urochloa, but the latter grow well on better country.

What further treatment is needed?

Follow-up treatment, usually by spot spraying, is essential on any woody weed, whatever the initial treatment.

Don't start on a new area until you have followed-up treatment on the last area.

Rubbervine spreading from creek flats