

Clearing or thinning trees

A–B pastures grow naturally under an open canopy of 30–80 large eucalypt trees per hectare. Pasture is reasonably productive under the trees although they compete for water and nutrients. Trees also suppress many woody shrubs.

During wet summers, there is often enough moisture for both grass and trees, but in drier years and as the season progresses competition increases. The effect is strengthened if the population of trees and shrubs increases.

In more southern regions, killing trees may double the growth of the understorey pasture, and it may be worthwhile clearing some of the better class of country.

Think very carefully before clearing mature trees. Much of the benefit is offset by the cost of controlling regrowth.

What are the advantages of clearing?

More grass. Grass production can double on the better box soils, with the advantage most pronounced in dry summers. However, the benefits depend on the fertility of the soil, the density of the trees and the region.

You can carry more animals or increase the weight gains per animal if the land and grass quality are good enough. You may want to develop better class land with a fully sown pasture for fattening or weaning.

Clearing may allow the grass cover to thicken, reducing erosion and loss of soil.

Easier stock handling. Mustering is easier in cleared country. Cattle may be self-mustered by using speartrap gates onto a cleared area that may be improved with sown or fertilised pasture.

Easier mechanical clearing of woody weeds. Dense infestations of currant bush or rubbervine can be cleared more easily with a dozer in open country.

What are the problems with clearing?

Biodiversity. Overcleared land loses its ability to keep nature in some sort of harmony. Without this balance, your land is potentially subject to degradation and loss of future productivity.

Cost. The cost of clearing may outweigh the benefits on poor country. You need to consider the initial cost of clearing, the expected benefits in terms of grass and stock, and how long your management allows the benefits to last before they are wiped out by regrowth.

Don't clear country with plenty of wattles, narrow-leaved ironbark or cypress pine. It is not worth the effort and is bad for land management.



Trees compete for water with the adjacent grass or crop.



Open grassland after partial clearing.



Do not clear sloping land with an unstable subsoil.



These wattles took off after the big trees were killed.



False sandalwood increasing under box.



Cypress pine invading because of lack of fire.

Develop your property plan to guide any tree clearing.

Erosion. Box trees frequently grow on solodic soils. Pulling trees or cultivating deeply afterwards can expose the dispersable subsoil to rain water, resulting in severe gully or tunnel erosion.

Salinity. Clearing ridges with permeable soils can cause salinity to break out on toe slopes or adjacent flats. Once the surface soil is saline, all production will be lost. Remedial techniques such as replanting are expensive, long-term and sometimes of doubtful effectiveness.

Woody weeds and regrowth. Seedlings and root suckers of trees and shrubs keep growing larger every year.

What regrowth?

Within five years after clearing and under minimal management, hundreds of small seedlings per hectare can grow into a much worse problem than the original open woodland.

More than half of the total population of eucalypts in a natural woodland are saplings under 1.5 metres high—suppressed by the mature trees. These saplings are usually missed when the trees are pulled with a chain or injected with herbicide. Once the mature trees are killed, the eucalypt saplings start to grow and new seedlings establish. At the same time, suppressed sandalwood, wattles, limebush and cypress pine start growing. False sandalwood may grow slowly (about 30 cm a year), and does not become a real problem for 5–6 years, but the other species can grow to 1.5 m in a good year.

If the soil has been disturbed by pulling, seed of many species may germinate. Seeds of currant bush, whitewood, sandalwood, cypress pine and wattles may have been lying in the soil, while seeds of rubber vine and bitterbark can blow in from nearby frontage country.

Do trees provide any benefit to grazing stock?

Animal production may be slightly higher under a light tree canopy in higher rainfall districts where there is less competition for water. Shaded green grass may be more digestible, and the grazing stock may suffer less heat stress in summer. The grass will be protected from light frosts in winter; minimum temperatures can be 2°C higher under living trees and 1°C higher under standing dead trees.

Some plant nutrients may be cycled from greater soil depth by the tree roots, but the overall effect of this on pasture growth is minimal. However, soil micro-organisms are more active in cooler, shaded soil and these can improve soil structure and infiltration rates.

Trees for shelter belts or stock camps should always be retained—even on your best country.

If I want to clear some land, where should I start?

Develop the best land on your property first—typically the brigalow land.

On fertile brigalow land:

- your sown grass will grow more densely and be of better quality
- blade-ploughing is cost-effective for sucker control and renovation in brigalow pastures.

Under the Native Vegetation Management Policy, you have to retain certain vegetation to avoid land degradation, maintain biodiversity and maintain 'ecological processes'. However, you can reclear woody regrowth and put in fencelines and firebreaks in 'essential' and 'routine' management operations.

What are the guidelines for clearing trees?

Even if it appears economical to clear trees, there are areas that should never be cleared. Land clearing guidelines for different types of country from the Department of Natural Resources are useful principles for any land.

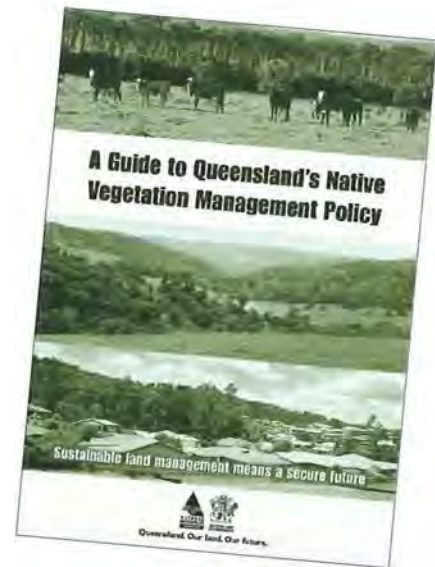
Plan to leave all these areas uncleared:

- steep hillsides or slopes
- erodible soils
- around water courses, wetlands or lakes
- intake ridges that produce potential salting
- useful or commercial timber
- dense understorey growth
- scenic value spots
- wildlife havens such as areas with old, hollow trees
- at least 10% of all land types.

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

- Keep clumps of trees for cattle camps at least 5 ha in area. With smaller clumps, the soil becomes overgrazed and compacted, while the tree-line is 'eaten' away at the edges by fires.
- Do not clear within 100 metres of 'permanent creeks' (those able to hold waterholes); tree roots prevent bank collapse better than grasses.
- Check local recommendations in your local Tree Clearing Guidelines or their successor.

Check the legislation before you start planning. You will need to submit a Land Management or property vegetation management plan before a Tree Clearing Permit can be issued by the Department of Natural Resources.



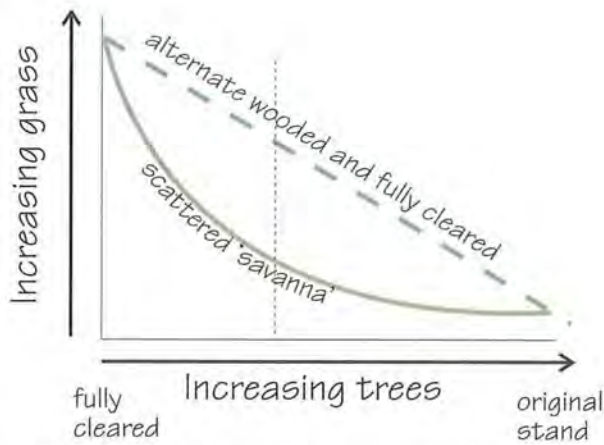
Check the latest tree clearing guidelines.



Alternate strips of cleared and original woodland—20% of the original tree population in strips at least 100 metres wide.



A savanna of scattered trees looks pleasant but it produces less grass and encourages widespread seedling regrowth.



For the equivalent number of trees, the alternate strips system produces more grass, and is better for biodiversity.



Do not put in stock immediately after pulling. Accumulate grass fuel to burn within two years to control regrowth.



Fire was used (eventually) to control box and wilga regrowth after this country was pulled.

Thin the stand or clear the lot?

If you are going to clear, alternate the cleared grassland with strips of uncleared forest. A 'savanna' of scattered trees may look scenic, but it needs 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 tree 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 widely re-infested with tree seeds.

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

Develop only an area that you can look after.

How soon can I graze after clearing?

The grass responds immediately after clearing or as soon as trees treated with arboricide stop using water.

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.

Eucalypt saplings grow out of reach of fire after about 3–4 years, become small trees in about 10 years, and sizable trees after 20–30 years. Thus pasture should be burned within 2 years of clearing.

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

What is the best way to control regrowth?

The cheapest control is to burn your grass while the woody weed seedlings are small. Fire will kill seedlings and keep saplings up to 2 metres tall under control by destroying the top growth. Periodic cool fires will prevent cypress pine invading on marginal country.

Fire should become a basic tool for managing your grazing country. If you can burn every 5–7 years, it means that your stocking rate is about right.

What are the other methods of control?

Dry years favour trees in grazed country. 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 computer-based *Woody Weed Adviser* and the DNR Pestfacts can help you decide on 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. Do not pull when the soil is very dry as the tree stems snap off leaving roots to sucker. Don't pull when it is too wet as small plants push over without being uprooted.

Graslan is effective on eucalypts 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; it is generally too expensive for low potential land, and may increase the risks of erosion, especially on slopes with unstable subsoils. Pasture seed should be sown if land is blade-ploughed.

Individual tree treatment. It is usually impractical to treat individual trees over large areas, but this may still be the best method against weeds such as rubber vine on some frontage country and isolated clumps of currant bush.

Controlling weeds

As in other regions, there are numerous weeds or problem plants that are either widespread throughout the A–B country or that are specific to certain districts.

Widespread woody weeds include currant bush (everywhere) and rubber vine in the north.

Currant bush (a.k.a. berry bush, Burrum bush, conkerberry) (*Carissa ovata* and *C. lanceolata*) is a prickly shrub that has thickened up over some 10 million hectares of grazing land.

What is the best way to control currant bush?

The cheapest way is the ecological approach of light stocking and burning—currant bush can be killed with a hot fire. The problem is that once the bushes become large or close together, there is insufficient fuel surrounding them.

What are the other options?

Mechanical clearing with chisel ploughing followed by stickraking can reduce the bush canopy by 90%, and kill 80% of the bushes.

This costs about \$55/ha and is the most cost effective mechanical treatment for dense currant bush.



Blade ploughing is effective and economical only on cleared brigalow regrowth.



Currant bush is thickening on over 10 million hectares of grazing land.



Keep out rubbervine — a serious weed of riparian vegetation and frontage in north Queensland.