How to Establish or Restore Native Trees in Central Queensland Grazing Systems

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Funded by

fba

Queensland Government

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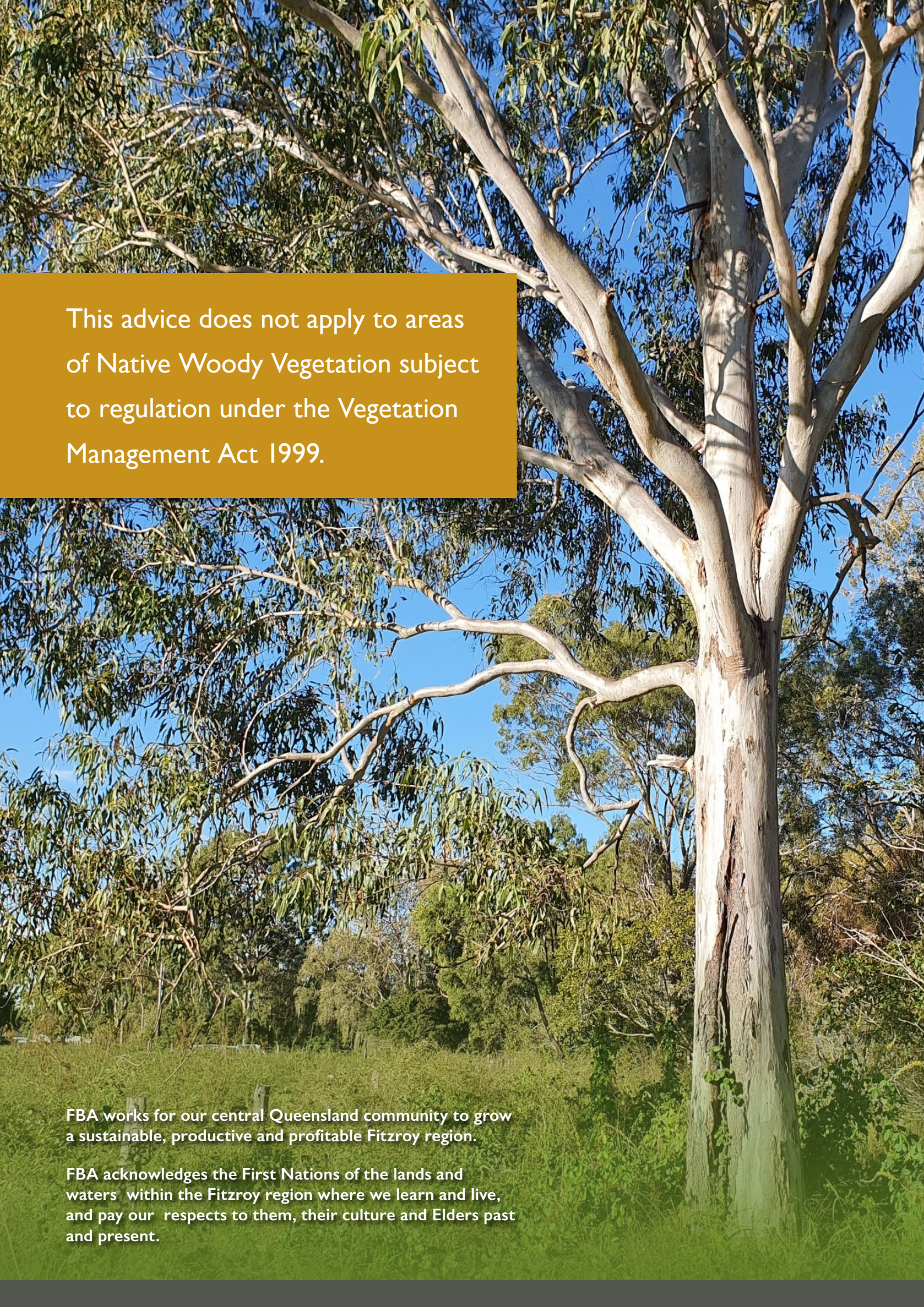

This advice does not apply to areas of Native Woody Vegetation subject to regulation under the Vegetation Management Act 1999.

FBA works for our central Queensland community to grow a sustainable, productive and profitable Fitzroy region.

FBA acknowledges the First Nations of the lands and waters within the Fitzroy region where we learn and live, and pay our respects to them, their culture and Elders past and present.

With over 30 years of practical experience propagating, planting and restoring native vegetation, Steve Elson is regarded as a local ecology and botany expert.

Steve is highly regarded by all those who are lucky enough to work with him. FBA are forever grateful for the unsurpassable knowledge that Steve imparts so willingly and hope to share this gift through this resource.

True to Steve's style, this guide is a pragmatic approach to establishing or restoring native trees in central Queensland's often unkind and unrelenting climatic conditions.

If you need a hand getting started, identifying a gum or choosing which natives are best for your place, FBA is here to help.

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Disclosure Statement

Potential Benefits of Native Trees in Grazing Systems

Retention or restoration of a healthy mix of local native trees and other plants on central Queensland properties can have a variety of benefits for biodiversity, land productivity and the well-being of land managers and the community. Trees, shrubs and pasture species compete for water, nutrients and sunlight but may productively co-exist under the right circumstances. Finding the right balance for a mutually beneficial relationship is not always simple or easy, however, native vegetation may help to:

- moderate local climate through reduced wind speed, reduced ground temperature, and increased humidity
- increase water and soil nutrient cycling through leaf drop with associated soil improvement (carbon, nutrients, micro-organisms, permeability)
- control erosion through protecting soils and riverbanks
- reduce land degradation and salinity through reduced water-logging and dryland salinity problems
- improve water quality and availability
- provide habitat (food and shelter) for wildlife; including for beneficial insects, birds and bats
- provide wildlife drought refuges in areas with higher soil moisture
- connect areas of wildlife habitat to allow movement for feeding, breeding, survival during droughts, and dispersion following droughts
- provide shade and shelter for livestock which reduces heat stress and increases their ability to put on a hold weight
- provide a renewable source of timber
- store carbon above and below ground, mitigating the effects of greenhouse gas emissions and enhancing soil condition
- improve air quality

There is increasing interest in the role that woody native vegetation plays in grazing land, especially the potential for increased productivity and profitability. This has required greater consideration of the land management practices that influence the density and species mix of woody native vegetation, especially grazing animal management and the use of fire.

Property Goals

Before determining how to manage existing native vegetation on a property (or how and where to restore native vegetation) it is important to determine property (or paddock) management objectives. Plus, how trees, shrubs or other native vegetation fit with these objectives. Cropping land is usually simpler than grazing land, as native vegetation can only be located in discrete areas within and around the cropped areas, and these areas are often grazed. For this reason, the following advice is most relevant to grazing properties or to parts of properties that are grazed.

Some simplified property (or paddock) objectives could include:

- maximise profit
- maximise or increase grazing productivity
- increase soil carbon or total carbon storage
- increase grazing productivity while also increasing native species diversity and populations
- maintain grazing productivity but increase native species diversity, populations, and resilience
- improve productive and environmental condition of permanent perennial pastures (e.g. Accounting for Nature® (AFN) score – learn more about this method on Page 6)
- improve score for other AFN approved assessment methodologies
- restore "natural" ecology in selected high priority areas e.g. riparian, landscape linkages, semi-evergreen vine thicket, threatened species habitat (feeding, roosting, nesting, predator cover).

Each property (and the native vegetation on each property) will vary due to topography, aspect, soils, moisture, pre-clearing vegetation, history of grazing and fire, and other factors. In order to understand how native plants (especially woody native plants) can be beneficial in grazing systems, it is recommended that consideration be given to programs run by Fitzroy Basin Association, and other organisations and individuals that specialise in natural resource management.

Please note: this advice does not apply to areas of Native Woody Vegetation subject to regulation under the Vegetation Management Act 1999.

Native Vegetation Objectives

Once the overall property (and/or paddock) objectives have been determined, it is easier to set objectives for native vegetation. These could be anything from a minimalist need for some shade during summer to natural ecosystem restoration. Some simple objectives are as follows:

- trees for shade
- trees for improved grazing productivity
- increased native plant species – ground, shrub, canopy, emergent
- reduced tree and shrub density
- restoration of natural* ecosystems in priority areas
- improved wildlife habitat connectivity
- improved wildlife drought resilience

If a specific rating system is being used (such as one of the AFN approved methodologies) a detailed analysis of the assessment methodology may be needed, including consideration of:

- assessment scores for each site and the paddock or property
- the relationship between these scores and native plant species occurrence and density
- the practical ability to influence these scores by management of native plant species occurrence and density.

**as natural as possible considering that restored vegetation cannot be the same as remnant vegetation*

The Accounting for Nature® Method

The Accounting for Nature (AFN) Method to assess the productive and environmental condition of grazing land relies on simplified metrics from the Queensland BioCondition Assessment Framework (Queensland BioCondition Manual, Eyre et al. 2015) to assess the environmental condition of permanent perennial pastures; including native woody vegetation. The methodology uses comparisons between measures of native woody vegetation at a property site with benchmarks for the regional ecosystem that is present at the site (remnant regional ecosystem) or that was present on the site before clearing (pre-clear regional ecosystem). A reduced score may result from not enough or too many trees, or because trees are not high enough. A significant part of the score is influenced by the proximity to the site of remnant vegetation and this can't be influenced by management actions.

It is important to recognise that re-establishing a native plant community similar to a natural ecosystem is not always consistent with maintaining or increasing grazing productivity, at least at the local area scale (e.g. semi-evergreen vine thicket and shrubby woodlands). **However, loss of productivity in parts of the property may be acceptable if overall productivity is maintained or increased.**

Native Vegetation Establishment and Management

Ground Layer (grasses, forbs)

The composition and density of the ground layer is strongly influenced by the history of grazing, fire, and clearing of a site; in addition to all the other factors associated with topography, soils, endemic plant species and introduced species. If an objective is to increase native ground layer species (e.g. native 3P species such as *Themeda australe* - kangaroo grass, *Heteropogon contortus* – black spear grass, *Dicanthium sericium* – Queensland bluegrass, *Astrebla spp* – Mitchell grasses), then expert advice should be sought on:

- desired species of native plants that are (or were) present, and
- an appropriate grazing (and possibly fire) regime that will bias toward these species over time.

In some cases, the desired native species may need to be reintroduced.

3P species are those that are **palatable, perennial and productive**.

FBA's Land Condition Photo Standards in Central Queensland book outlines central Queensland's 3P species along with the landforms where they are found and thrive.

Example: Box flats
Land Condition: A
Pasture Species include: Forest bluegrass, Pitted bluegrass, Windmill grass, Dark wiregrass, Buffel grass, Sida spp., Five-minute grass

Example: Coastal flats with mixed eucalupts on grey clay
Land Condition: A
Pasture Species include: Black speargrass, Seca stylo, Golden beard grass, Verano stylo, Flannel weed, Native bluebells, Spiny sida

Example: Narrow-leaved ironbark with rosewood
Land Condition: A
Pasture Species include: Black speargrass, Jericho wiregrass, Golden beard grass, *Sida* spp.

Example: Serpentine ironbark
Land Condition: A
Pasture Species include: Black speargrass, Native sorghum, Sensitive plant, Kangaroo grass, Queensland bluegrass

Canopy/Emergent and Shrub Layer (woody native vegetation)

If regrowth of native woody vegetation is too thick based on the objectives set for the site, thinning (or removal) can be undertaken. As the intent of this guide is to assist establishment and management of native woody vegetation, only thinning will be considered.

If native woody vegetation is too sparse (or non-existent) based on the objectives set for the site, consideration must be given to the potential for increasing the density of stems, and the native species to be promoted. **First preference should always be retention of natural regrowth of the target native species, due to the very high cost and high risk associated with planting trees and shrubs.**

Depending on the objectives set for the site, some expertise may need to be sought to identify desired species and density and determine the practicality of achieving the objective for the site. Central Queensland land managers can seek this expertise from FBA.

Natural woody regrowth promotion and control

Priority areas for regrowth retention

Priority areas for retention of regrowth may depend on a particular property rating methodology (for example AFN). However, for biodiversity, the priorities should be riparian vegetation (creek lines, floodplain, gullies, wetlands, springs), wetter areas in the landscape (e.g. outwash areas below hills), and landscape connections between riparian areas and remnant vegetation or between patches of remnant vegetation. Habitat for threatened fauna species and areas containing threatened plant species are also important but may need expert advice to locate. Similarly, priority may be given to threatened regional ecosystems (listed by the Queensland Herbarium) or threatened ecological communities (listed under the *Commonwealth EPBC Act*).

Areas where there are over-mature trees with hollows are of potentially higher value to mammals that live in trees, hollow nesting birds and bats. Increasing the extent and/or connectivity of these areas through the retention of natural regrowth, especially in riparian zones, can be very beneficial to fauna.

In order to increase the density of native woody vegetation in an area by natural recruitment, there needs to be a source of seed. Generally this means having at least one remaining tree (and preferably several and a mix of target species) that will produce seed. This seed must then be dispersed by wind or water (rarely by birds or bats) and germinate under suitable conditions. Areas for natural regeneration can be selected based on the likelihood of success.

Open remnant ironbark woodland (bottom) adjacent to a rehabilitation area

It is theoretically possible to obtain seed for target species and disperse this seed in the areas where trees are desired but where currently no seed trees exist. However, this is a high risk – low return strategy and is only worth attempting in specific situations with careful planning. In grazing land, it may be possible to selectively over-graze an area when there is good rainfall, disperse suitable tree seed, and hope that the trees will establish quickly enough to beat the grass. Grazing would need to be constrained until seedlings adequately establish.

Target Species for Regrowth Retention

In order to determine which species are desirable to retain in order to meet the objectives that have been decided on, some knowledge of native plant species is desirable. Most commonly this means knowledge of the local eucalypt species that occurred within the regional ecosystems that were present on the property prior to clearing. *Appendix 1* offers a guide to identifying eucalypt species for someone with little botanical knowledge and reasonable computer skills.

Some soils naturally supported few (if any) species of trees (e.g., "downs" country). Establishing trees on these soils requires careful species selection and usually requires planting rather than natural recruitment.

Self-mulching (cracking) clays naturally support a limited range of tree species, often dominated by *Acacia harpophylla* (brigalow). Although establishing trees on these soils by natural recruitment is possible, brigalow is often not desired and careful species selection is needed.

Open grassy brigalow

Semi-evergreen Vine Thickets (SEVT) often contain numerous species that are not so easy to identify. However, it is still possible to identify dominant canopy and emergent species without significant botanical knowledge. *Appendix 2* offers a guide to identifying SEVT species.

Density of Target Species for Regrowth Retention

The density (stems per hectare) of target woody species desired to be achieved depends on the property (or paddock) objectives with some allowance for losses due to insect attack, drought, grazing animal impact etc. For example, a mature grassy eucalypt woodland may have widely spaced (15 – 20m) canopy trees with occasional sub-canopy and shrub species. It will take 10 - 50 years to get from seedling recruitment to something approximating this during which time there will be significant losses and possibly some gains. Adjusting management to achieve the lowest cost establishment requires an intimate knowledge of how woody plants respond to grazing, fire and other management actions.

Tree seedlings will usually only establish and survive where there is limited competition for moisture. Of the millions of seeds produced by eucalypts each year, very few germinate and survive. Good grass cover will strongly limit natural recruitment of woody native species. However, if bare ground is available when soil moisture increases, substantially woody regrowth can establish provided that a soil seed bank exists. The timing and intensity of grazing can be used to promote or prevent woody species recruitment.

Once woody plant species have established, a decision must be made as soon as possible on whether the density is too high or too low. A density lower than the objective for the paddock requires management to try to promote retention e.g. by excluding or limiting stock until high enough to withstand grazing. If the regrowth is at a density significantly higher than the objective for the paddock, it requires management to reduce numbers. There are a number of strategies that may be used to reduce the density of woody plant species including fire, mechanical removal, herbicide, and grazing. The practicality of each approach depends on the species desired to be retained, degree of establishment, topography and a variety of other factors that may be relevant to a site.

Thickening of woody species in a regrowth eucalypt woodland

The cost of thinning is a significant issue and property owners often know the best strategy to achieve their objective. However, thinning is the only significant cost associated with establishing woody native plants by natural recruitment (assuming productivity is not affected).

A series of Planned Burn Guidelines developed by Queensland Parks & Wildlife Service (https://parks.des.qld.gov.au/management/programs/fire-management/guidelines) may provide useful guidance for the use of fire to control the density of native woody regrowth.

Successful Regrowth Retention Timeframe

The timeframe for initial (establishment) and ultimate (mature) success varies widely according to species, rainfall and other factors. However, a rough guide of 2-5 years to firmly establish recruitment and 20 years to reach reasonable canopy is suggested for eucalypts.

Tree planting

Tree planting on grazing land in central Queensland is not recommended unless it is considered highly beneficial and worth the very high cost. While it is possible to purchase tubestock plants suitable for a site for $3 or $4 each, the cost of site preparation, planting, watering, feral and native animal guards, frost guards, marker stakes, exclusion of grazing, and ongoing maintenance for 3 – 5 years can be very high. The most successful tree planting projects are supported by a significant amount of time and effort by the property owner/manager. The probability of failure is high, mainly due to inadequate soil moisture at the time of planting or in the first couple of years.

The following advice is based on 30 years experience with tree planting in central Queensland. There are many ways to do it and variations are needed to suit circumstances. Success usually depends on water and weed control, although sometimes fire or feral species will interfere.

Planted site supplementing regrowth

Target species

While it may be possible to achieve the paddock (or property) objective for woody vegetation using exotic or non-local native species, this advice relates only to species that were naturally present on a site prior to clearing. Not all local native woody species are suitable for planting and the following criteria are relevant (there are many others depending on the objectives):

- mature height and canopy cover
- growth rate
- fire sensitivity
- resistance to insect attack
- availability of tubestock.

In general, species selection for a site should start with a comprehensive list of native species that previously occurred on the site. In many situations this will require a review of the remaining native species on the site (if there are any), and/or a survey of remnant native species in nearby areas of the same soil/geology/land type. In Queensland this is supported by the availability of mapping of pre-clearing and remnant regional ecosystems. However, care must be taken to ensure that the site geology, landform and soils are consistent as the mapping may not be accurate at paddock scale. A site may have supported more than one pre-clearing regional ecosystem or plant community.

A mixture of species is generally better than a monoculture as this provides more diversity and continuity of food supply (flowers, insects, leaves) and ultimately habitat. The actual mix of species depends on the objectives for the site and may include shrubs and trees.

Planting Density

The planting density depends on the objectives for the site and the species mix selected to achieve the objective. In general, eucalypts will be widely spaced (10 – 20m) and smaller trees and shrubs will be more closely spaced. Allowance must be made for potential losses which can vary from 5% – 100%.

Timing of Planting

As a general principle, planting of tubestock in central Queensland should occur when there is good soil moisture and conditions are warm enough to allow rapid establishment of roots ready for drier times. Immediately after the wet season is generally the best, when daytime temperatures are reducing, and before the cold of winters slows growth or severe frosts may kill young plants. This allows the plants to get their roots established and prepare for the typical hot dry spring. Unfortunately the timing of the wet season tends to be unpredictable (and it may not occur). This can be partly offset if enough water and labour is available to put enough water into each plant.

Purchasing Plants

Purchase desired species as tubestock in good growing condition (not root bound) and reasonable height (30 – 50cm). When purchasing tubestock, it is desirable to get plants that have been grown from seed collected at least within a similar climatic zone. Blue gums from south-east Queensland may not grow so well in the drier and hotter central Queensland.

Note: It can be difficult to impossible to purchase the desired species. FBA usually grow plants to meet requirements. There may be a lag of several months to acquire seed, germinate and grow to suitable size. The ideal approach is to collect your own seed and propagate the plants. This is easy to do and can be done at low cost, but does take time.

Site Preparation

Weed suppression through establishment of full canopy cover, or until adequate growth of each tree to effectively compete with weeds, takes 3 to 5 years under good seasonal conditions. It is therefore desirable that the weeds on the site or at least within the vicinity of each planted tree are removed and the soil seed bank removed, exhausted or prevented from germinating, prior to planting. The re-introduction of weed seeds by wind or water flows must also be countered. Unfortunately, this can be very difficult to achieve.

Management measures prior to planting to reduce competition from other plants may include:

- removal of top layer of soil to remove seed bank
- multiple herbicide applications to exhaust the seed bank
- use of pre-emergent herbicide
- effective buffers around the edge of plantings to limit reintroduction of weed seed
- control of weeds upslope of planting areas.

Herbicide can be used to control grass and weeds if appropriate. If you cannot use herbicides the following methods are recommended:

- Graze and/or slash to reduce grass and weed cover to assist layout and preparation to plant
- To assist ongoing maintenance (possibly for 5 years), it is best to plant in straight rows (in both directions if possible) and permanently mark the location of the rows and each tree
- Remove the top layer of soil and grass/herbs within 1m radius of location of each hole to reduce competition with planted tubestock (including the soil seed bank). Scraping with a bucket or blade may be practicable
- Use a post-hole auger to drill holes a minimum of 40cm deep at the location of each tree to allow for planting of trees with root base at depth of 40cm. Over-drilling is not a problem as holes can be cleaned out with a shovel or partly filled before planting as required. Roughen the holes by rocking the auger when depth is reached or using a crowbar or shovel. **Note**: The most efficient way to prepare the holes will depend on the site. The important thing is to get a deep hole preferably wide enough to get a shovel down.

Clearing out a plant hole (left) and trees planted in a row (right)

Planting

One of the major causes of failure of trees to establish is drying out of the root mass prior to and just after planting. The potting mix used by nurseries has good moisture holding capacity and good drainage characteristics. However, if the potting mix dries out, it can be very difficult to rewet it. Nursery plants get two or more waterings a day which generally prevents problems. However, potting mix in tubestock could dry out within an hour or two on a hot day. With the time taken to collect and transport the tubestock to the site, hole preparation, and distribution of plants to holes, drying out of the potting mix/root mass is a significant concern.

Ensure that tubestock does not dry out from time of collection from the nursery to time of planting of each tree. This will require very regular watering to prevent the potting mix drying out (could be hourly under hot dry conditions).

Plan the rate of planting and number planted per day to be consistent with the availability of water.

- **Minimum 20 litres per tree within 2 hours of planting**
- **Minimum 20 litres per tree follow up watering within 1 day of planting**
- **Minimum 20 litres per tree follow up watering 1 week after planting**

Excavate or fill each hole to provide for planting at a depth of 40cm. The aim is to place the plant roots at the bottom of the hole (approx. 40cm deep). This requires preliminary cleanout of each hole using a shovel, and careful placement of the tubestock in the bottom.

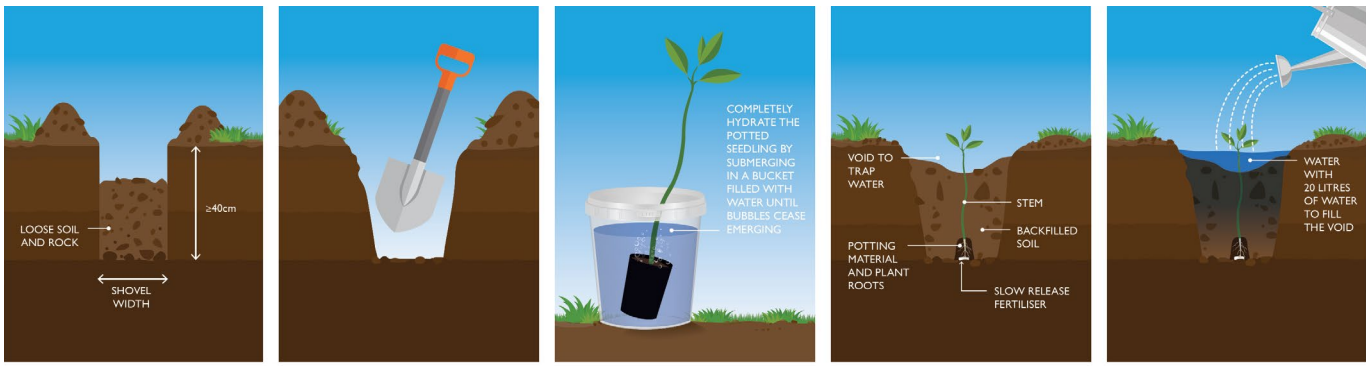
Note: Deep planting may not be appropriate in some locations, and some soil types, that are prone to water-logging, or when the season is very wet. The plants can drown if the hole remains filled with water for long periods.

Pre-watering of holes may be desirable if the soil is very dry. Pre-watering does not affect the recommended volume of water to be applied after planting.

Prior to planting each tree, immerse tubestock in water (addition of seaweed extract to this water is desirable to stimulate root development) until air bubbles stop coming up, then remove tree from pot, taking care to minimise root disturbance.

Note: Commercial potting mix will dry out quickly and becomes water repellent. Rewetting requires total immersion of the pot in water until all air is removed.

Place tree with root base at 40cm depth and backfill with soil. Backfill can extend well up the stem of the tree but should leave a significant depression around the stem (see FBA Deep Planting Guide below). The depression around the plant is intended to ensure that all of the initial watering (approximately 20L) would funnel to the roots and the immediate vicinity of the roots. Do not firm down the backfill as this may inhibit water penetration and dispersion of soil into the potting mix on first and second watering.



Initial auger hole | Cleaned out hole | Hydrate the seedling | Final hole with planted tree | Water with at least 20 litres to fill the void

Deep planting guidelines

This planting technique has to be varied according to the height of the tubestock to ensure the plant does not end up completely buried. Backfilling to a level well up the stem of the plant is encouraged, without burying the top of the plant.

Note: Deep planting allows the roots to access water deeper in the soil profile at an earlier stage and, in conjunction with the water capture well, should offer improved growth/survival in dry seasons.

Fertiliser

Provided the species planted are the same as naturally occurring at the planting location, and the soil has not been substantially degraded, fertiliser is not considered to be essential to get good growth rates. Water availability (including consideration of competition from roots of other plants) is usually the main factor determining growth rate, at least to a point where there is adequate water at all times. However, appropriate fertiliser application may improve growth rates and resistance to disease, and may be essential in degraded sites.

TIPS FOR SUCCESS

1. Water with a minimum of 20L/tree within 2 hours of planting. (50 trees will require at least 1000L). Watering should ideally commence immediately after planting each tree with the aim of dispersing the soil into the potting mix and wetting the surrounding soil. Dispersion of soil into the potting mix should ensure that the potting mix will not become water repellent and that the roots can immediately grow out into the surrounding soil (this is not effective in sand). The volume of water (first and second watering) must be adequate to disperse the backfill soil into the potting mix. Failure to get the initial planting and watering correct can set the trees back a year or more in growth potential due to death of roots in air pockets.
2. Pre-watering holes is good, particularly in dry soils, but the watering volume after planting is the same. If the soil is saturated at the time of planting, it may be difficult to apply 20L of water even with a good well around the plant. Apply sufficient water to fully disperse the soil into the potting mix around the roots, even if multiple small applications are necessary. There should be no sign of air bubbling from the hole.
3. Clearly mark each tree with a durable stake approx. 1.5m high (paint-marking helps) to assist locating during maintenance (may need 3 stakes if installing animal or frost protection).
4. Install grazing animal (rabbits, wallabies, hares) protection as/when required.
5. Install frost protection (hessian or plastic 'tent') if required. It is recommended that planting occur after the risk of frost has passed or at least one month before risk of first frost.
6. Carry out a follow-up watering at the same rate (minimum of 20L) within 1 day of planting (same day or next). More water may be needed in heavy clay soils. This second watering should ensure that clay is dispersed into the potting mix around the roots.
7. Mulch if practicable (and if fire risk is acceptable) after the second watering using weed free mulch that is not water repellent.
8. Prevent stock access until the trees are of a height that can withstand likely impacts (could be 2 - 3m high for eucalypts.

Maintenance

Provide time for a follow-up watering at the same rate (minimum 20L/tree) about one week after planting. This watering is to ensure that the roots have adequate available moisture in the surrounding soil to keep growing out.

Further watering (after first week) depends on available soil moisture and rainfall. Monitor trees for moisture stress and apply water (minimum 20L/tree) as required, or water more regularly if a faster growth rate is desired. Maintaining adequate soil moisture is critical to ensuring survival and growth of trees. Availability of moisture depends on the local soil, topography, seasons, and capacity to provide waterings until well established. Watering only when the plants look stressed should force the roots to chase moisture deeper in the soil and build resistance to dry periods.

Control competing plants around each tree until at least 2m high. The trees need to be protected from competition from grass, herbs/forbs and weeds until sufficiently high to outcompete, or until canopy cover is adequate to shade out competition.

Manage fire risk as required using fire breaks, strategic grazing, slashing, brush cutting as appropriate.

When trees are sufficiently well established, grazing can occur for short periods such that stock will only target the grass.

Timeframe for Tree Planting Success

The timeframe for initial (establishment) and ultimate (mature) success varies widely according to species, rainfall and other factors as with natural regrowth, 2-3 years to firmly establish recruitment and 20 years to reach reasonable canopy for eucalypts. However, most tree plantings fail either immediately (due to planting/watering problems) or in the first year or two due to low soil moisture or too much competition (or both).

Fitzroy Basin Association (FBA)

FBA is central Queensland's natural resource management organisation. We help central Queensland land managers improve the condition of their land – working to balance productive and environmental outcomes.

FBA has a team of technical experts and resources (like this guide) available to land managers located in the Fitzroy. To organise an obligation-free property visit to discuss topics in the guide, or anything else, contact FBA on 07 4999 2800 or admin@fba.org.au

Appendix 1.

An approach to identifying eucalypts in central Queensland

List eucalypts potentially occurring in the area of interest

1. List the (pre-clearing) regional ecosystems in the area of interest (DES online map https://apps.des.qld.gov.au/map-request/re-broad-veg-group/ or GIS https://qldglobe.information.qld.gov.au/)
2. Get full regional ecosystem (RE) descriptions for each RE from regional ecosystem description database (REDD) https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/descriptions/download
3. Get technical descriptions for each RE https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/technical-descriptions
4. Get a species list for the area of interest (20km radius) https://apps.des.qld.gov.au/report-request/species-list/
5. If really keen, get the Queensland plant census for the pastoral district in which the area of interest is located https://www.data.qld.gov.au/dataset/census-of-the-queensland-flora-2020
6. From the RE descriptions and the species list, make a list of the eucalypt species (3 genera Eucalyptus, Corymbia, Angophora) that could be present in the area of interest.

Identify species on site

1. Consider what eucalypt species could be there based on the pre-clearing RE mapping (at site and nearby), the RE description and technical description (and possibly the species list). If possible, consider what other species are present to confirm the RE.
2. Identify the likely species based on bark and form. Confirm with Euclid description (factsheets should be adequate) and consider alternatives e.g. which bloodwood, which ironbark. Look at more than one example. https://apps.lucidcentral.org/euclid/text/intro/index.html
3. If necessary, refer to more detailed diagnostics in Euclid e.g. seed capsules to determine which genus, bark structure and colour, leaf orientation. Usually only need to look at the most obvious differences between species.

Appendix 2.

An approach to identifying SEVT regional ecosystems and SEVT species

1. List the (pre-clearing) regional ecosystems in the area of interest (https://apps.des.qld.gov.au/map-request/re-broad-veg-group/ or https://qldglobe.information.qld.gov.au/)
2. Get full regional ecosystem (RE) descriptions for each RE (including sub-RE descriptions) from regional ecosystem description database (REDD) https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/descriptions/download
3. Identify the regional ecosystems or sub-regional ecosystems that contain semi-evergreen vine thicket (SEVT)
4. Get technical descriptions for each RE containing SEVT https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/technical-descriptions
5. Get a species list for the area of interest (20km radius) https://apps.des.qld.gov.au/report-request/species-list/
6. From the RE descriptions and the species list, make a list of SEVT species that could be present in the area of interest.
7. List the dominant species for each SEVT RE in the area of interest and check the internet or Rainforest App to see what they look like.
8. On site, locate the SEVT (if possible) and see if you can see the species listed.
9. If necessary, use a key to identify unknown species. (Rainforest Plants of Australia app, https://apps.lucidcentral.org/rainforest/identity/key.html, Rainforest Trees and Shrubs - A field guide to their identification)

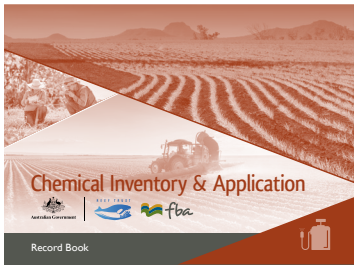
Register Your Interest
FOR FBA'S RESOURCES

☐ Visitors

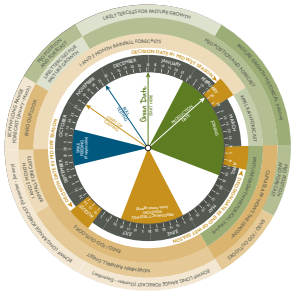
☐ Fire Management

☐ Supplements

☐ Vehicle / Machinery Service



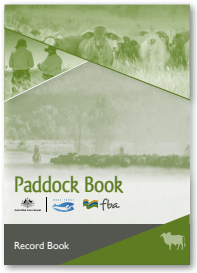
☐ Chemical Inventory & Application



☐ CQ Grazing Production Planner

☐ Land Condition Photo Standards in Central Queensland: A guide for practitioners

☐ Pasture Budgeting in Central Queensland Photo Standards



☐ Paddock Book

☐ Self-Assessment Toolkit

YOUR DETAILS

*Full name:

*Phone/mobile: *Email:

☐ If you'd like to request a property visit with one of FBA's staff please leave your details below.

Address:

Property name: Property size (ha):

HOW TO REQUEST ONE OF OUR RESOURCES

@ Send photo of completed form to Vicki.Horstman@fba.org.au

Fitzroy Basin Associaton, PO Box 139, Rockhampton Qld 4700

Call Vicki on 07 4999 2800 or 0419 160 537

*Required

Tree video trilogy turns the tables on grazing paradigm

FBA has produced a series of three videos shedding light on the myth that fewer trees in your paddock means more efficient cattle grazing.

In the last half of the 20th century, we witnessed the wholesale clearance of trees on CQ land based on a misconception that more land was being opened up for grazing and cropping.

Today, FBA is spreading the word to encourage land managers and communities to stop clearing and start planting trees to bring CQ paddocks back to life.

Take a few minutes now to watch these compelling videos set in stunning CQ backdrops which tell the story of the importance of trees in your paddock, the benefits to soil biodiversity and water systems and the profit increases in grazing enterprises.

An introduction to trees in grazing systems

Video 1: An introduction to trees in grazing systems

Raising cattle and trees together can produce immense benefits for your property, the region, and the planet.

FBA Environment Leader, Shannon van Nunen, introduces the journey of discovery about how trees in your paddocks can improve land value, biodiversity, and productivity.

Optimal canopy cover for grazing

Video 2: What is optimal for canopy cover for grazing?

30-40% canopy cover is desirable for many reasons including cattle shade, species diversity and water retention.

Tree consultant Steve Elson explains how to plant trees efficiently for best survival rates and Rolleston land manager Cam Gibson tells us the story of how trees on their family property improve cattle temperament and weight gain consistently throughout the year.

Practical experience and science of trees in grazing systems

Video 3: Practical experience supports what science has been telling us

CQUniversity researcher Dr. Chris O'Neill explains the science behind how 30-40% canopy cover in a paddock improves cattle weight gain better than a paddock cleared to have maximum space for grazing.

Cam Gibson supports this with his story of how calmer and cooler animals are more inclined to continue feeding during summer months because they can stay cooler and eat more nutrient dense grass species found in the shade of canopy cover.

To help you get trees in your paddock, contact one of the team at FBA on 07 4999 2800.

These videos are supported by Fitzroy Basin Association through funding from the Queensland Government's Natural Resource Investment Program.

This resource has been specifically designed for central Queensland land managers to help them establish or restore native trees in grazing systems.

To learn more about the benefits of trees in paddocks or how to get started contact FBA at fba.org.au

This document is funded by Queensland Government's Natural Resources Recovery Program with support from Fitzroy Basin Association.