

Tree Configurations Guide

The right trees in the right place are an investment for your farm and future.

There are many ways of designing tree plantations on your farm. To maximise the benefits and chances of success, careful design and management is key.

Tree configurations can vary greatly, and depend on the available space and your goals for planting trees, whether that's increasing on-farm productivity, diversifying farm income or supporting conservation. There are a several configurations to consider for your property.

Which tree configuration?



BLOCKS

Blocks are typically large tree plantations in areas of farms dedicated to forestry. They are primarily established for commercial wood production; however, depending on the design of the plantation, they can also bring benefits such as shelter and habitat long before harvest time.

Plantation blocks contain trees as long-rotation crops to produce large volumes of wood and timber within a designated area. Species vary significantly depending on the objectives of the landholder and the needs of the identified end-market.

For more information on species selection and markets, read Fact sheet 15 – Economic benefits and Farm Guide No. 14 – Tree Species List

As plantation blocks are primarily designed to produce wood products for market, active management is required (e.g., thinning and pruning) and, when the time comes, harvesting. The position of plantation blocks should therefore allow for machine access and transportation of wood products to market. Consider the position of slopes, farm infrastructure and roads to avoid costly works when it comes to harvesting time.



Example of a plantation block. Source: Department of Agriculture, Fisheries and Forestry.



WOODLOTS

Woodlots are smaller plantings of less than 10 hectares in size, generally positioned in opportunistic positions such as paddock corners, between pivots or in unused areas of land. Woodlots offer multiple on-farm benefits such as improved soil health, water quality, shelter and biodiversity, and can therefore be designed in response to specific farm needs. They also present small-scale wood production opportunities, including firewood, construction materials or biomass.

Designing and establishing a woodlot is subject to the same rigorous planning process as any other plantation. There are, however, some key considerations for this type of planting:

Maximising on-farm benefits

Consider where your trees can be strategically placed to support and enhance on-farm productivity. This could include positioning a woodlot to control ground water levels, reduce salinity or protect soil from erosion. Well-placed woodlots are ideal for providing shade for stock, also known as 'stock havens'.

Harvesting your woodlot

Consider the placement of your woodlot for management and harvest access. If you require machinery to undertake these activities, farm infrastructure and roads should be taken into account, so trees can be accessed without significant disruption of farm operations.



Example of a woodlot. Source: Department of Agriculture, Fisheries and Forestry.



BELTS

Belts are linear plantings consisting of rows of trees, which are typically placed around paddocks to provide shelter from wind, heat and rain. Belt plantings also offer water quality, soil health and biodiversity benefits, as well as commercial wood production opportunities.

The design and management of a belt of trees can influence wind speeds on both sides of the plantation. Shelter efficiency is impacted by many factors, including height, depth, orientation, permeability and size. Typically, belts consist of at least three rows of trees.

Shelter

As the primary benefit of belt plantings, shelter can:

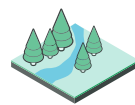
- Improve paddock microclimate
- Reduce livestock mortality
- Lessen crop damage and soil erosion
- Reduce need for irrigation
- Improve growth rates of stock and crops.

Species selection for belts varies depending on the height and depth requirements of the site, and whether you are planning to harvest the trees for commercial purposes. Native and exotic species can be used, and will generally require management (e.g., pruning and thinning).

For more information on the benefits of shelter and how to design a shelterbelt, read Farming Guide No. 2 – Farm Shelter.



Example of a shelterbelt. Source: Department of Agriculture, Fisheries and Forestry.



RIPARIAN

Riparian vegetation is located at the edge of waterways (e.g., streams or rivers) and is made up of trees, shrubs, herbs, sedges, rushes and grasses. Healthy riparian vegetation improves on-farm and catchment water quality by reducing erosion and sediment runoff. Riparian vegetation can also provide flood protection, biodiversity and habitat, and shelter.

To maximise the effectiveness and success rate of riparian plantings, species should be selected according to their position on the water bank. This includes:

- **Low zone** – areas closest to the water edge, to be planted with rushes and sedges that can withstand moisture for long periods
- **Mid zone** – areas further up the bank, to be planted with a mixture of grasses, rushes, shrubs and small trees that may experience minor winter floods, but dry summers
- **Upper zone** – areas furthest from the water edge, to be planted with hardy trees and shrubs that are dry for most of the year.

The management of riparian vegetation varies according to its condition:

Condition	Description	Management approach
Poor	Vegetation is limited with a high level of weeds and pasture areas, erosion is present, sediment is in waterways, and stock has unlimited access.	Riparian area likely requires a proactive revegetation regime including stock removal.
Good	Vegetation is fragmented with moderate to low diversity and habitat, weeds and erosion are present, and stock has access to waterways.	Management activities such as weeding and fencing can often improve riparian outcomes without the need for significant revegetation.
Excellent	Vegetation includes high levels of native species, low to no levels of weeds, and offers a diverse habitat.	No change to existing management approach is necessary.

Characteristics and management approaches to different conditions of riparian vegetation

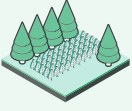
A major threat to riparian vegetation on farms is browsing pressure from livestock. Where stock is allowed to enter riparian zones, vegetation can be damaged and waterways contaminated. Excluding stock from riparian zones (e.g., by fencing) is an important step in any management of riparian zones.

Weeds are equally common in riparian zones, including willows, gorse, hawthorn and blackberry. Efforts should be made to remove and manage weeds as early as possible.

For more information, read the Private Forest Tasmania information sheets Farming Guide No. 7 – Weed Control and Fact sheet 5.2 – Fencing



Example of riparian improvements on a Southern Tasmanian farm between 2007 and 2013. Source: Tree Alliance, Case Study 1. Strategic tree planting to restore eroded gullies and improve farm productivity.



ALLEY / STRIP CROPPING

Alley cropping – also referred to as ‘strip cropping’ – is the practice of planting trees in single or multiple rows with crop production in the alleys between. Wide-spaced alley / strip cropping is similar, with wider alleys between tree rows (typically between 26 and 50 meters in width).

Alley / strip cropping increases productivity by providing shelter and creating a microclimate between tree rows, to enhance production in alleyways. It can also support soil health through nutrient cycling and erosion control.

Key considerations for this kind of planting include:

- Root competition – understanding the distribution of root systems to reduce root competition between trees and crops
- Light competition – selecting tree species that provide light shade over heavy shade, designing an east-west orientation of trees, spacing rows sufficiently, and pruning and thinning to reduce light competition
- Chemical interactions – selecting or rotating species to control chemical interactions between trees and crops (e.g., levels of nitrogen and acids) that may impact growth.

TO PLANT OR RESTORE?

Any tree configuration can be made up of newly planted trees, the restoration of remnant vegetation, or a mixture of both.

When identifying remnant vegetation, take time to review your farm as a whole and determine areas of existing vegetation, neighbouring vegetation and the potential to establish nature corridors.

If you are establishing a plantation for shelter or productivity benefits, the design of your configuration matters (e.g., height, spacing and location), so be sure to contact a forester for planning support.

References

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Next Step



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