



Tree planting guide



Collective information, collective analysis, collective solutions

This guide is intended to provide some basic information about the planting of trees and other non-productive plants on irrigated farms. Full advice and information on species and planning should be obtained from the sources listed at the end of this booklet, and local nurseries.

Images courtesy of Caswell Images, Environment Canterbury, and Mark and Devon Slee

Why plant trees?

Trees and other plants on farms can bring a number of benefits, including:

- Stock shelter and shade.
- Biodiversity: trees and other plants provide essential habitat for various fauna.
- Nutrient harvesting to reduce movement of nutrients into waterbodies.
- Some species can be used as fodder during drought periods.
- Plantation species can provide an income source and future options for farm succession planning.
- Protection for irrigation infrastructure in high winds (on upwind side of the shelter).
- Trees are aesthetically pleasing for both the landowner and the wider community.
- Soil conservation.



Shelter

Many older, exotic shelterbelts were planted in order to prevent or minimise wind-blown soil erosion. However, with irrigation, the organic matter of the soil is improved, and wind-blown erosion is no longer such an issue. However, shelter plantings can provide many other benefits, and reconfiguration of paddocks can provide an opportunity to re-plant shelter in different and innovative ways. Well-designed and well-managed shelter can have the following benefits:

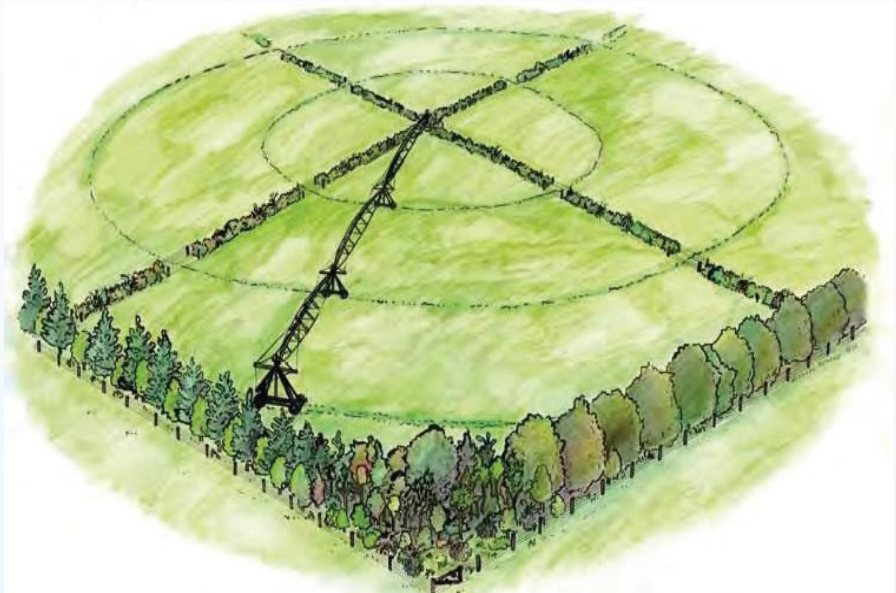
- Stock shelter — shade from heat and protection during bad weather, for both animal welfare and potential productivity gains.
- Helps restore a more natural level of plants, animals and habitats to an ecozone.
- Provides attractive visual screening.



- Creates habitat and 'corridors' for insects such as bees and other wildlife (to allow wildlife to travel from one place to another).
- Demonstrates that we are stewards of our land and environment.
- Well-managed shelter and shade plantings can provide timber and fodder from certain species.
- Captures carbon from the atmosphere and other nutrients from the soil and water.
- Creates an interesting and diverse landscape, and helps create an identity and sense of place for the local community.

Low native plantings under a centre pivot





Radial hedging under centre-pivot : tall external shelter, bushes in dry corners, and low planting under pivot arm.

Riparian areas

The riparian area is the margin of land on either side of a watercourse. We all know the importance of fencing waterways to keep out stock (to protect stream banks from erosion and to reduce faecal contamination of the water), but managed planting of the riparian areas enhances these benefits even further, as well as improving the physical habitat for aquatic wildlife.



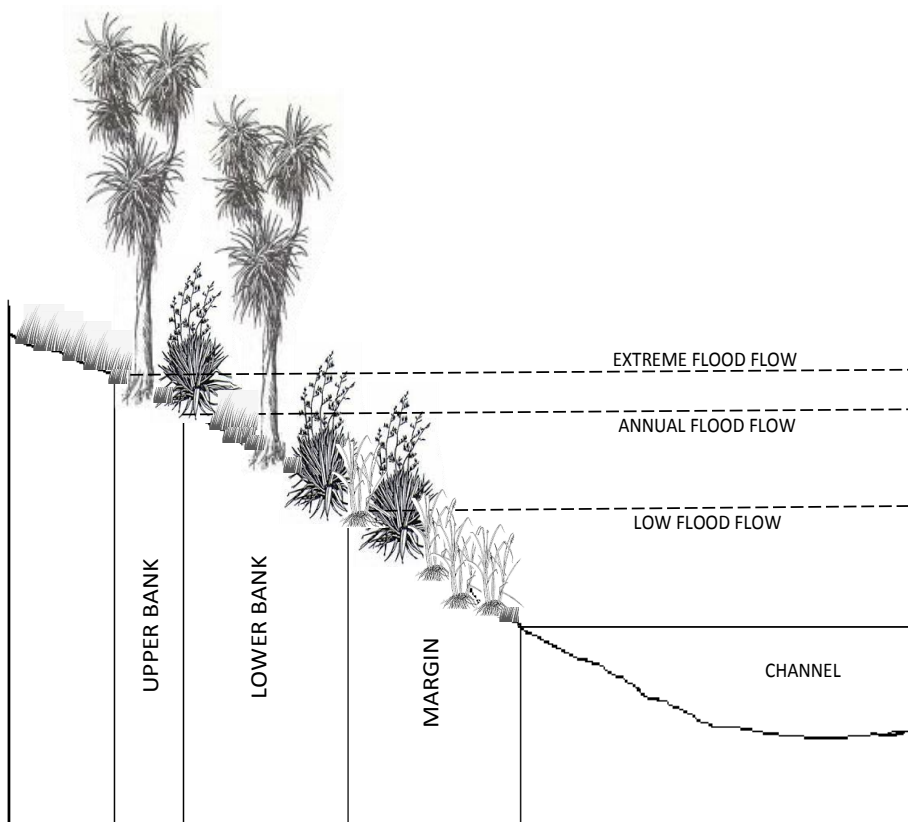
Riparian areas should be firstly fenced and stock excluded.

Priority areas for planting should be where runoff or erosion occur most frequently and have the greatest effect on water quality. This includes springs, swales, gullies, eroding banks, boggy areas, and wet soils. Remember bank reconstruction could be required before planting.

Where possible, riparian plantings should be linked along the waterway creating corridors for wildlife to extend along the catchment.

Riparian margins can be grouped into three zones reflecting the frequency of flooding. Each zone has slightly different planting requirements:

- The stream margin: includes frequently submerged banks and wetlands. Plants should be multi-stemmed with flexible stems or branches to bend and sway with the flood flows.
- Lower bank: less frequently submerged, but still subject to regular flood flows. Must be multi-stemmed but also vigorous fibrous root growth to control bank erosion.
- Upper bank: normally above all but the largest flood flows. Taller species will not have issues with toppling (such as the cabbage tree in the photograph on the previous page). Taller species are necessary to create shade which reduces water temperature (which limits excessive algal growth) and creates a better habitat for aquatic wildlife. These taller species can be beneficial for providing stock shelter and shade, and provides the opportunity for incorporating high-value timber species.



Wetlands

A boggy, unproductive corner of the farm can be transformed into a healthy wetland. Wetlands have multiple benefits, including:

- reducing nutrients in run-off by up to 50%
- creating a habitat for aquatic animals,
- they are visually appealing,
- they can protect surrounding land from flood damage,
- and they can be an excellent area for duck-hunting!

Before



After



Ongoing management

After initial planting, weed control is the most important factor in successful plantings. A small investment in protective surrounds for young plants protects them from pests and makes weed control easier.

For planting and re-planting to be successful, ongoing maintenance will be required for the first three years, including weeding, watering, and replacement of dead plants.



Where to go for more information

A guide to drain management - written for drains around Te Waihora/Lake Ellesmere, but this also has more general information applicable to other areas:

<http://www.wet.org.nz/wp-content/uploads/2012/03/2013-June-Managing-your-drains-.pdf>

Federated Farmers Trees for Bees programme, including region-specific planting guides:

<http://www.fedfarm.org.nz/advocacy/Trees-for-Bees.asp>

DairyNZ guidelines for waterway management, including planting guidelines for different situations and regions:

<http://www.dairynz.co.nz/environment/land-and-nutrient/waterways/>

Environment Canterbury guide to protection of riparian areas:

<http://ecan.govt.nz/publications/General/RiparianZonesWetlandsE0470.pdf>

Environment Canterbury guide to shelter and nature conservation:

<http://ecan.govt.nz/publications/General/shelter-nature-conservation-canterbury-practical-guide-000510.pdf>

Environment Canterbury guide to replacing shelter:

<http://ecan.govt.nz/publications/General/biodiversity-factsheet.pdf>

New Zealand Farm Forestry Association resources:

<http://www.nzffa.org.nz/farm-forestry-model/resource-centre>

Otago Regional Council guide for managing waterways in Otago (note this was published in 2005, and the rules as to what can and cannot be done in around waterways in Otago have recently changed - if you are unsure as to what is permitted, check with the Council):

http://www.orc.govt.nz/Documents/Publications/Farming%20and%20Land%20Management/env_consider_cleanstreams.pdf

New Zealand Constructed Wetlands Planting Guidelines, produced by NIWA and the New Zealand Water and Wastes Association:

https://12240-console.memberconnex.com/Folder?Action=View%20File&Folder_id=101&File=constructed_wetland_planting_guide.pdf





PO Box 159, Oamaru 9444

info@waitakirrigators.co.nz

www.waitakirrigators.co.nz

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