

# Getting riparian planting right in Canterbury

*Your step-by-step guide for successful riparian planting*



**Protecting our valuable water resource is important for dairying in New Zealand. It also benefits the community who use water for drinking and economic, recreational, aesthetic, ecological and cultural activities.**

Riparian zones can be used to maintain and improve water quality. Once fenced and planted, they filter phosphorus, sediment and bacteria that leave the land as runoff. Healthy riparian zones will improve the health of your waterway.

This practical “how to” guide for riparian management covers planting and maintaining riparian zones for a sustainable and profitable dairy farm. It includes advice from industry and regional council experts.

## *What are riparian zones?*

Riparian zones are the strips of land beside drains, streams, rivers and lakes. They include areas on-farm where the soils are wettest, such as wetlands, springs or seeps, and swales or gullies.

# How to successfully manage your riparian zones

## Have a plan to succeed

*Having a plan is the key to getting value for your money and doing it right the first time. Your riparian plan should cover the three steps of fencing, planting and maintaining your riparian zones.*

## Use your farm knowledge to form your plan

1. To avoid losing plants in floods, determine how your waterway behaves in full flow. This will help you decide where to place fences and what to plant.
2. Identify areas on your farm where runoff or erosion occur most frequently and have the greatest effect on water quality. This includes seeps, springs, swales, gullies, eroding banks, boggy areas and wet soils. These should be part of the fenced area and prioritised for planting. Bank reconstruction might be needed before planting.
3. Decide what is manageable. Fencing can be completed reasonably quickly, whereas planting and follow-up maintenance takes longer. Set a realistic timeframe and budget for planting.



### TIP

Your Environment Canterbury biodiversity officer or land management advisor can answer questions you have about fencing and riparian planting during a farm visit. They can help develop riparian plans with you, tailored to your farm. It's free and it's the best way to find out what funding or support is available. Call 0800 324 636.



*Set fences back from the regular high flow height. This may be quite different from the low flow height.*

## First things first – animals out

*Livestock trample and graze plants. They also damage banks and defecate in water, adding sediment, nutrients and bacteria which reduce water quality. All waterway fencing needs to be permanent to guarantee stock exclusion.*

Map your waterways and create a fencing plan. Work out fence lines and crossing points.

### Choosing a fencing setback distance

The aim of the setback is to slow runoff enough to ensure as much bacteria, phosphorus and sediment as possible are filtered out before they enter your waterway. A setback distance for a healthy riparian zone should vary on-farm to reflect different soil types, slopes and flow.

A wider setback is needed on steeper paddocks, longer paddocks and heavier soils, because these all generate fast flowing runoff. On flat to undulating land, relatively small zones of 3-5 m are still capable of reducing nutrients, sediment and bacteria entering waterways.

When choosing the setback distance of your fence, keep in mind what you want to achieve by planting the zones. If you want to create shade for your stream to reduce weed growth and keep streams cool, you may need wider zones to allow more space for the trees. If you want to filter nutrients, sediment and bacteria from runoff, then smaller zones (3-5 m) with shrubs and grasses will still be effective.



## TIP

You may require consent or approval for certain types of fencing or planting particularly on drains. Check planning rules before you start any work by calling Environment Canterbury on 0800 324 4636.

## What to plant and where

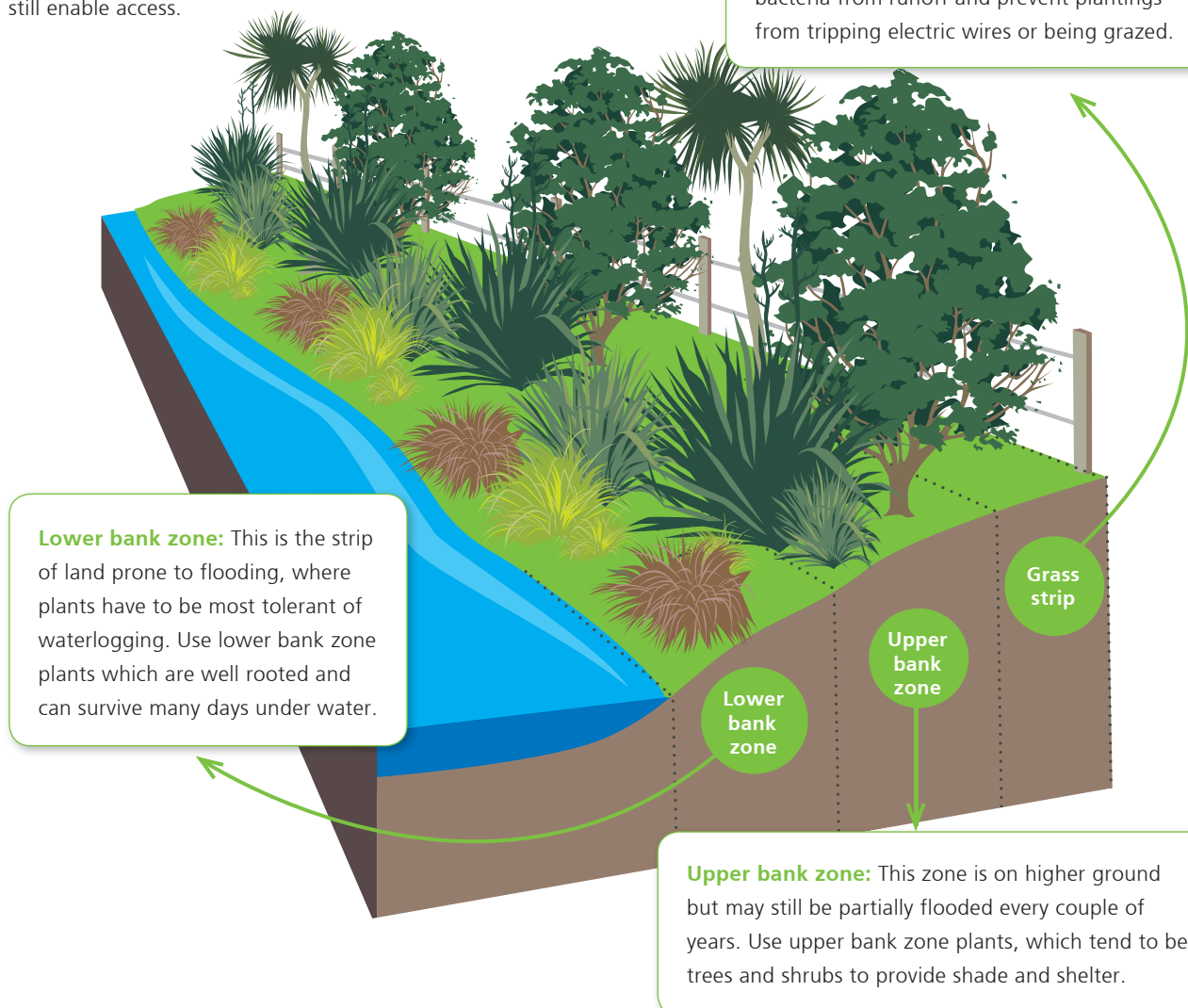
*The next step is to decide what to plant, where and at what spacing.*

There can be up to three zones of plant types on a healthy riparian zone, as illustrated in the picture below. Planting your upper and lower banks will improve your water quality more than using grass strips alone.

Use the Table of Riparian Plants in this guide to find out which plants are recommended for each zone in the Canterbury region and the correct plant spacings to ensure plants outcompete weeds.

**Drains:** Maintaining access to drains is important so only plant one side in tall species, preferably the north bank. This will provide the stream with shade in summer. Low growing species, such as carex secta or rank grass on the south bank will provide a filter for runoff but still enable access.

**Grass strip:** A one metre wide grass strip should be left around all fences. This will help to filter out sediment, phosphorus and faecal bacteria from runoff and prevent plantings from tripping electric wires or being grazed.





## Steps for effective planting technique



### 1 Remove any grass or weeds.

- 4-6 weeks before planting, spray 1 m diameter circles with a glyphosate-based herbicide at the location where you will plant each plant. Check product information to ensure the herbicide is applied correctly.



### 2 Put the plant in a hole that is big enough to accommodate plant roots without them being curled up or bent at the bottom or sides of the hole.

- On drier soils, ensure the base of the stem is 1-2 cm below the soil surface. Mulch around plants will help keep soils damp, reduce weeds and provide nutrients. Good mulches include straw, staked down cardboard or wool.
- On permanently wet soils, place the base of the stem (just above where the roots start) about 2 cm above the soil surface with soil mounded up to the root ball.



### 3 Put a stake beside your plants so you can find them easily when you are weeding and can see if they have died or need replacing (don't attach the plant to the stake).

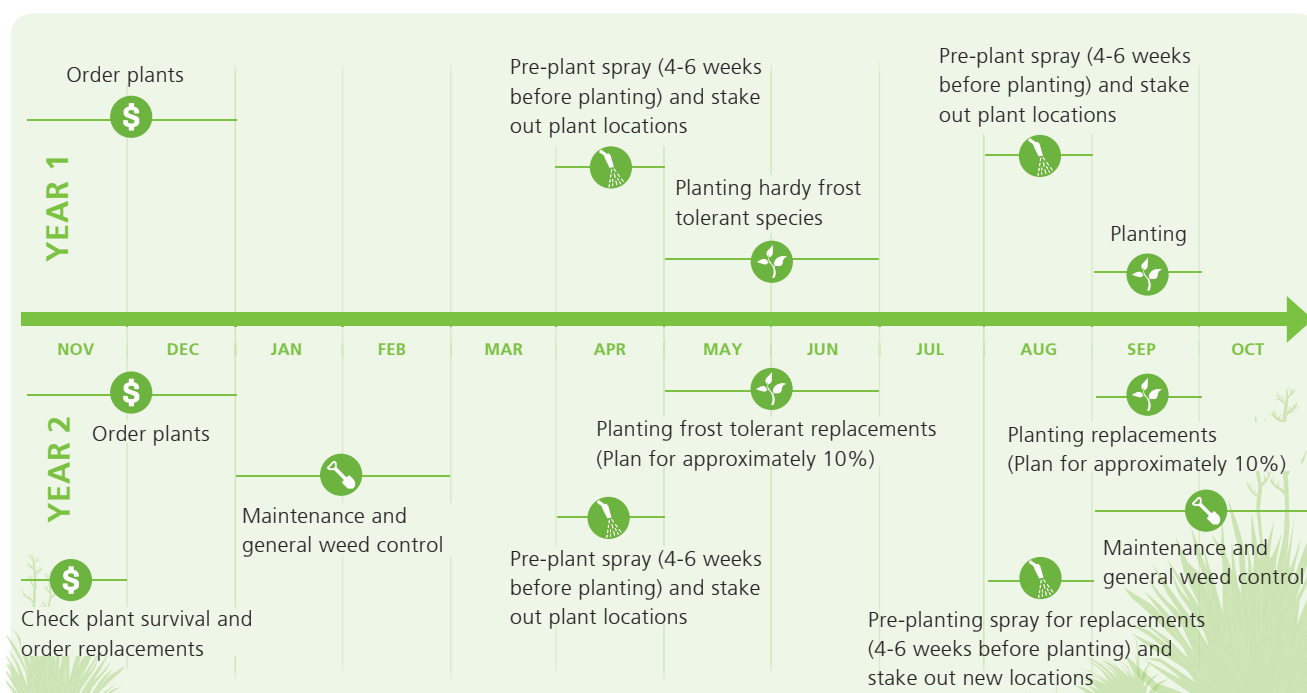


### TIP

Plant protectors help protect plants from cold wind, maintenance spraying and rabbits and hares.



## Riparian planting calendar – two year plan



## Effective plant maintenance

*Keeping on top of weeds and pests is crucial in the first five years for a healthy riparian zone to become established.*

Combining protective and active maintenance methods is recommended as the most effective maintenance option.



**Protective maintenance** – this is less labour intensive but comes at a greater initial cost. Surround each plant with at least a 30-40 cm diameter of biodegradable mat that suppresses weed growth. You can use mulch, biodegradable weed mat (not plastic), or old woollen carpet. Avoid using plain wood chip around the plant as it will strip all the nitrogen out of the soil causing the plant to yellow off and possibly die.



**Active maintenance** – this can be labour intensive but has a lower initial cost. Each plant should be staked for easy location and brush cut, hand weeded, or carefully sprayed around with a glyphosate-based herbicide, twice a year. If you choose to spray, follow product guidelines; desired plants are usually sensitive to herbicides so caution must be taken to protect against spray drift or accidental spray.



### TIP

Grass strips do a great job at filtering runoff. Avoid the temptation to let livestock graze your margins, even if it is just rank grass. If you need to, brush cut your grass filter strips – don't spray them.



### TIP

Pests such as rabbits, hares, possums and deer will eat your plants. Contact your Environment Canterbury biosecurity officer for information regarding animal pest control by calling 0800 324 636.

## Common weeds to remove in Canterbury



Broom

Photo courtesy of  
Weedbusters



Old mans beard

Photo courtesy of  
Weedbusters



Gorse

Photo courtesy of  
Waikato Regional Council



Grey willow/Crack willow



Nodding thistle

Photo courtesy of  
J Barran Photography



Blackberry

To find out how to manage weeds in Canterbury, visit [ecan.govt.nz/pest-plants](http://ecan.govt.nz/pest-plants).

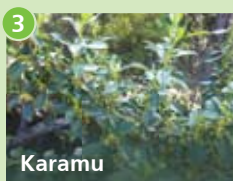
## FAST 5 PLANTS FOR CANTERBURY



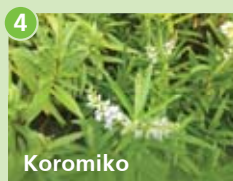
Carex secta



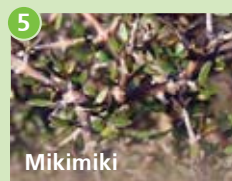
Cabbage tree



Karamu



Koromiko



Mikimiki

These 5 go-to plants are ideal to start your planting with – they are hardy, fast-growing, can be planted straight into pasture and don't require shelter. Ask your nursery for eco-sourced plants as they are grown from local wild seed and are best adapted to your climate.

### Table of Riparian Plants

**Tolerates key:** Full sun Wind Salt wind Frost hardy Poorly drained soil (boggy) Dry soil conditions

**Benefits key:** Attracts birds Attracts bees Slope stabilisation Filters runoff Shade Fish habitat

Plant name	Type	Tolerates	Benefits	Size (height x width)
<b>Lower bank zone</b>				
<b>Space 1-1.5 m between plants</b>				
Carex secta (purei) <i>Carex secta</i>	Sedge			0.75 x 1 m
Swamp sedge <i>Carex virgata</i>	Sedge			2 x 3.5 m
Edgar's rush <i>Juncus edgariae</i>	Rush			2 x 1 m
Glen Murray tussock <i>Carex flagellifera</i>	Sedge			1 x 1 m
<b>Upper bank zone</b>				
<b>Space 1.5-2 m between plants</b>				
Cabbage tree (tī kōuka) <i>Cordyline australis</i>	Tree			10 x 3 m
Karamu <i>Coprosma robusta</i>	Shrub/small tree			4 x 1.5 m
Koromiko <i>Hebe salicifolia</i>	Shrub			1.8 x 1 m
Mikimiki <i>Coprosma propinqua</i>	Shrub			4 x 1.5 m
Black matipo (kōhūhū) <i>Pittosporum tenuifolium</i>	Small tree/tree			8 x 3 m
Golden akeake <i>Olearia paniculata</i>	Shrub			3 x 3 m
Broadleaf <i>Griselinia littoralis</i>	Tree			10 x 3 m
Kanuka <i>Kunzea ericoides</i>	Tree			8 x 3 m
Lowland ribbonwood (manatu) <i>Plagianthus regius</i>	Tree			3 x 15 m
Mānuka <i>Leptospermum scoparium</i>	Small tree			4 x 1.5 m
Narrow leaved lacebark <i>Hoheria angustifolia</i>	Tree			6 x 3 m
Swamp flax (harakeke) <i>Phormium tenax</i>	Grass			2 x 2 m
Toetoe <i>Austroderia richardii</i>	Grass			1.5 x 1.5 m



## Successful riparian planting in Canterbury



*Boggy Creek, a tributary of Te Waihora/Lake Ellesmere flows through the entirety of Phil Garrett's 440 hectare farm in Leeston. Phil has driven the riparian fencing and planting on the farm and now considers it to be another part of the farm system.*

Riparian management began on the farm when Environment Canterbury offered to plant along Boggy Creek once it was fenced. Seeing the benefits of fencing and planting, such as added stock shelter and a greater bee population, Phil continued to fence the rest of his drains.

Phil says Boggy Creek used to need fairly regular clearing as it suffered from a high sediment load due to stock access. Since planting, Phil has seen a significant improvement. "It no longer needs clearing and is back to its original shingle bottom."

Boggy Creek is constantly flowing and often floods during high rain fall. Phil has planted *Carex secta* beside the stream which is resilient to flooding – moving to accommodate the extra water and bouncing back when the water recedes. Flaxes and larger plants are placed further up the bank to avoid being ripped out when the water flow is higher and stronger.

Weed removal is a priority for Phil to ensure the success of his plants. Spot spraying is used a month before planting to minimise competition for the plants. Gorse and blackberry are the main weed concerns in the planted areas and crack willow is also a problem as it is plentiful at the source of the creek. Yearly maintenance spraying ensures these weeds are kept under control.



### TOP TIPS Phil Garrett

#### ***"Be patient, plants look messy for the first year"***

Plants will be alive and thriving in the second year if you've planted correctly and kept up with maintenance, but in the first year, they can look a bit messy. We have plants that are eight years old and reaching maturity – they look really great.

#### ***"Keep on top of maintenance after planting"***

Maintenance of plants is a big task. There is a lot of labour involved, particularly in the first three to five years. You can get a contractor in or get your farm team to help out and it makes a difference to your success and plant survival rates.

#### ***"Plant wet, unproductive areas as well"***

A triangle of land was created when our races were adjusted to suit the central pivot. This area was naturally wet and unproductive. We created a wetland area by planting flax and *Carex* species. They filter runoff from the races and grow low enough to not hit the pivot.

## A valuable asset for your farm

*When fenced and planted, riparian zones are a valuable asset for your dairy farm. They function like a sieve, helping to filter out sediment and nutrients that leave farmland in runoff before they enter waterways and provide valuable habitats for animals, birds, insects and fish.*

### How do healthy riparian zones improve water quality?

- Riparian zones help to reduce sediment into waterways, improving water clarity and the habitat for insects and fish. Less sediment means less cost for drain clearing and less risk of flooding.
- Riparian zones reduce nutrients into waterways, decreasing weed growth, improving biodiversity and water quality, and providing a better environment for swimming and fishing for you and your community.

On your farm, well managed riparian zones will improve stock management and protect them from getting stuck or drowning in waterways. Taller trees will provide shelter from wind, increase shade and reduce heat and wind stress.

Riparian plants stabilise banks with their roots, limiting the loss of your land through erosion.

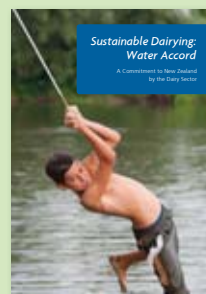
*The Sustainable Dairying: Water Accord (Water Accord) was developed in 2013 by the dairy industry and is a commitment to manage the land in a way that contributes to achieving water quality desired by New Zealanders. Good riparian management is a requirement of the Water Accord.*

The Water Accord requires dairy farmers to ensure:

- Stock exclusion from 90% of farm waterways\* and drains\*\* greater than 1 m in width and deeper than 30 cm and significant wetlands by 31 May 2014 and 100% by 31 May 2017.
- 50% of dairy farms with waterways\* have a riparian planting plan by 31 May 2016 and all by 31 May 2020.
- Of these farms half of their riparian plan commitments have been met by 31 May 2020, with full implementation by 2030.

\*A water accord waterway is a "lake, spring, river or stream (including streams that have been artificially straightened but excluding drains) that permanently contains water and any significant wetland. This does not include temporary watercourses that flow during or immediately following extreme weather events".

\*\*A water accord drain is an artificially created channel designed to lower the water table and/or reduce surface flood risk and which has permanently flowing water but does not include any modified (e.g. straightened) natural watercourse.



Environment Canterbury has rules about what can and cannot be done near or to waterways. Activities you may need consent for which relate to riparian zones include:

- Construction of bridges, culverts and dams
- Any activity disturbing the bed of a river or lake including channel realignment or deepening, dry cuts, gravel extraction and piping
- Drainage of a wetland or the creation or deepening of drains close to a wetland
- The planting of vegetation in the bed of a river.

