



MANAGING WATERWAYS ON FARMS



BENEFITS OF WELL MANAGED WATERWAYS

- Reduced stock losses and easier stock management.
- Reduced erosion, sedimentation and pugging.
- Recreational opportunities such as fishing and duck shooting
- Enhanced farm landscape with potential income from timber tree production.
- Enhanced wildlife and stream habitat.
- Reduced nutrient runoff into waterways

THE IMPORTANCE OF RIPARIAN AREAS

The type of land practices that occur on waterway margins and the type of vegetation growing there, can have a significant impact on the quality of water within the waterway. Water entering waterways from pastureland can carry fertiliser, manure and sediment which pollutes waterways by elevating nutrients and bacteria resulting in death of plant and animal life. A mixture of trees, shrubs and grasses is the most effective buffer for the interception of both surface and sub surface water runoff.

Providing shade is very important in reducing water temperature for stream life and preventing water weeds and algae growing. Leaf litter from plantings provides food sources for stream life. Well managed waterway margins improve biodiversity by providing diverse plant and animal communities and wildlife corridors and habitat.

RIPARIAN MANAGEMENT

Riparian management has become very topical as a result of the push/trend towards sustainable land management practices. Many of our overseas markets are seeking assurances that their food is produced in an environmentally sustainable way.

Riparian strips and waterway margins are the interface between farmland and water. The term waterways includes rivers, streams, creeks, drains, lakes, ponds, wetlands and estuaries that go through or border farmland.

Riparian management is the active management and enhancement of these areas and the sources of water that feed them.

PLAN WELL TO MEET YOUR GOALS

One of the secrets of a successful waterway planting is to be clear about goals and to plan your planting approach to achieve them. While protecting freshwater life and improve water quality may be key benefits of planting you may want to maintain bank stability, enhance biodiversity and beautify your farm. It is important to incorporate all your goals into a planting plan. For a successful replanting project that provides maximum benefits for the freshwater life, while allowing some filtering and bank stability, it is best to retire 5-10 meters from the waters edge.



PREPARING A PLANTING PLAN

By dividing your planting area into three zones you can make a list of plants for each zone.

Zone A – Waterlogged Soils

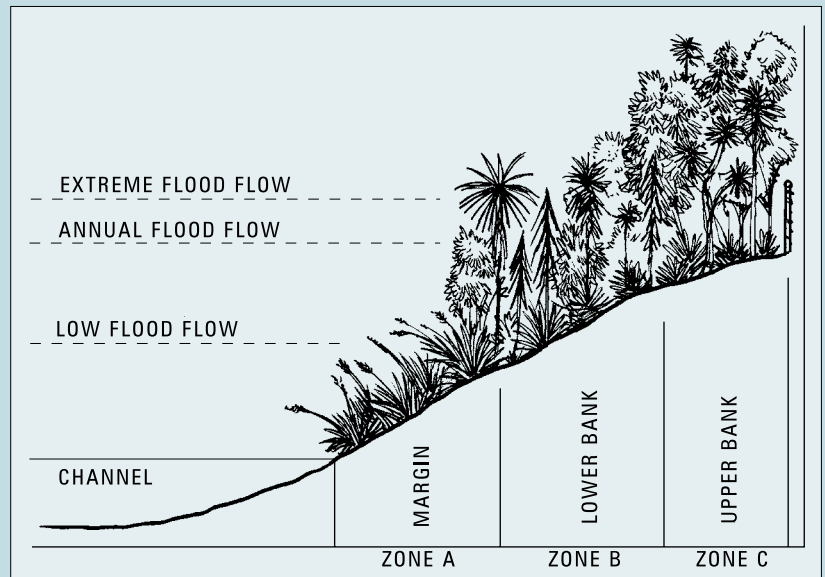
Plants that will tolerate prolonged waterlogged soils. For use along the waters edge, swamps and spring seepage areas.

Zone B – Margin Plantings

These do not tolerate waterlogged soils or flooding for any length of time

Zone C – Complimentary trees

Trees that compliment plants in the previous zones but whose selection is for shade aesthetics or timber production.



PLANT SPACING

In areas close to the water, plant at 2.5m spacing and on higher ground at 2-2.5m. Trees in Zone C are planted at 3-5m apart. Ensure the plant species chosen will tolerate local frost conditions and only use coastal plants where salt spray is an issue.

SPECIES

Margin

Sedges, *Carex buchananii*

Rushes, *Carex flagellifera*

Tussock, *Carex secta*

Tussock, *Carex vertosa*

Tussock, *Carex virgata*

Flax, *Phormium tenax*

robur, rubra

Swamp cypress, *Taxodium distichum*

Dawn redwood,

Metasequoia glystroboides

Riverbirch, *Betula nigra*

Willow, *Salix alba kinayenagi*

Lower Bank

Cabbage tree, *Coryline australis*

Toe toe, *Cortaderia richardii*

Manuka, *Leptospermum scoparium*

Kohuhu, *Pittosporum tenuifolium*

Lemonwood, *Pittosporum eugenoides*

Kowhai, *Sophora microphylla*

Red maple, *Acer rubrum*

Liquid amber, *Liquidambar styraciflua*

Tupelo, *Nyssa sylvatica*

Willow, *Salix alba*

Upper Bank

Japanese cedar, *Cryptomenia japonica*

European oak, *Fraxinus excelsor*

Maidenhair tree, *Ginkgo biloba*

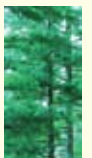
Oriental plane, *Platanus orientalis*

Poplar, *Crow's Nest, Kawa, Veronese*

Oak, Quercus palustis, petrea x

Willow, *Salix kinuyanagi*

Redwood, *Sequoia sempervirens*





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A Stream and a Dream

Jaap and Sue van Dorsser live on a 3.6ha lifestyle block north of Rotorua with crystal clear Awahau Stream flowing along the property. In the 1980's all major streams feeding Lake Rotorua were fenced. While this improved water quality, riparian areas soon become infected with blackberry and other weeds. Armed with slashers, spades and herbicide Jaap, Sue and friends cleared the weeds and began planting.



Once their property was planted, they began on the neighbour's. Not wanting to stop there, Jaap has a vision of having all stream margins in the lake catchment planted to form corridors for birds from Mamaku Plateau to Lake Rotorua.

Jaap comments: "Nature can do most of the work in the long run. All it needs is to be given a chance."

USING TREES TO STABILISE STREAMBEDS

The most effective trees for bank erosion are willows and poplars. Pair plant as opposites along straight reaches at 5-7 meters apart and 2-3 meters apart on the outside of bends where erosion is most likely. Prune up progressively to allow another plants to grow and also for timber production.

FENCING

Above all it needs to be stockproof. If electrified, 2 wires for dairy cows or 3-4 wires for beef and sheep or a traditional permanent fence where power isn't available. Flooding can be a challenge for maintaining fencing near waterways. Care needs to be taken to design a fence that can easily be stood back up.

WEED CONTROL

The first 2 years after planting are critical for good survival and growth. Control invasive weeds prior to planting. Use Glyphosate to create planting spots in the early autumn. Reapply if there is regrowth within the planting spot. Following planting keep a .7 meter area around your trees free of competing grass and weeds. Remember to control other pests such as rabbits, hares and possums.

WETLANDS

Wetlands once covered extensive areas of the countryside. Now they are some of the rarest and most at risk ecosystems. Think of the wetlands as a giant sponge, slowing flood water and then releasing water flows. Bacteria that live in the damp soil of a wetland absorb and break down 90% of nitrogen from farm run off. Wetlands form a valuable part of our natural landscape, hosting birds and wildlife and many options for recreation.

