

### 3| HOW TO PLANT - ENSURING PLANT SURVIVAL

The North Marlborough climate is generally favourable for plant growth. However, frosts occur regularly in inland valleys, summer drought is common and gales and rainstorms are quite frequent. Appropriate plant selection for the site and care during plant establishment (usually the first two years) will minimise losses.

The following are key factors for ensuring successful plant establishment.

#### PREPARATION

- Time planting to avoid harsh frosts and dry soils, according to local conditions. Early spring planting while soil moisture is still high and after the worst of the frosts are over will give best results, in most areas. This is particularly the case in inland and high altitude areas. In some years, early autumn planting of natives can be successful when there has been some early rain. This will allow roots to get well established before the cold of winter sets in.
- In frost-free coastal situations with free-draining soils, winter planting will make the most of higher rainfall.
- Summer is the best time to plant wetland margins and the flood zone behind, when water levels are at their lowest.
- The approach will vary according to soil type and conditions. In a dry site, for example, it may be possible to use machinery (ensuring it is cleaned so it will not spread new weeds) to clear the area before planting. This would, however, not be recommended in a fragile wetland.
- In large-scale revegetation projects, ripping the ground with a tractor or bulldozer a month or two before planting will concentrate all available rainfall deep in the rips, providing good initial soil moisture levels for plant establishment. Ripping has the added benefit of making planting much



quicker (thus potentially more economical). Do not, however, rip wet or puggy soils as this will cause compaction below the surface.

- Prior to planting, poison, trap and/or shoot wild pests in the area, then follow up.
- Eliminate all weeds that are likely to prevent growth and establishment of plantings. Remove ground vegetation on the soil surface, at least out to a one metre diameter from where the specimen will be planted. Either chip off with a spade to expose the soil or spray with herbicide. Plants will grow faster in the absence of competition for water, soil nutrients and light.
- Grass is a major competitor for moisture and sometimes light. If the area has not been tightly grazed, you could weed-eat to achieve a similar effect. Herbicides will be effective on fast-growing, tall (but not on dry, rank) grasses, leaving a mulch of dead material which will inhibit grass and weed seedling growth and retain moisture.
- Provide shelter where conditions are harsh. This can be done by constructing an artificial wind-break or by initially planting wind-tolerant species such as ngaio or kanuka. Tree lucerne, radiata pine and leyland cypress are exotic alternatives which should be used with caution and later removed.
- Source quality plants that are healthy, locally grown and hardened off. Discuss your planting aims and species selection with the nursery.
- Include a number of different species to spread risk, in case some do not cope with the conditions or become vulnerable to threats such as insect attack.
- Avoid planting shock by gradually hardening plants off on the site, a week or two before planting out. Ensure they are kept well watered.
- Soak roots for up to two hours before planting.

## TYPES OF PLANTING STOCK

### Root Trainers (RT) and Tubes

These are seedling (one-year-old) plant stocks that have been mass produced in small containers. They are generally the best choice for larger scale planting due to being easier to transport and handle than larger potted or bagged planting stock. Cost is generally low.

### Potted or Bagged

These plant stocks are in plastic bags or pots that come in a range of sizes. They can be seedling plants or older. They generally require some root pruning to remove twisted or entangled roots prior to planting. It is important to select plants that have not outgrown the bag or pot i.e. they have a large top with only a small root system. These plants can be root-bound and may not survive or grow well.



Young totara seedlings coming through in the nursery.

### Bare rooted/open ground (OG)

These are plant stocks that have been grown in an open nursery bed. They have been regularly root wrenched to encourage the strong development of a full, fibrous root system. Sale of bare rooted/open ground native plant stock is not common as it does not suit the production of many native species.

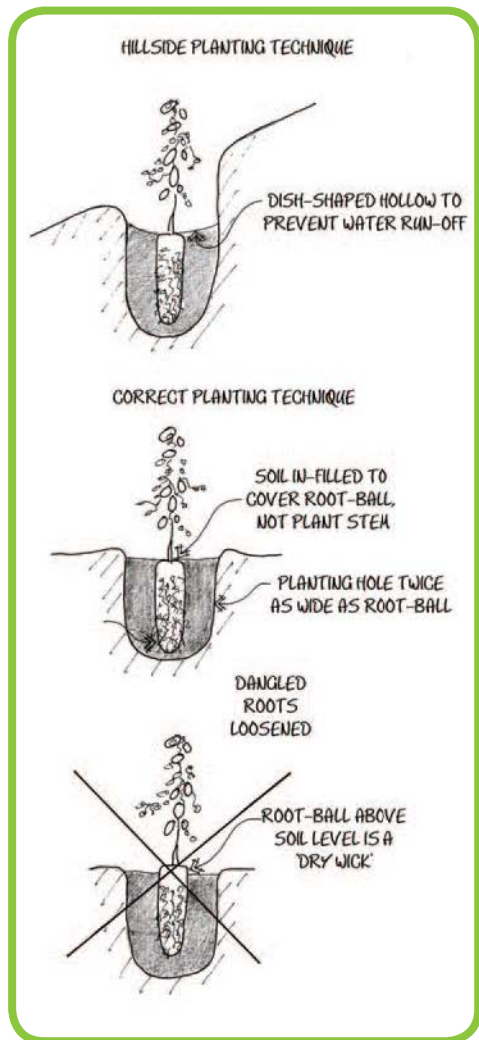
Bare rooted/open ground stock must be planted in winter or early spring in order to allow the root system to become well established. They need to be handled with care during transport and planting to minimise any damage to the root system and also to ensure the roots do not dry out.

### Splitting Flax

Flax plants can be prepared by lifting a large flax and splitting it up into individual fans for planting. This is best done in winter. Ensure the plants do not dry out. The outer (older) leaves on the flax fans can be trimmed off prior to planting, taking care not to damage the inner growing shoot.

## THE PLANTING PROCESS

- Soak the rootball in water, until no bubbles emerge.
- Plant at the coolest time of the day (preferably evenings), on overcast days or when there is rainfall predicted. Avoid windy days.
- Dig a hole bigger and deeper than the root ball.
- Work soil in the planting hole well beyond the size of the container to encourage root development.
- Do not pull the plant out of the bag by its stem. Cut the bag or turn the plant upside down and carefully remove to minimise root damage.
- For root-trainers, open and push plant up and out.
- Cut off tangled and matted roots.
- Place the plant into worked soil at the bottom of the hole. Consolidate crumbled soil around roots and avoid air pockets.
- On slopes, leave a dish-shaped indentation around each plant to hold water.



- About a dessertspoon of slow release fertiliser (20-25g) sprinkled into the hole before planting will ensure fast initial growth. Alternatively, mix as much compost as you can afford with the soil.
- Just cover exposed potting mix with soil, not burying the stem.
- Plant deeper in dry environments (with the collar below the natural soil surface) and shallower in permanently moist sites (collar at soil surface). Never leave any of the original root ball showing above the soil, as it will act as a dry wick.
- Water plants in well directly after planting. For planting into moist, ripped ground with larger scale projects, watering will be unnecessary (providing the rootball is saturated).
- Plant in clusters so plants shelter one another as they grow.
- Mulch around the base to a depth of 8-10cm – 1m<sup>2</sup> per plant, to keep the root zone weed-free and the soil well-conditioned, cool, moist and insulated, especially at hot and dry sites. Good mulch materials include straw, leaves, compost, grass clippings, seaweed and newspaper (held down by rocks or bark), permeable weedmat, coconut matting or mixes from local landscaping and composting firms. Large stones placed around the plant create a shady area. Keep very wet mulching material from directly touching the stems (especially of non-woody plants), as contact can promote collar rot.

## SOME GENERAL PRINCIPLES

- Plant in clusters so plants shelter one another as they grow.
- Where severe frosts are likely, plant frost-sensitive plants on north-facing slopes or beneath trees.
- To ensure fast growth and quick canopy cover, weed control is essential. To “release” a plant from competing species entails hand-pulling any growing close to the trunk then removing a metre square of weed cover from around the plant, either manually or by careful use of a herbicide.
- Fence plants from stock.



- In larger scale plantings where mulching is not feasible and grass or fern etc is likely to overtop plants, bamboo marker stakes will assist with finding plants for releasing.
- Tree protectors can be used to provide shelter for new plants. They should be removed, generally a year after planting. They may also prevent damage by rabbits and hares, otherwise use repellent sprays and/or shooting.
- To re-create bush plantings on a large scale, dense planting is essential. Plants should be spaced at between 1-1.5 metres on sites with good growing conditions. On harsher sites, such as those that are dry, exposed or with poor soils, plants should be less than one metre apart to minimise losses by providing group shelter and reduce gaps left by any that may die.
- For early stage plantings of revegetation projects, the area should be a minimum of four metres wide in any direction (i.e. five plants wide at one metre spacings) to minimise light penetration from the edges. Any narrower and shading and weed suppression will not be effective.
- If underplanting, select a site where the plant will get some sunlight and clear ground cover from the immediate area.

## FOR NUMBER CRUNCHERS

A formula for calculating the number of plants required to fill a given area is:

$$(x/p + 1) \text{ times } (y/p + 1)$$

Where:  $x$  is the *length* of your area to be planted in metres  
 $y$  is the *width* of your area to be planted in metres  
 $p$  is the *spacing* between plants in metres

For example, if you had a 17m x 7m area you wanted to plant out at 1.5 metre spacings, then:

$$(17/1.5 + 1) \times (7/1.5 + 1) =$$

$$(11.33 + 1) \times (4.66 + 1), \text{ now round decimals downwards, } =$$

$$(11 + 1) \times (4 + 1) = 12 \times 5 = 60 \text{ plants required.}^*$$

\*Note, that because 1.5m does not go into 17m or 7m exactly, there will be a little bit of land not able to be planted due to the rounding down. To fill the space up to all margins, round decimals upwards and plant at closer spacings at these two margins,

$$\text{ie. } (12 + 1) \times (5 + 1) = 13 \times 6 = 78 \text{ plants required.}$$

## MAINTENANCE/FOLLOW-UP

- Keep plants free of competing weeds until they are able to do this themselves with canopy closure. Remove weeds, then use mulch or weed mats.
- Ongoing mulching will also conserve water.
- The aim with irrigation should be to imitate nature. In dry country, a good drenching rather than frequent shallow watering is necessary to encourage deep rooting, enabling plants to subsequently survive droughts.
- Do not use weedeaters around young plants without hand-clearing the grass first. Ringbarking is one of the most common causes of plant mortality.
- Do not spray grass around your plants unless you get good advice on what herbicides to use. Many natives are very susceptible to spray drift.
- Control pests.
- Keep a photographic record and a diary of progress. This will help you learn what works and what does not and make changes as necessary.



New native plant surrounded by competing weeds and identified by a bamboo stake.