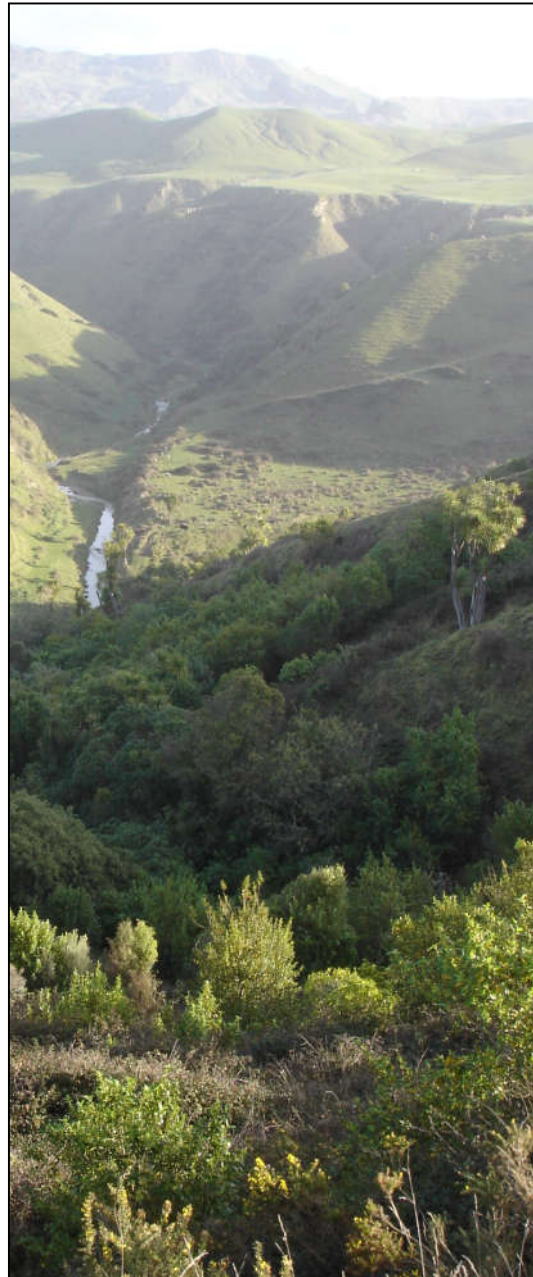


## **SMALL SCALE PROPAGATION OF NATIVE TREES A SIMPLE GUIDE AND EXAMPLES**



6<sup>th</sup> Edition  
February 2023



## **NATIVE TREE PROPAGATION GUIDELINES**

Surveying the Bay feel fortunate to have been involved in a number of development projects which include a revegetation or restoration component. Improved aesthetics, integration of development into the landscape, carbon storage and restoration of natural systems are all “feel good factors” which come with native bush and as a result revegetation is adding significant value to many developments we are involved with, particularly Farm Park and Rural Residential projects.

Erosion, gravel and silt choked waterways, loss of topsoil, increased water runoff and loss of bird and insect life are all signs that large parts of Hawkes Bay should have been left in their natural vegetated state.

The benefit to the land and the added value for our clients make revegetation consistent with the Best Practice approach of our company. As a result we have been actively researching and implementing the propagation of native trees and produced the first version of these guidelines in 2008. This manual is a simple summary of our work to date and aims to provide easy to follow notes to assist others with the small-scale propagation of a number of native tree species – we have had difficulty finding easy to follow guidelines.

We are not experts in this field and this is not an income stream for our company. Many of our trees are gifted to community projects or to developments we are involved in, others we plant at our homes. We do not sell trees.

A key motivator for the work of Surveying the Bay is the pride we feel when we return to projects long after our professional involvement is complete. The establishment of even small patches of native bush can only add to that pride and we look forward to watching these trees grow, as “our” developments mature, well into the future.

We hope you will find these guidelines to be of use.

**Andrew Taylor**  
**February 2023**  
**6<sup>th</sup> Edition**

# **NATIVE TREE PROPAGATION GUIDELINES**

## **GLOSSARY AND REFERENCES**

**“Canopy Closure”** is the point at which a revegetation project is largely self sustaining. Canopy closure reduces sunlight penetration and under such conditions few weeds thrive and sub-canopy species are protected from climatic conditions while younger.

**“Colonising”** tree species are those which are suitable for planting on bare sites as the first plantings of a revegetation project.

**“Eco-sourcing”** involves sourcing seeds for a particular project from existing healthy naturally established trees as near as practical to the area of proposed planting and is widely considered “best practice”.

**“Hardening off”** is progressively exposing seedlings to the elements before planting so they don’t experience the shock of immediately transitioning from full shelter to no shelter.

**“PB3”** is a size 3 polythene planter bag. Many other sizes are available, the larger the number, the bigger the bag. A PB3 is roughly equivalent to 3 pints. A pint = 600 ml so PB3 holds approx. 1.8 litres.

**“Pricking Out”** is the process of repotting small seedlings from seed raising trays to planter bags or root trainers. Be gentle, maybe use a screwdriver.

**“Root Trainer”** is a plastic foldable tray, typically of four cells, which trains seedling roots to grow downwards. These take up less space and use less potting mix than planter bags or pots, and are a lot easier to work with when you have frames which hold a dozen or so trays. Frames can be purchased or self made by cutting and bending reinforcing mesh.

**“Stratification”** is cold storage and involves placing seeds in the fridge for a specified period, normally in a plastic bag with moist sand and plenty of air. Bags should be shaken weekly and checked for mould. Removal from the fridge simulates the winter to spring temperature change and triggers germination. Stratification is not used with all species.

### **References - Books:**

Crowe, Andrew: The Quick Find Guide to Growing Native Plants, Penguin Books (1997).

Porteous, Tim: Native Forest Restoration. A Practical Guide for Landowners, QEII National Trust (1993).

Metcalfe, Lawrie: The Propagation of New Zealand Native Plants, Godwit Publishing (1995).

Stewart, Ken, Collins Handguide to Native Trees of New Zealand, William Collins Publishers (1986).

### **References - Websites**

[www.canopy.govt.nz/ngahere-maori/species/rongoa](http://www.canopy.govt.nz/ngahere-maori/species/rongoa) for Rongoa or maori medicine  
[www.hbrc.govt.nz/assets/Document-Library/Land-Management/Riparian-Planting-Guide.pdf](http://www.hbrc.govt.nz/assets/Document-Library/Land-Management/Riparian-Planting-Guide.pdf)  
includes simple summaries of what to plant and where, planting tips and weed and pest control.

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## CABBAGE TREE

(*Cordyline Australis*)



Cabbage trees are one of the most distinctive of New Zealand's native trees and are very easily grown from seed.

### Tree qualities/ characteristics:

- Fast growing coloniser
- Frost tolerant
- Good for erosion control
- Tolerates poor soils, and wet or dry conditions
- Attracts birds
- Tolerates fire and possums but seedlings easily damaged by Pukeko, hares and rabbits
- Height at maturity approx 10 metres

### Seed Collection:

Ripe seed appearance	White or pale blue, less than half the size of a peppercorn
Seed Collection time	January to May
Collection method	Cut flower / seed head from tree
Seed cleaning	Manually peel flesh off outside of seed, then rinse in sieve.

This simple process will quickly and simply produce hundreds of small black shiny seeds.

### Growing from Seed:

After cleaning seeds should be allowed to dry for a few days, then soaked in water overnight. Spread seed between layers of wet brown absorbent paper, and seal in a plastic bag with plenty of air space. Cold stratify for 28 days and check regularly for mould.

Spread seeds onto seed raising mix and cover with a few millimetres of mix. Keep moist with a spray mister or similar, generally daily. Seeds will germinate quickly (the first seedlings should appear in less than six weeks) but it will take some months before all have germinated.

Seedlings should be transplanted to potting mix approximately two months after germination, either into root trainers or, if space allows, to planter bags (PB2 or larger).

Well tended seedlings (watered frequently and fertilised regularly from seeds harvested in March) will grow quickly and could be large enough to plant out around the middle of the following winter.

**Suggested programme:** Harvest seeds in April, stratify May, sow in June, prick out in September, plant out July of the following year.

**Tip:** Seed keeps well and extra seed stored dry over winter then stratified over spring / summer will allow seed to be germinated earlier in the year and can provide larger trees for planting the following season.

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## **KARAKA** (*Corynocarpus Laevigatus*)

Karaka have lush green leaves and large orange fruit. The trees were grown by Maori for their edible seeds which are poisonous unless steamed and processed correctly.



### **Karaka qualities/ characteristics:**

- Colonising species
- Tolerant of frost once established
- Good for erosion control
- Tolerates poor soils
- Tolerates drought but not wet soils
- Attracts birds
- Tolerates possums
- Height at maturity approx 12 metres

### **Seed Collection:**

Ripe seed appearance

Seed Collection time

Collection method

Seed cleaning

Large orange seed, roughly the size of a large grape

January to April

Ripe seeds can be collected from the ground under trees or will fall easily from tree when shaken

Peel orange flesh from seed - soaking seeds in water for a week will make flesh easier to remove

### **Growing from Seed:**

Following cleaning seeds should be allowed to dry for a few days, then soaked in water overnight. Stratify by placing in a plastic bag with sand and plenty of air space and put in refrigerator for 28 days. Shake weekly.

Wash sand off seeds then apply a light dressing of tomato dust. Plant seeds with at least 25 mm cover in a deep seed bed, or individually direct to root trainers or planter bags. Keep moist with a spray mister or similar (generally daily). Germination will take between 2 and 6 months. Some seeds should be periodically checked throughout germination and tomato dust applied to the top of the mix if a small maggot or weevil is present. Lush seedlings will grow very quickly after germination.

The tap root develops quickly so seedlings should be transplanted approximately two months after germination (to PB3 or larger). Well tended seedlings (from seeds harvested in March) grow quickly and will be large enough to plant out the following season, after the frosts have finished.

**Suggested programme:** Harvest seeds in February, stratify in March, sow in April, replot in December, plant out in July of the following year.

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## KANUKA (AND MANUKA)

(*Kunzea Ericoides* and *Leptospermum scoparium*)

Kanuka is an excellent nurse plant well suited to providing the bulk of the new plantings for most revegetation projects. Canopy cover established by kanuka provides excellent conditions for under story species which require some shade and protection to establish.

### Kanuka qualities/ characteristics:

- Fast growing coloniser
- Frost tolerant
- Good for erosion control
- Tolerates poor soils, in dry to moist conditions.
- Does not tolerate waterlogging
- Small white flowers
- Height at maturity approx. 7 metres

### Seed Collection:

Ripe seed appearance	Brown seed capsules are around 1/2 peppercorn size, much smaller than manuka
Seed Collection time	March to April
Collection method	Branches laden with seed capsules should be collected before they open and kept dry in a plastic bin or clear bag. Capsules will open quickly and seed will fall to the base of the bin where it can be sieved from the small leaf litter.

This simple process will quickly and simply produce many thousands of tiny brown seeds which have the appearance of pieces of short fine brown hair.

### Growing from Seed:

Sow a dusting of seed directly onto seed raising mix and keep moist with a spray mister or similar. Keep away from direct sunlight. Seeds will germinate very quickly (around three weeks) and can be shifted outside after frosts. When seedlings have at least four leaves and are around 50 mm tall they can be gently pricked out individually to root trainers or planter bags (PB2). Well tended seedlings from seeds harvested in March will grow quickly and should be large enough to plant out the following Autumn.

**Suggested programme:** Harvest seeds in March, sow onto seed raising trays straight away, germination in May, prick out to individual bags October/November, plant out the following June (after the frosts). If seedlings are too small to plant after the first year repot to a larger bag and trim in August to 300 mm tall, then again around Christmas. A new leader will develop and the tree will be stronger for planting the next season.

This approach also works for manuka, although manuka seed can be harvested almost all year round.

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## KANUKA OR MANUKA?

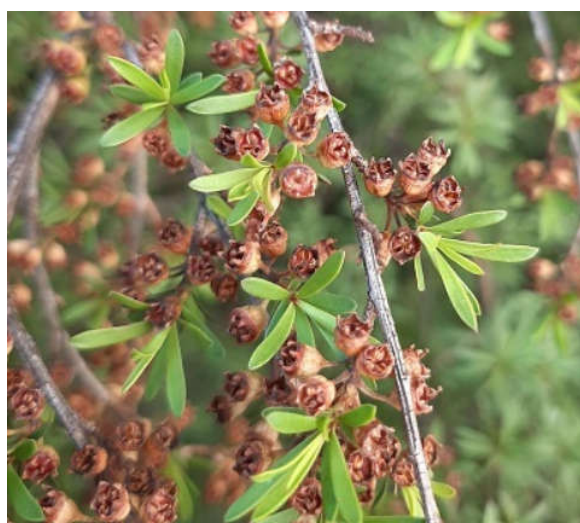
As discussed above Kanuka and Manuka are both easily grown from seed, have the potential to colonise and provide the bulk of the initial trees for a revegetation project. Both are similar in appearance - key differences include:

- Manuka carry seed capsules all year while kanuka seed is generally only fresh on the tree in March and April.
- Manuka will grow to around 8 metres in height while kanuka can grow to over 25 metres.
- Manuka tolerate wetter conditions while kanuka are more drought tolerant.
- Honey from manuka trees is widely recognised for its medicinal qualities, and trees of higher “UMF” capability rating can be targeted for seed collection.



Manuka Seed Capsules

Kanuka Seed Capsules



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## **KAHIKATEA** (*Dacrydium dacrydioides*)

Kahikatea, also known as White Pine, is New Zealand's tallest tree and grows in dense stands on moist open fertile soils. Kahikatea timber is non-durable and prone to damage by house borer. The absence of timber odour created great demand for the timber to build butter boxes, cheese crates, and tallow casks in the days before fibre-board containers. Consequently, there was once a sizable export trade in the timber to Australia and Europe.

### **Kahikatea qualities/ characteristics:**

- Long lived
- Tolerant of frost
- Prefers rich soils
- Tolerates coastal wind
- Tolerates dry and wet soils
- Attracts birds
- Tolerates possums
- Height at maturity up to 60 metres



### **Seed Collection:**

Ripe seed appearance  
Seed Collection time  
Collection method

See photo at right  
March to May  
Simply pick ripe seeds from trees or collect from under trees and remove the seed (the black / indigo bit) from the fruit (the red bit).

This simple process will quickly and simply produce hundreds of seeds which are roughly the size of a peppercorn.

### **Growing from Seed**

Seed should be stratified in sand for six weeks before sowing into reasonably deep trays of seed raising mix. Germination will take around 3 – 4 months. Seedlings should be pricked out at around 50 mm height before the tap root is long and before fragile lateral roots become too established. Seedlings grow on nicely in root trainers but should be repotted to PB3's or larger at around one year's age.

Kahikatea are reasonably slow growing and will take two to three years before they can be planted out under at least a partial canopy.

**Suggested programme:** Harvest seeds in March, stratify April, sow May, repot September, plant out possibly in two years time depending on plant size and site conditions.

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## REWAREWA

(*Knightia Excelsa*)

Rewarewa are a very tall tree with a poplar like form, upward pointing leaves, and attractive flower heads and seed pods.

### Rewarewa qualities/ characteristics:

- Easily grown from seed
- Classed as a coloniser but also longlived
- Tolerates moderate frost
- Requires good drainage
- Tolerates drought but not waterlogging
- Attracts birds
- Tolerates possums
- Height at maturity up to 30 metres

### Seed Collection:

Ripe seed appearance

Seeds contained within rusty coloured pods – see photo at right.

Seed Collection time

April to June

Collection method

Pods will split open easily when ripe

Seed cleaning

No cleaning required



Seed pods are normally well above the ground and ripen and split over a short period of time. It is necessary to watch carefully when ripening approaches if seed is to be collected from the ground. Alternatively clusters of almost ripe pods can be removed from trees if within reach.

### Growing from Seed:

Sow seeds into seed raising mix and lightly cover shortly after collection. Germination should occur in around 2 months.

Seedlings can and should be pricked out early as a strong tap root quickly develops.

Note that Rewarewa tend to grow best on ridges and in drier areas and are prone to fungal diseases when young. Germination and propagation need to account for this. Regular treatments of fungicide may help but the best approach is to avoid moist conditions which encourage fungal growth. Rewarewa seeds and seedlings should be kept drier than most other native species.

**Suggested programme:** Harvest and sow seeds in May, prick out in July, plant out in the following July or grow on for another year in larger bags.

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**KOWHAI**  
(*Sophora Tetraptera*  
or *Sophora Microphylla*)

Kowhai is an attractive easily recognised New Zealand native which grows throughout the country.

**Kowhai qualities/ characteristics:**

- Fast growing coloniser
- Frost tolerant
- Attracts birds, especially tui and bellbird
- Good for erosion control
- Tolerates poor soils, in dry to moist conditions.
- Attractive yellow flowers
- Height at maturity approx 7 metres



**Seed Collection:**

Ripe seed appearance	Yellow or brown seeds the size of a large peppercorn are contained in brown pods which hang from trees
Seed Collection time	March to October
Collection method	Remove pods from trees – be sure to get the freshest pods as old pods can remain on trees for some years. Seeds can be easily removed from the pods – any rotten or discoloured seeds should be discarded.

As each pod will contain around 6 seeds this simple process can quickly produce hundreds of seeds which should be washed and sieved to remove rubbish.

**Growing from Seed:**

Kowhai seed has a hard external shell which keeps moisture out and slows germination. A small chip should be taken out of one end of the seed case with nail clippers or a sharp knife. Then sow into a tray of seed raising mix at a depth of around 10 millimetres. Germination will occur quickly but can be erratic. Prick out to planter bags (PB2 or larger) once seedlings are around 75 mm high. Keep under cover and carefully watch moisture levels (not too wet or too dry) while younger as seedlings have a tendency to simply collapse and die.

Kowhai can be difficult to get started but well tended seedlings can grow to 600 mm high within a year of sowing.

**Suggested programme:** Harvest, chip and sow seeds in March, prick out to PB3's in May/June. Plant in the July of the following year.

# **AKE AKE**

(*Dodonaea Viscosa*)  
(*Dodonaea Viscosa Purpurea* = *Purple Ake Ake*)

Ake Ake are found north from about Christchurch and are easily grown from seed. Ake Ake come in two forms, standard and purple and are a coloniser which can provide good variety in foliage colour early in a revegetation project.

## **Ake Ake qualities/ characteristics:**

- Fast growing coloniser
- Frost tolerant when older
- Good for erosion control
- Tolerates poor soils, in dry to moist conditions.
- Tolerates sand but not waterlogging
- Height at maturity approx 4 metres



## **Seed Collection:**

Ripe seed appearance	Winged pods contain small black seeds to be blown from trees and naturally distributed by the wind.
Seed Collection time	January to April
Collection method	Simply remove pods from trees

## **Growing from Seed:**

Clean seeds i.e remove “paper” wings then sow into a tray of seed raising mix at a depth of around 10 millimetres and keep moist and under cover. Seeds will germinate quickly and should be pricked out to root trainers when around 50 millimetres high, which may be as little as six weeks after sowing. The seedlings will be slow to recover from pricking out but well tended seedlings will grow vigorously.

Ake Ake are well suited to root trainers and should grow to well over 400 millimetres in their first year.

**Suggested programme:** Gather and clean seed in early March, sow in April, prick out in late May – then plant in July of the following year.

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## **LANCEWOOD**

*((Psuedopanax Crassifolus)*



Lancewood is a very distinctive native tree that changes form significantly as it grows. Some believe that the tough narrow leaves on young trees developed to discourage browsing by the now extinct giant moa. Once the tree has grown above moa height the leaves change becoming less serrated, shorter, greener and more tasty. The photo at left shows the juvenile form.

### **Lancewood qualities/ characteristics:**

- Reasonably fast growing one set.
- Frost hardy
- Possum hardy
- Drought tolerant
- Attracts birds
- Tolerates poor soils, prefers good drainage
- Height at maturity approx 6 metres

### **Seed Collection:**

Mature lancewood are tall, thin and of a form which does not encourage climbing for seed collection. If you are lucky enough to find trees close to a cliff or bridge, gather away. Otherwise you may need to buy lancewood seeds over the internet.

Ripe seed appearance	Black seed head roughly peppercorn size, individual seeds look a bit like brown rice but around one quarter of the size
Seed Collection time	April to July.
Collection method	So far we have had to purchase over the internet.

### **Growing from Seed:**

Seed should be stratified for six weeks before sowing into seed raising mix. Germination will occur quickly, and seedlings should be ready to be pricked out in another five weeks or so. Seedlings will grow well in root trainers but may need to be grown for two years (in which case you should consider repotting to PB3 or larger) before planting out.

**Suggested programme:** Collect or buy seeds as early as possible (April), stratify through May, and prick out in June. All going well these may be ready to plant in the July of the following year – but likely best grown on for another year or even two.

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## **NIKAU** (*Rhopalostylis Sapida*)

Nikau, a very distinctive and attractive tree, is New Zealand's only native palm.

### **Nikau qualities/ characteristics:**

- Attracts birds
- Possum hardy
- Can be grown in a pot
- Frost tender
- Prefers shelter and partial / full shade
- Very slow growing
- Height at maturity approx. 8 metres

### **Seed Collection:**

Collecting seeds from the ground after they've passed through a bird saves the effort of cleaning the flesh off seed.

**Growing from Seed:** Having trialled stratification we prefer to sow seeds unstratified into a deep tray of seed raising mix and cover with approx. 10 mm of mix. Seeds should begin sprouting in approx. 3 months but it will take six months or more before all have sprouted.

Seedlings are quite robust and can be pricked out individually for potting into PB2's or larger.

**Suggested programme:** Collect seeds in January, sow out, germination April onwards, prick out July onwards, tend and repot as plants grow – will be at least two (but more likely four) years before trees are big enough to plant out, but they're worth the effort.

Repot to larger bags as the plant size increases as root mass and depth can be significant.

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## **POHUTUKAWA**

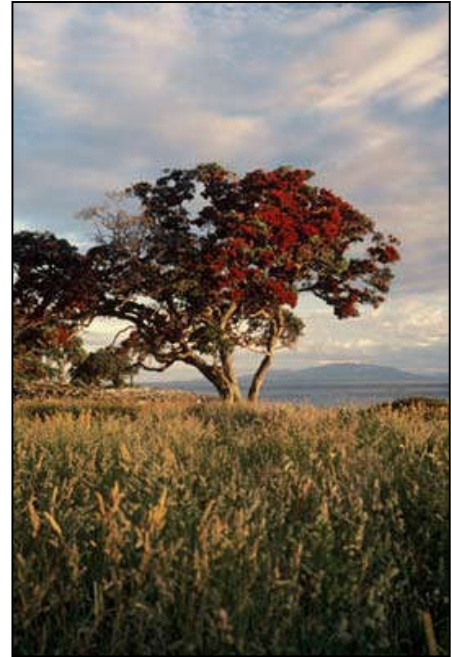
*(Metrosideros excelsa)*

Pohutukawa are an iconic tree with striking red flowers often referred to as New Zealand's Christmas tree.

Generally grown north of Napier, but can grow as far south as Dunedin, Pohutukawa are from the rata family which are widely admired in the south of New Zealand.

### **Pohutukawa qualities/ characteristics:**

- Quick germination but slow growth
- Frost tender when young
- Prefers well drained soils
- Does not tolerate waterlogging
- Resistant to wind, well suited to coastal sites
- Height at maturity approx 10 metres



### **Seed Collection:**

Ripe seed appearance: Light brown seed capsules are the size of a raisin and contain hundreds of small brown seeds which have the appearance of very short pieces of fine hair

Seed Collection time: April to May

Collection method: If the capsules are open bend seed laden branches into a bucket and shake. Alternatively remove seed capsules from trees and break open.

Seed cleaning: No special cleaning required

Pohutukawa are one of the easiest seeds to gather. Capsules are normally easy to reach and the collection described above can quickly produce thousands of seeds ready for planting.

### **Growing from Seed:**

Sow a dusting of fresh seed onto seed raising mix, mix some into the top layer a little and keep moist in a warm but shaded spot. Germination will occur strongly and quickly but growth will be slow. Prick out when seedlings are at least 50 mm tall and with four leaves or more which will be around late November. Root growth will be strong so planter bags are better than root trainers. Keep sheltered (especially from frosts) but gradually expose to more daylight then shift outside under shade cloth.

**Suggested programme:** Harvest seeds in April, sow straight way, germination in May, prick out in November. Keep sheltered but gradually expose seedlings to more daylight after winter. It is likely to take two years or more before trees are large enough to be planted out.

Beware Murtle Rust with Pohutukawa, which should be treated if it appears.

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## **A MIXED SEED BED**

All of the above can mean lots of work and if you're happy to just dabble, in no particular rush and see what grows a mixed seed bed is a good option.

In a sheltered shady part of your garden locate a seed bed (say 1 metre by 0.5 metre) where you can mix topsoil, lots of potting mix and a little compost and to a depth of 200 mm or more. Ideally this should be free-draining so a little above ground but not so high that it dries out, sited away from full sun and sheltered from frost. No timber edging is required, just keep it simple.

As you collect native seed simply sow it into the bed and cover with a little potting or seed raising mix. Then wait and see. Keep the soil moist and prick out seedlings as they reach appropriate heights and pot individually to planter bags before the roots are too deep. This approach is a bit "hit and miss" but works particularly well for the likes of Karaka, Kowhai, Ake Ake, Nikau and Kahikatea – harder seeds which take their time to grow up out of the ground. Try to keep soil moist but not too wet.

***"Up in the hills, the people began to plant trees. Papatuanuku stirred from her melancholy as she felt the roots of her cloak being restored".***

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## **GENERAL**

### **Tree Species Selection**

Tree selection is very important. The Tree Species Comparison chart at the rear of these guidelines covers a number of key matters (mostly climatic) which need to be taken into account when considering which trees to grow and where they should be planted.

Sadly many established trees need to be removed because they grow larger than expected, cast significant shade, crowd services (either through roots or branches), encroach over boundaries or have a tendency to drop branches. All such characteristics need to be considered, particularly when planting in urban areas.

### **Propagation Housing**

Temperature and moisture control is important to maximise seedling germination and growth. Native tree seeds generally do not need a lot of sunlight to germinate and keeping seeds and seedlings away from cold and frost is important until the frosts end.

During spring and summer tunnel houses can become extremely hot and cook seedlings or significantly stunt growth.

### **Pots, Planter Bags or Root Trainers?**

Root trainers have the distinct advantages of using less potting mix and take up less space. Baskets or frames for the root trainer are important as without them root trainers can be difficult to handle without the cells opening, in which case the potting mix and roots can spill out.



Root trainers in plastic frame

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Although planter bags are cheap they can be slow to pot into so if plants are to grow larger than desirable in a root trainer plastic pots can be a good option (and they can be reused). Either way it is important to ensure that the size of the pot or planter bag allows plenty of room for the roots as root-bound trees will seldom grow properly once planted out. Root trainers are the best way to keep the roots pointing down but have a limited capacity.

### **Planting, Mulching, Fertilising, Weed Control and Pest Control**

These are all crucial to the success of any tree planting proposal. These matters are covered simply and clearly in the Hawkes Bay Regional Council's guide "Planting Native Plants in Hawke's Bay" which is a free publication.

If you are unable to track down a copy of the HBRC guidelines these can be downloaded from our website [www.surveyingthebay.co.nz](http://www.surveyingthebay.co.nz) – look for the tab "We Like Trees".

### **Not sure where to start?**

Just have a go, maybe first up try manuka (see Kanuka instructions above):

- Collect some manuka branches with seed capsules - \$ free
- Place in a plastic bin or ice cream container for a week or two - \$ free

Buy some

- Seed raising mix & seed tray from your local garden centre - \$20-

Keep moist until seeds germinate - \$ free

Buy planter bags (PB2) and 3 bags of potting mix from local garden centre, noting a 40 litre bag of mix will fill around 30 PB2's - \$ 40-

So for around \$ 60- you should get 120 seedlings, but many more if you buy more potting mix and PB2's. If germination is strong and you want to grow more trees the bulk purchase of planter bags and potting mix is much less expensive - then you'll be hooked.

Manuka is a good seed to start with. Germination will be fast and prolific, trees will be ready to plant in a year and provide a great coloniser to start any revegetation project.

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# SEED COLLECTION CHART

## Collecting Seeds from native trees

People may collect seed from a property only after obtaining permission from that property's management  
- in the case of Mangemangeroa Reserve permission must be obtained from Manukau Parks.

Common Name	Botanical Name	Colour of Ripe Fruit/Seed	J	F	M	A	M	J	J	A	S	O	N	D
Cabbage Tree	<i>Cordyline australis</i>	White/paleblue												
Fuchsia	<i>Fuchsia excorticata</i>	Red puce												
Flax	<i>Phorium tenax</i>	Dry black												
Honeysuckle	<i>Knightia excelsa</i>	Dry brown												
Houpara	<i>Pseudopanax lessonii</i>	Black												
Kahikatea	<i>Dacrycarpus dacrydiodes</i>	Red/orange												
Kanuka	<i>Kunzea ericoides</i>	Brown												
Karaka	<i>Corynocarpus laevigatus</i>	Orange												
Karamu	<i>Coprosma robusta</i>	Orange												
Kohekohe	<i>Dysoxylum spectabile</i>	Green/red												
Kowhai	<i>Sophora sp</i>	Yellow												
Lancewood	<i>Pseudopanax crassifolius</i>	Black												
Mahoe	<i>Melicytus ramiflorus</i>	Purple												
Mangeao	<i>Litsea calicaris</i>	Reddish												
Manuka	<i>Leptospermum scoparium</i>	Dry brown												
Mapou	<i>Myrsine australis</i>	Black												
Nikau	<i>Rhopalostylis sapida</i>	Red												
Pigeonwood	<i>Hedycarya arborea</i>	Orange												
Pohutukawa	<i>Metrosideros excelsa</i>	Dry brown												
Pukatea	<i>Laurelia novae-zealandiae</i>	Green												
Puriri	<i>Vitex lucens</i>	Red												
Putaputaweta	<i>Carpodetus serratus</i>	Black												
Rangiora	<i>Brachyglottis repanda</i>	Dry brown												
Rimu	<i>Dacrydium cupressinum</i>	Red												
Tawa	<i>Beilschmiedia tawa</i>	Purple												
Taraire	<i>Beilschmiedia tarairi</i>	Purple												
Titoki	<i>Alectryon excelsus</i>	Red/black												
Totara	<i>Podocarpus totara</i>	Red/yellow												

Chart source: [www.aerolink.co.nz/mangemangeroa/spring2006.pdf](http://www.aerolink.co.nz/mangemangeroa/spring2006.pdf)

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## TREE SPECIES COMPARISON

	Height	Sun	Soil	Frost	Drought	Wind	Growth	Stability	Possums	Birds
<b>Ake Ake</b>	5 m	Full	Tolerates poor, Prefers drained	Hardy	Tolerant	Tolerates coastal	Fast	Yes		
<b>Broadleaf</b>	7 m	Full - shade	Tolerates poor	Hardy	Tolerant	Tolerates coastal	Fairly fast	Yes	Hardy	
<b>Cabbage Tree</b>	9 m	Full - partial	Tolerates poor	Hardy	Tolerant	Tolerant	Fast	Yes	Hardy	Attracted
<b>Five Finger</b>	5 m	Full - partial	Tolerates poor	Hardy	Tolerant	Tolerates coastal	Fast	Yes		Attracted
<b>Kahikatea</b>	Over 50 m	Full - shade	Prefers rich	Hardy	Tolerant	Tolerant			Hardy	Attracted
<b>Kanuka</b>	Over 15 m	Full - partial	Tolerates poor, prefers drained	Hardy	Tolerant	Tolerant	Fast	Yes		
<b>Karaka</b>	12 m	Full - shade	Prefers rich, prefers drained	Half hardy	Tolerant	Tolerates coastal	Fast		Hardy	Kereru
<b>Karo</b>	5 m	Ful - shade	Tolerates poor, prefers drained	Hardy	Tolerant	Tolerates coastal	Fast	Yes	Hardy	Attracted
<b>Kauri</b>	Over 20 m	Full - partial	Tolerates poor, prefers drained	Half Hardy	Tolerant	Tolerant	Surprising			
<b>Kowhai</b>	7 m	Full - partial	Tolerates poor	Hardy	Tolerant	Tolerant	Fast	Yes	Hardy	Tui, Bellbird
<b>Manuka</b>	6 m	Full - Partial	Tolerates poor	Hardy	Tolerant	Tolerant	Fast	Yes		
<b>Nikau</b>	8 m	Partial - Shade	Prefers rich	Half Hardy	Prefers moist soil	Requires shelter			Hardy	Attracted
<b>Pohutukawa</b>	10 m	Full	Tolerates poor, prefers drained	Half Hardy	Tolerant	Tolerates coastal	Fast	Yes		Attracted
<b>Rewa Rewa</b>	Over 15 m	Full - partial	Prefers well drained	Half Hardy	Tolerant	Tolerant			Hardy	Attracted
<b>Titoki</b>	8 m	Full – shade	Tolerates poor, prefers drained	Half Hardy	Tolerant	Requires shelter				Attracted
<b>Totara</b>	Over 10 m	Full - shade	Tolerates poor	Hardy	Tolerant	Tolerant	Fast in good soil	Yes		Tui
<b>Wineberry</b>	6 m	Full - partial	Tolerates poor	Hardy	Prefers moist soil	Tolerant	Fast	Yes	Eaten by Possums	Attracted

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