

SMALL SCALE PROPAGATION OF NATIVE TREES A SIMPLE GUIDE AND EXAMPLES



November 2011
3rd Edition



NATIVE TREE PROPAGATION GUIDELINES

Surveying the Bay are involved in a number of development projects which include a revegetation or restoration component. Improved aesthetics, integration of development, carbon storage, and restoration of natural systems bring a feel good factor to 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 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. 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 are not experts in this field, and this is not an income stream for our company. All of our trees are gifted to appropriate community projects or to developments we have been involved in.

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
November 2011
3rd 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 to be “best practice”.

“**PB3**” is a size 3 polythene planter bag (of approx. 2 litre capacity). Many other sizes are available, the larger the number, the bigger the bag.

“**Pricking Out**” is the process of repotting small seedlings from seed raising trays to planter bags or root trainers.

“**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 if you have baskets which hold a dozen of so trays.

“**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).

Metcalf, 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).

Hawkes Bay Regional Council, Planting Native Plants in Hawke's Bay

References - Websites

www.bushmanfriends.co.nz

www.forestfloor.co.nz

www.hbrc.govt.nz

<http://www.aoteamoana.co.nz/native/native.html> for Rongoa or maori medicine

www.landcareresearch.co.nz/services/greentoolbox/ includes free software to assist to match tree species to local conditions

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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 (fertilised regularly from seeds harvested in March) will grow quickly and could be large enough to plant out the following winter.

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

Note: 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. Place 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. 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 is present. Lush seedlings will grow quickly after germination.

Seedlings should be transplanted approximately two months after germination (to PB3 or larger) as the tap root develops quickly. 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

(Kunzea Ericoides)

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 opening and kept dry in a plastic bin or clear bag. As capsules open the seed can be sieved from 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 seed directly onto seed raising mix and keep moist with a spray mister or similar. Seeds germinate very quickly (around three weeks). Once seedlings are over 20 mm tall they can be gently pricked out to root trainers or planter bags. Well tended seedlings from seeds harvested in March will grow quickly and should be large enough to plant out the following Autumn.

Pricking out is timely and even a little root disturbance may cause kanuka seedlings to sulk or die. An alternative approach is to sprinkle seeds directly onto root trainers then thin with scissors to eventually leave one seedling per root trainer cell. Sounds drastic but seed is so prolific and germination so strong that this is now our preferred approach.

Suggested programme: Harvest seeds in March, sow onto root trainers in June, thin to around 5 stems per cell when seedlings are 20 mm tall, then to single stem per cell when seedlings are 100 mm tall, plant out the following July (after the frosts). If seedlings are too small to plant after the first year trim in August to 300 mm tall, then again around Christmas. A new leader will develop and the tree will be stronger for planting in the next season.

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KAHIKATEA

(*Dacrycarpus 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 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 roughly the size of a peppercorn.

Growing from Seed

Seed should be stratified 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 too long and before fragile lateral roots become too established. Seedlings grow on nicely in root trainers but may need to be repotted to PB3's or larger at around one year's age.

Kahikatea are reasonably slow growing and will take at least two years before they can be planted out – preferably under an established canopy.

Suggested programme: Harvest seeds in March, stratify April, sow May, replot August, 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 and lightly cover into seed raising mix 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 needs to reflect 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 and well known New Zealand native which grows easily 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 bigger) once seedlings are around 75 mm high. Keep under cover and carefully watch moisture levels 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 from sowing.

Suggested programme: Harvest, chip and sow seeds in March, prick out to PB3's in May. 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 cold stratify with sand for three weeks.

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, stratify then 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
- 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 need to buy lancewood seeds

Ripe seed appearance	Black seed roughly peppercorn 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 five 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 might consider repotting to PB3 or larger) before planting out.

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

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POHUTUKAWA

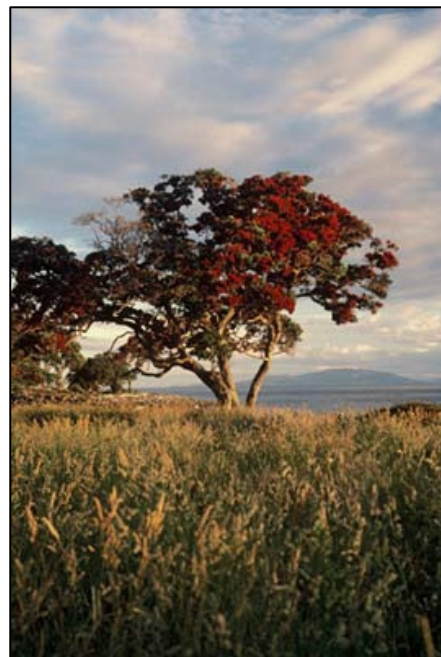
(Metrosideros excelsa)

Pohutukawa are an iconic tree with striking red flowers and is 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:

- Growth speed
- 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 large raisin and contain hundreds of small brown seeds which have the appearance of very short pieces of fine red/brown hair

Seed Collection time: April to May

Collection method: Simply 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 after very little work.

Growing from Seed:

No stratification is required. Simply sow the seeds on top of seed raising mix and keep moist. Germination will occur quickly (within a few weeks) but growth will then be very slow. Leave pricking out until late as some say seedlings do better in groups.

Suggested programme: Harvest seeds in April, sow straight way, germination in May, prick out in October. It is likely to take two years before trees should be planted out - depending on plant size and site conditions.

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GENERAL

Other Tree Species

We are also growing Nikau, Manuka, Totara, Broadleaf, Five Finger, Broadleaf, Black Maire, Titoki, and Karamu, from seed and will add propagation details as these trials progress (assuming we get them to grow).

Tree Species Selection

Tree selection is very important. The Tree Species Comparison chart at the rear of these guidelines discusses a number of 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 very important to maximise seedling 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 become extremely hot and can cook seedlings or significantly stunt growth.

Pots, Planter Bags or Root Trainers?

Root trainers have the distinct advantages of using less potting mix and taking up less space. Wire baskets are a real advantage 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. Although planter bags are cheap we find them slower to pot out so if we want plants to grow larger than desirable in a root trainer we prefer to use plastic pots. We have not trialled biodegradable wood fibre pots but they look like a great option too.

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 please send us an email and we can send a scanned copy to you: info@surveyingthebay.co.nz

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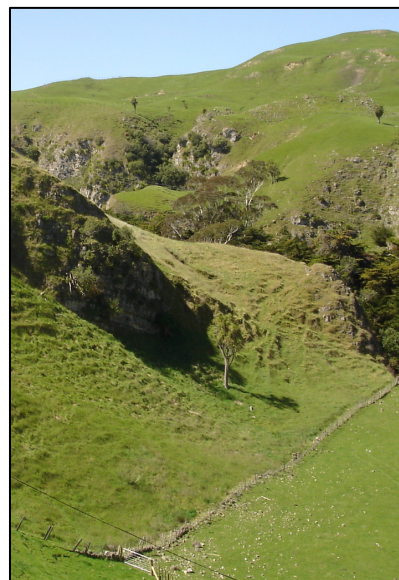
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Trees established by Surveying the Bay Ltd

In winter 2009 we gifted and planted approximately 500 trees into a "Pilot Revegetation Project" being undertaken by Surveying the Bay Ltd. This site is close to Kairakau and is an area of cultural significance where native bush will restore natural systems, bring back birdlife and add amenity to an adjoining subdivision we have been working on. Trees planted include Broadleaf, Wineberry, Cabbage tree, Kowhai, Kanuka, Karaka, Kauri and Pohutukawa.

Each year we plan to plant more trees here as the abundance of natural values and variability of site conditions make this an excellent site for us to learn on.

In late 2009 around 170 trees were gifted to the Hastings District Council to be planted at Roys Hill Park, a new reserve currently under development.



Since 2009:

In 2010 we donated a total of around 500 trees to the Whatever It Takes Trust (to be established at their new site at Riverbend Road, Meeanee), to our Kairakau Pilot site, to the Hastings District Council (for the Roys Hill Reserve) and to the Waiohiki Marae to be established at Otatara Pa, Taradale.



Trees in transit – ready for planting.

In 2011 we donated a total of around 600 trees to the Waiohiki Marae, the Roys Hill site, our Kairakau Pilot site, a proposed wetland under development at Whakatu and another at Swamp Road, an existing QEII covenant area close to Raukawa Road and to the Rotary Centennial Pathways Trust to be planted at Grange Creek, Haumoana.

At this stage we hope to have around 1,000 trees ready for planting in autumn of 2012.

November 2011

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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>Meliccytus 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

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TREE SPECIES COMPARISON



	Height	Sun	Soil	Frost	Drought	Wind	Growth	Stability	Possums	Birds
Ake Ake	4 m	Full	Tolerates poor Prefers drained	Hardy	Tolerant	Tolerates coastal	Fast	Yes		
Broadleaf	5 m	F - S	Tolerates poor	Hardy	Tolerant	Tolerates coastal	Fairly fast	Yes	Hardy	
Cabbage Tree	9 m	F / P	Tolerates poor	Hardy	Tolerant	Tolerant	Fast	Yes	Hardy	Attracted
Five Finger	5 m	F / P	Tolerates poor	Hardy	Tolerant	Tolerates coastal	Fast	Yes		Attracted
Kahikatea	Over 15 m	F - S	Prefers rich	Hardy	Tolerant	Tolerant			Hardy	Attracted
Kanuka	7 m	F / P	Tolerates poor	Hardy	Tolerant	Tolerant	Fast	Yes		
Karaka	12 m	F - S	Prefers rich prefers drained	Half hardy	Tolerant	Tolerates coastal			Hardy	Kereru
Karo	5 m	F - S	Tolerates poor prefers drained	Hardy	Tolerant	Tolerates coastal	Fast	Yes	Hardy	Attracted
Kauri	Over 15 m	F / P	Tolerates poor prefers drained	Half Hardy	Tolerant	Tolerant				
Kowhai	7 m	F / P	Tolerates poor	Hardy	Tolerant	Tolerant	Fast	Yes	Hardy	Tui, Bellbird
Lancewood	6 m	F / P	Tolerates poor prefers drained	Hardy	Tolerant	Tolerant			Hardy	Attracted
Nikau	8 m	P / S	Prefers rich	Half Hardy	Prefers moist soil	Requires shelter			Hardy	Attracted
Pohutukawa	10 m	Full	Tolerates poor prefers drained	Half Hardy	Tolerant	Tolerates coastal	Fast	Yes		Attracted
Rewa Rewa	Over 15 m	F / P	Prefers well drained	Half Hardy	Tolerant	Tolerant			Hardy	Attracted
Titoki	7 m	F / S	Tolerates poor prefers drained	Half Hardy	Tolerant	Requires shelter				Attracted
Totara	Over 10 m	F - S	Tolerates poor	Hardy	Tolerant	Tolerant	Fast in good soil	Yes		Tui
Wineberry	6 m	F / P	Tolerates poor	Hardy	Prefers moist soil	Tolerant	Fast	Yes	Eaten by Possums	Attracted

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