

Pā to Plate

A Brief Growers' Guide

Poipoia te kākano, kia puāwai.

Nurture the seed and it will blossom.

He kai kei aku ringa.

There is food at the end of my hands.

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Pā to Plate

Beginning as a research project in 2016, Pā to Plate has evolved as a marae community grower-led enterprise that has been operational since 2019. Its kaupapa is to reconnect tangata with their whenua through harnessing the value of kai and hua on the journey from the Pā to the Plate. It operates as a social enterprise that works with growers in over a dozen rural marae communities across the mid north of Tai Tokerau.

Pā to Plate targets three distinct markets:

1. The local informal market (whānau and community)
2. The non-local social enterprise market (providing kai to those in need)
3. The formal commercial market primarily for descendant consumers to buy kai or other resources from home

Since the Covid pandemic, Pā to Plate has focused primarily on nurturing its local communities where there is an immediate need for food security.

More information on Pā to Plate:

www.pa2plate.co.nz

www.facebook.com/pa2plate

Introduction to Growing

Māori have been involved in gardening or horticulture since their arrival in Aotearoa. As noted by Nick Roskrige in his 2021 publication *Establishing a Māra Kai*¹ a number of practices that evolved over many years continue to this day, including:

- Applying wood ash or plant matter as fertiliser
- Using stones in a māra to increase soil temperature via heat retention
- Adding sand to lighten heavy soil
- Crop rotation
- Crop storage
- Gardening traditions have remained strong for a reason – they are tried and tested

This brief guide provides you with some traditional practices that can be utilised in Tai Tokerau to help you operate a successful māra. This guide is not exhaustive, but it provides a foundation to build a successful māra. As you build up your gardening skills, you will undoubtedly also build up your own traditions to add to those included in this guide.

¹Nick Roskrige: Ko Mahinga O Tōku Māra Kai – Establishing a Māra Kai, LMG Ltd, 2021

Land Selection

When starting out, it is important to choose the right site to develop your māra. If you are working on a whenua that has a history of gardening it is worthwhile asking where the old māra were situated as that might be a logical place to consider starting your gardens. It's worthwhile checking the points below before making a final decision.

Situation of the land is one key to having a successful māra. In selecting a site ensure that you consider:

- The direction that your māra faces. Ideally, you should try to have a north or west facing māra to maximise exposure to the sun.
- The slope of your māra. Gently sloping land is ideal and flat land is good.
- Whether there is adequate drainage or if it is flood prone.
- If the māra holds water in the winter, this will impact your ability to garden over the cooler months unless you have raised beds.

Soils are also important. Success in the garden starts with healthy soil. Soil - as much as water and sunlight - determines whether plants thrive or die. Ideally it is good to have alluvial or river valley soils.

Some areas of Tai Tokerau are also blessed with rich volcanic soils, though some of this soil is also very rocky. It is best to stay away from heavy clay soil as it requires a lot of work to bring these into production (but it's not impossible). The soil of your māra needs to be able to provide nutrients to plants. Otherwise, your plants will not grow well.

Having the right soil pH (a measure of the level of acidity) means your plants can take up the necessary nutrients in the soil. If your pH is too high, many nutrients such as phosphorus and iron may become less available; if your soil pH is too low, it can be toxic to plants. Without healthy soil, it is very difficult to have a successful māra.

Healthy soil also enables you to use less fertiliser.

Getting a soil test is the best way to find out your soil pH and soil health. A good soil test will evaluate the basic texture of your soil - sand, silt, or clay - and determine its pH level. The available amounts of nutrients, including magnesium, calcium, phosphorus, and potassium, will be calculated and recommendations will be made for raising each to the correct levels for optimum plant growth.

Armed with this knowledge, you can make the proper improvements using fertiliser, compost and mulch. There are a range of soil testing facilities available in Aotearoa via universities, crown research institutions and a number of private companies. You can also undertake it yourself using a DIY kit available at hardware stores and horticulture outlets.

Water access is crucial. With climate change causing more frequent and severe droughts, it is important that there is access to water for irrigation. It is possible to install water tanks and an irrigation system to use during dry spells. Drought impacts negatively on crops so it's best to plan for this when you embark on gardening.

Shelter is another factor that you need to consider when choosing the site for your māra. Determine where the prevailing winds come from as strong winds will dry out a māra and can wreck crops. Ideally you will have a sheltered spot, but you can erect wind breaks and plant shelter belts if needed. If looking at a shelter belt, then consider planting an edible shelter belt including the likes of feijoa, alongside rongoā such as kawakawa, thereby enabling you to harvest from your shelter belt.

Basic Equipment

Some basic tools for starting a māra include:



All are available at hardware stores. They are also readily available on platforms such as TradeMe and Facebook Marketplace. You can readily pick them up in second-hand stores. Depending on the size of your māra, you may need a rotary hoe to work the whenua. These can be borrowed or are available for hire from the likes of Hirepool and, for those in Northland, Cowley's Hire Centres.



Māori woman gardening with a timo or hoe. Date unknown.
Photograph by Lindsay Charles. Te Papa Collection.

If you have a larger māra (a quarter of an acre or more) then you will need a tractor with a rotary hoe. Discs may also be needed if the soil is heavy. Seek the advice of other gardeners in your rohe. Consider forming a cluster with other growers nearby so you can share tools and support each other.

A useful list of basic garden tools is available here:
www.almanac.com/gardening-tools-guide

Crop Selection

In selecting crops, it is useful to determine via kōrero what grew well in your local area in the past. Most marae communities tended to have a reputation for certain crops, such as kūmara or watermelon. Also, don't be overly ambitious in the first or even the second year. See what grows best on your whenua. It is possible to plant a summer māra and, once that is over, plant another māra for winter. In Tai Tokerau, a gardener is also able to grow crops in the shoulder seasons — spring and autumn — but your main focus ought to be on two major cropping seasons.

The summer garden is normally your best producing māra in terms of volume of produce. Once you have prepared your māra, considering the factors noted on page 2, then select the crops for growing over the summer months. To start, look at growing some traditional kai such as:

- Kūmara
- Taro
- Yams
- Peruperu
- Riwai
- Kamokamo
- Pumpkin
- Corn

Added to this you can look at tomato, lettuce, capsicum (peppers), chili, eggplant, beans, cucumber, melons, carrots, beetroot and the like.

Some growers in the north endeavour to grow a number of leafy greens such as cabbage, cauliflower and broccoli over summer. However, in hot and humid climates it is best to grow these crops over the cooler autumn, winter and early spring months.

For winter gardens, ensure that you have adequate drainage, that the māra is not subject to heavy frosts and that you have adequate shelter against prevailing winds. The best winter crops in Tai Tokerau are leafy crops and these all work well in most māra. There are also a range of other root crops. Winter crops can include:

- Brassicas (cabbage, brussels sprouts, kale, broccoli, cauliflower)
- Silver beet
- Leeks
- Chinese greens
- Turnips
- Spinach
- Beetroot
- Carrots

The best recommendation is to experiment and see what works best on your whenua.

A herb garden for culinary and medicinal uses should also be considered. A guide to establishing a herb garden can be found here: www.gardenersworld.com/how-to/grow-plants/how-to-create-a-herb-garden

Plants for rongoā can also be an integral part of your māra. Rongoā plants can be planted throughout your māra, integrating them into your garden — for example, kawakawa can be planted in your shelter belts. The following are useful guides to rongoā: www.canopy.govt.nz/ngahere-maori/species/rongoa www.bpac.org.nz/bpj/2008/may/docs/bpj13_rongoa_pages_32-36.pdf

You may also consider planting flowers within your māra. Apart from their visual delight, many flowers have a medicinal benefit, and they are good for companion planting. They can also act as great pollinators, and some can be utilised for pest control (e.g., marigolds help to repel possums in a māra).

A guide to companion planting can be found here: www.palmers.co.nz/blogs/how-to-guides/companion-planting

A useful guide to attracting pollinators can be found here: www.saferbrand.com/articles/top-plants-that-attract-pollinators

There are also a range of sources for fruit trees. Koanga has the most comprehensive collection of heritage fruit trees available in Aotearoa: www.koanga.org.nz. These are grown in the Hokianga.

Fruit crops that could be considered for your māra include:

- Stonefruit — peaches, plums, nectarines, apricots
- Citrus — oranges, lemons, limes, mandarin, grapefruit
- Pipfruit — apples, pears
- Berryfruit — strawberries, blueberry, raspberry
- Vines — grapes, passionfruit, kiwifruit

There are also a range of subtropical plants that could be considered for your māra. These include banana, avocado, papaya, persimmons, figs, cherimoya, guava and pomegranate. Many are available online via speciality outlets or groups.

It's best to ask other local growers what fruit grows well in your rohe. Plan your orchard carefully as it is difficult to move an orchard around once planted. Seek advice if you are unsure.

Seeds

It is possible to purchase seeds at your local garden centre or at hardware stores.

They can also be bought online. There are many speciality seed suppliers. Some leading suppliers include:

- Kings Seeds – the most comprehensive seed supplier in Aotearoa: www.kingsseeds.co.nz
- Koanga – best source of heritage seeds, fruit trees and root crops: www.koanga.org.nz
- Egmont Seeds – another comprehensive supplier of seeds and other garden equipment: www.egmontseeds.co.nz
- Yates Seeds is one of New Zealand's oldest seed companies with no online store, but seeds are available at most garden centres or hardware stores: www.yates.co.nz/plants/vegetable
- Mr Forthergill's is an English seed company that does not sell online but the web site provides information on seed raising and growing: www.mrfothergills.co.nz
- McGregor's is another seed brand available in most garden centres and hardware outlets: www.mcgregors.co.nz/products/seeds
- SETHA'S Seeds of Hawke's Bay is an excellent source of heirloom and organic seeds: www.sethasseeds.co.nz

Tipu or kūmara slips, together with seed peruperu and riwai are available from markets, specialist outlets and online.

There are many specialist seed companies in New Zealand as well. If you are after rare plants, then check out TradeMe. There are also numerous Facebook garden groups where it is possible to buy or swap seeds, roots, tubers and plants. It is very difficult or illegal to import most seeds into Aotearoa due to biosecurity regulations.



Ngawini Hetaraka (left) and Ngahuia Hetaraka, during kūmara harvest. Awanui, Northland. Date unknown. Alexander Turnbull Library.

Seed saving is a great way to save money as well as ensure that your favourite pumpkin or bean can be grown year after year. If you want to investigate seed saving the following are some useful resources:

- Seed Savers is an American organisation that provides advice on how to save seeds, by crop: www.seedsavers.org/how-to-save-seeds
- The University of Minnesota offers some good advice on seed saving: www.extension.umn.edu/planting-and-growing-guides/saving-vegetable-seeds#harvesting-823210
- Farmer's Almanac has a series of videos on seed saving: www.almanac.com/how-save-vegetable-seeds

Seed saving is one way to guarantee food sovereignty for your māra.



Family harvesting corn, Nelson region. 1880s. Alexander Turnbull Library.

Gardening Practices

Before planting your crops, it's best to consider what sort of gardening style you want to adopt – such as permaculture, organic, syntropic permaculture or a mix of practices. It's worthwhile checking out styles that may fit what you are comfortable with. Most gardeners do not want to use chemical sprays on their gardens. In fact, it's a negative when selling surplus kai in the likes of farmers markets where many ban the sale of produce that is sprayed with chemicals.

To determine what practices may work best for you, ask other growers and check out the following websites:

- Māori Organics: www.tewakakaiaora.co.nz
- Guide to organic education: www.organicnz.org.nz/magazine-articles/guide-organic-education-new-zealand
- Māori Food Sovereignty: www.papawhakaritorito.com
- Organics: www.oanz.org/organic-farming-practices
- Permaculture: www.permaculture.org.nz
- Biodynamics: www.biodynamic.org.nz
- BioGro: www.biogro.co.nz
- Syntropic Permaculture: www.permadynamics.co.nz

As you gain experience, you can adapt your own gardening practices over time. The wise gardener will work with their whenua to ascertain what crops grow the best over the four seasons.

It's worth the effort to draw up a plan for your māra at the beginning of each season. Some good advice on planning a garden can be found here: www.tinyurl.com/best-garden-layout



Maramataka

Planting by the moon cycle is a common practice amongst Māori. The Māori lunar calendar is called the Maramataka, which literally means the turning of the moon. It marks the phases of the moon in a lunar month.

The māra calendar begins in June/July and starts with a rest period. Maramataka has four distinct seasons with specific plantings and harvesting times. For more information on maramataka, please check out:

- What is the lunar calendar: www.teara.govt.nz/en/maramataka-the-lunar-calendar/page-1
- Rereata Makiha: Maramataka and the science of living by the moon: https://www.youtube.com/watch?v=R4MTE7E3R_Q
- Heeni Hoterene's maramataka guides: www.maramataka.co.nz
- Ngāti Rārua tiawa Iwi Trust maramataka guide: www.nrait.co.nz/our-owners/te-whanake/maramataka-the-maori-lunar-calendar



Fertiliser and Compost

Most soils in Tai Tokerau require some lime to be added before planting. Another fertiliser that you can investigate is blood and bone. There are many organic options as well. If you are unsure, ask other gardeners in the rohe or seek professional advice from your garden centre or hardware store. If you have had your soil tested, then you will most likely have recommendations on the fertiliser needed for your whenua.

You can make your own fertiliser via a worm farm or collecting seaweed. Here are some DIY garden fertiliser recipes:

www.tinyurl.com/organic-fertilizer-recipes

Compost is a natural way to enhance your soil.

At the same time, it is a way to minimise waste by using household scraps as well as lawn clippings and prunings to put nutrients back into your whenua. There are many good courses available in composting, or you can learn yourself:

- A simple guide to composting can be found here: www.lovefoodhatewaste.co.nz/composting-101
- A great resource to seek advice on composting can be gained from Para Kore. Para Kore is a Māori, not-for-profit, zero waste organisation: www.parakore.maori.nz
- Background to Para Kore: www.thespinnoff.co.nz/atea/01-09-2018/parakore-how-maori-business-is-embracing-the-zero-waste-movement

The goodness that you add to your soil will be reflected in your ability to harvest quality crops.



Crop Planting & Māra Care

Seedlings can be planted out and nurtured prior to planting in the māra. In developing a seedling nursery, recycled pots and seedling trays from the likes of Mitre 10 and many garden centres can be used. Some seeds can be directly planted but often a better harvest return is gained from using seedlings that have been nurtured in pots or trays.

Summer vegetable gardening guide:

www.daltons.co.nz/gardening-guides/summer-vegetable-planting-guide

Winter vegetable gardening guide:

www.daltons.co.nz/gardening-guides/winter-vegetable-planting-guide



A pātaka, or food storehouse, in old Māori village, Tauramunui. Circa 1890. Burton Bros.

After planting out in the māra, it is important to ensure that the young plants are well watered. The importance of access to water cannot be overestimated. Water access, water tank storage and reticulation are all important to guarantee a healthy and vibrant māra. The following is an introduction to water collecting and storage:
www.rhs.org.uk/garden-jobs/water-collecting-storing-and-using

Information on water storage and irrigation options is available from a variety of sources including hardware stores, horticulture suppliers and farming outlets.



Women harvesting kūmara in Tai Tokerau. Early 20th century. Alexander Turnbull Library.

It is also important to regularly maintain your garden. Weeding is a necessary aspect of gardening. If undertaken regularly it need not be a major chore. Mulching can help keep garden weeds at bay. It also helps maintain moisture around plants and keeps a māra tidy. Some basics on mulching are here:

- Mulching 101:
www.compostingnz.co.nz/everything-you-ever-needed-to-know-about-mulching
- Do's and Don'ts of mulching:
www.completelandscapes.co.nz/how-to/top-10-dos-and-donts-of-mulching
- Garden maintenance through mulching:
www.gardenersworld.com/how-to/maintain-the-garden/mulches-and-mulching

Harvesting

It is important to harvest kai on time and prepare it for storage, sale or processing. You need to check how best to keep your crops. For example, it's important to wash and dry kūmara and to ensure that the kūmara are cured in the sun. If this is not followed through, then the kumara are unlikely to have a long shelf life. It is recommended that you do not bag up uncured peruperu, riwai or kūmara as they are likely to spoil quite quickly.

Similarly, pumpkins and squash as well as mature kamokamo ought to be well cured in the sun so that the sun hardens the skin and enables it to be stored for months. It is also important to cut the stalks of pumpkins and squash at the T-bar join, again lowering the likelihood of early rot.

Some tips on harvesting vegetables can be found here:

- www.extension.umn.edu/planting-and-growing-guides/harvesting-and-storing-home-garden-vegetables
- www.thisnzlife.co.nz/how-and-when-to-harvest-vegetables-from-the-garden-in-february-plus-what-to-plant-this-month

The important thing is not to waste the kai that you have laboured to produce. Harvesting on time and safely storing well prepared kai is an imperative to guaranteeing an ongoing food supply from your māra throughout the year.

Storage

Tai Tokerau has a warm and humid sub-tropical environment. This makes it impractical to store many vegetables unless refrigeration or preserving is utilised. Refrigeration is expensive and while many marae have cool storage this is unlikely to be an option to use due to the cost. As a result, some are reverting to traditional storage methods for kai.

Storage pits, known as whata or rua, that were compacted and sealed against vermin were used to hold some foods, particularly root crops, such as kūmara, riwai and peruperu. Modern versions of these have been developed above ground using mud bricks.

Pātaka are small, raised buildings that were traditionally used to store food for winter use in many parts of Aotearoa. In the north they were mainly used to store grains, such as corn and seed riwai or peruperu.

Today, some gardeners are revisiting pātaka and whata when looking at ways to successfully extend the life of their harvest. These are a lower cost option to refrigeration.



Tairawhiti man standing at the entrance of a traditional underground food storvve (pit) for kūmara & riwai. Undated. Auckland Weekly News Supplement photo.

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