# Report 2 : Tīmata vs Traditional Native Planting

This report is based on measurements taken in July 2025 and follows an initial report was carried out in 2024.

## Introduction

New Zealand native forests consist of two primary types of plants: pioneer plants (e.g. mānuka, kānuka) along with other broadleaf species (e.g. makomako, karamu, mahoe). Mānuka and kānuka in particular are recognised for their role as early colonizers that naturally prepare the environment and soils for introduction of other coloniser species dispersed by birds and wind, and succession trees (e.g. Rimu, Totara, Kahikatea), which develop later as the forest matures.

In traditional planting, native plants are normally supplied in T28 (400ml) root trainers, PB2 and PB3 planter bags or pots. A full range of pioneer plants are usually planted with some succession tree species at a target stocking rate of around 4,444 stems/ha (1.5m x 1.5m spacings) but can range from 2,500 up to 10,000 stems per ha.

The Tīmata Method, which in Māori translates to begin, start, kick-off or commence, is intended to imitate the natural reversion process commonly seen by the appearance of seedling mānuka or kānuka that farmers classically have called scrub, which in time (50–100+ years) is known to evolve into fully restored ngahere (native forest). The fundamental principles of the Tīmata Method are use of a much higher (70%-100%) proportion of less expensive mānuka or kānuka plus a mix of bird loving coloniser species (such as karamu, mahoe, makomako, whauwhaupaku, tarata, kohuhu, koromiko, ti kouka and harakeke), using smaller “forestry-grade” plants grown in 120ml root trainers and fewer trees (1,100-2,800 stems per hectare) than conventional guidelines. Typical Forestry Grade Plant Specifications are:

- Minimum above ground seedling height of 30cm
- Root collar diameter of 3mm
- Seedlings grown in Lannen 64FD 120mm root trainer trays or equivalent
- Root density such that plugs hold together during lifting, transport and handling for planting

Deployed as a whole, the Tīmata Method significantly lowers the cost of planting and makes more efficient use of time and labour resources as detailed in the video, technical report and factsheet produced in 2023 with Our Land & Water funding The Tīmata Method for Low-Cost Native Forest - Our Land & Water - Toitū te Whenua, Toiora te Wai (ourlandandwater.nz). The Tīmata method is particularly suitable for broadscale retirement of steep pastoral land but also riparian and wetland margins using professional forestry preparation and planting methods.

The traditional method has been founded on the premise that larger seedlings planted densely (less than 2m apart) will achieve earlier canopy closure therefore reducing or negating the need for ongoing environmental weed control. The reality experienced by landowners however is that environmental weeds require strategic pre and ongoing control irrespective of planting method

without which sites can potentially be overrun to the point in some cases of requiring replanting. Also, overcrowding plants and the increased competition for water, light and nutrients is known to cause long term plant stress known as “stagnation” which can affect the health of the stand and associated ecosystem for many years.

Under the Tīmata method, forestry grade trees appear to grow faster and catch up to larger plants and therefore canopy closure is not far behind (2-4 years) the traditional method. Weed maintenance may be slightly higher but overall costs including weed control can be at least 50% less than the comparative cost of traditional planting. Tīmata trees planted at a wider spacing have a better chance to grow to their genetic potential and the ecosystem appears to be healthier allowing birdlife to enhance the natural regeneration process with seed dispersal.

| **Comparative Native Planting Costs (2024 pricing)** | | | | | |
|---|---|---|---|---|---|
| | | | **Tīmata Forestry Grade 3m** | **Tīmata Forestry Grade 2m** | **High Density PB3**** |
| Plant Spacing: | | | | | |
| - Metres Between Plants | | | 3.0 | 2.0 | 1.5 |
| - Metres Between Rows | | | 3.0 | 2.0 | 1.5 |
| Plants per ha | | | 1,111 | 2,500 | 4,444 |
| Blanking % | | | 15% | 10% | 0% |
| Blanking Plants | | | 167 | 250 | - |
| **Total Plants** | | | **1,278** | **2,750** | **4,444** |
| **Planting Cost Metrics** | | | | | |
| Preplant Spot Spray* | | $ Per plant | $ 0.50 | $ 0.50 | $ 0.50 |
| Plant | | $ Per plant | $ 1.22 | $ 1.22 | $ 2.70 |
| Planting | | $ Per plant | $ 1.30 | $ 1.30 | $ 2.50 |
| **Total** | | **$ Per plant** | **$ 3.02** | **$ 3.02** | **$ 5.70** |
| | | | | | |
| **Total Planting Cost per Hectare** | | | **$ 3,863** | **$ 8,314** | **$ 25,333** |
| * Ground based (Helicopter desiccation another option) | | | | | |

# Aim

To collect data for a comparative analysis of traditional native plant establishment and the Tīmata planting method to test:

- Comparative growth rates over time
- Time until canopy closure
- Environment weed incursion and control costs
- Stand ecosystem health (tree health, understory ground cover, birdlife and invertebrates)
- Natural regeneration

# Method

To compare these two methods, six permanent sample plots were taken across three properties in the Bay of Plenty region which each contain recent traditional and Tīmata planting. Plot locations chosen within each property contained similar altitude and aspect. The field measurements for this study have been undertaken by ***Stef Kincheff (B.For.Sc (Hons) and Guy Wilkins ( B.For.Sc)***

*Table 1: Sample plot coordinates, method, and planting year*

| Property | Plot GPS Coordinates | Method | Year Planted | Age |
|---|---|---|---|---|
| Maniatutu Road | 37° 54´ 2˝ S 176° 26´ 47˝ E | Tīmata | 2022 | 3 |
| Maniatutu Road | 37° 53´ 44˝ S 176° 26´ 46˝ E | Traditional | 2023 | 2 |
| Te Mania | 37° 36´ 40˝ S 175° 52´ 16˝ E | Traditional | 2021 | 4 |
| Te Mania | 37° 36´ 40˝ S 175° 52´ 25˝ E | Tīmata | 2021 | 4 |
| Pongakawa Bush Road | 37° 54´ 14˝ S 176° 29´ 40˝ E | Traditional | 2023 | 2 |
| Pongakawa Bush Road | 37° 53´ 55˝ S 176° 29´ 57˝ E | Tīmata | 2022 | 3 |

At each plot height and root collar diameter were measured for each plant. A height pole was used, and plants were measured in increments of 5cm and root collar diameter was measured using a calliper down to the nearest mm. Each plant was identified for species and the form was recorded.

*Table 2: Establishment methods used for pre plant spray and releasing*

| Property | Method | Pre Plant spray | Release #1 | Release #2 | | Release #3 |
|---|---|---|---|---|---|---|
| Maniatutu Rd | Traditional | Spot Spray | Spot release | Spot release | | Spot release |
| Maniatutu Rd | Tīmata | Spot Spray | Spot release | Spot release | | Spot release |
| Te Mania | Traditional | Spot Spray | Spot release | Spot release | | - |
| Te Mania | Tīmata | Spot Spray | - | - | | - |
| Pongakawa Bush Rd | Traditional | Spot Spray | Spot release | Spot release | | - |
| Pongakawa Bush Rd | Tīmata | Aerial blanket Spray | Spot release | - | | - |

*Table 3: Species Mix and 2024 per plant cost for both methods*

| Species | Tīmata Method* | Traditional Method |
|---|---|---|
| Kunzea ericoides | $ 1.25 | $ 2.70 |
| Leptospermum scoparium | $ 0.88 | $ 2.70 |
| Pittosporum tenuifolium | $ 1.65 | $ 2.70 |
| Pittosporum eugenoides | $ 1.70 | $ 2.70 |
| Phormium tenax | $ 1.70 | $ 2.70 |
| Cordyline australis | $ 1.40 | $ 2.70 |
| Makomako | $ 1.65 | $ 2.70 |
| Coprosma robusta | $ 1.40 | $ 2.70 |

| | | | | |
|---|---|---|---|---|
| Melicytus ramiflorus | $ | 1.65 | $ | 2.70 |
| Dodonaea viscosa | $ | - | $ | 2.70 |
| Knightia excelsa | $ | - | $ | 5.30 |
| Kōwhai | $ | - | $ | 4.20 |
| Pittosporum crassifolium | $ | - | $ | 3.80 |
| Podocarpus totara | $ | - | $ | 5.00 |
| Hoheria populnea | $ | - | $ | 4.40 |
| Carpodetus serratus | $ | - | $ | 5.30 |
| Dacrycarpus dacrydioides | $ | - | $ | 5.00 |

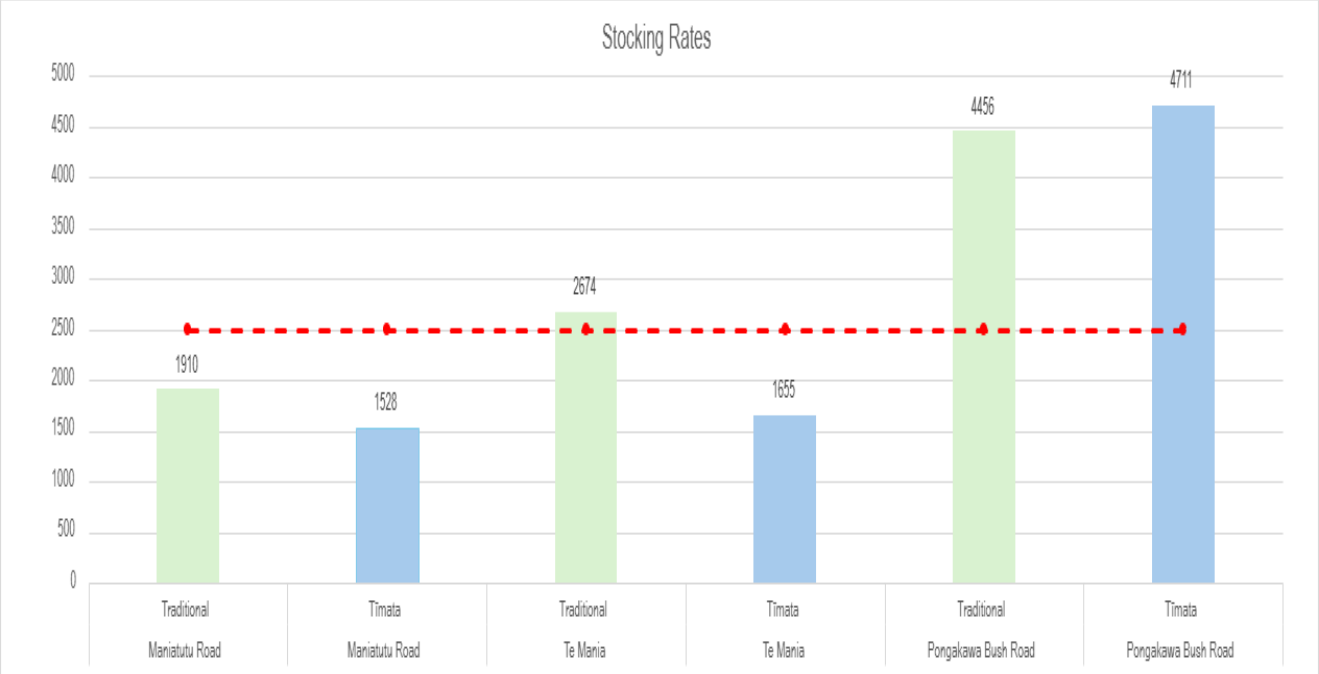
*The Tīmata mix on the sites averaged 70% mānuka and/or kanuka and 30% balance species

# Analysis

Measurement of stocking rates, plant height, stem root collar diameter and form will be undertaken annually from which establishment and growth for each property site and method can compared.

## Planted Stocking rates per hectare

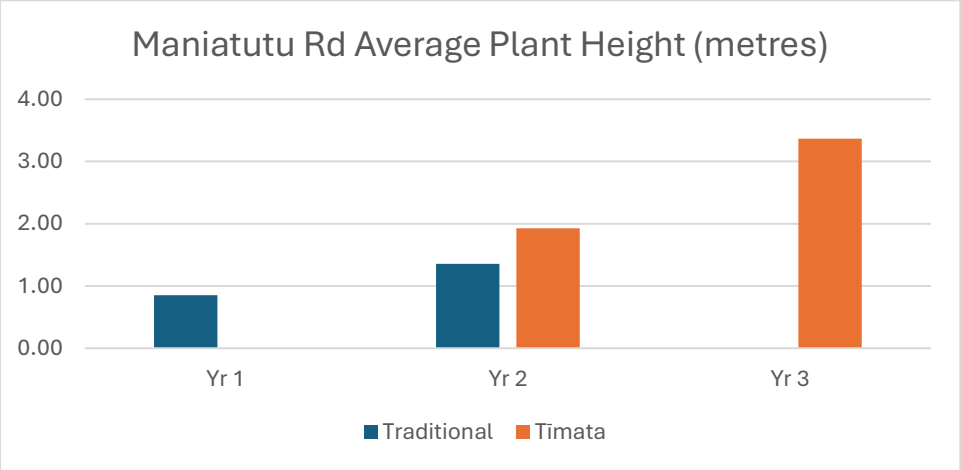
Target stocking rate for both Tīmata and Traditional on the trial sites were 2,500 stems/ha (2.0m x 2.0m spacings) as per the red dashed line. Traditional planting stocking is normally 4,444 stems per ha but can vary from 2,500 to 10,000 stems per ha. The table shows variable stocking rates on all the sites. The cause of variability could be the combination of spacing error at planting, terrain, obstacles (e.g. rock) and plant loss through environmental stress and pest damage.

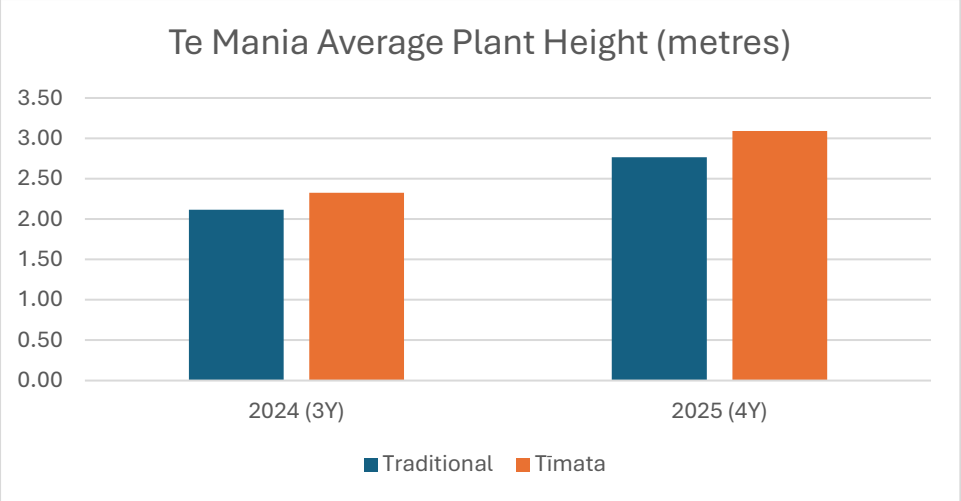


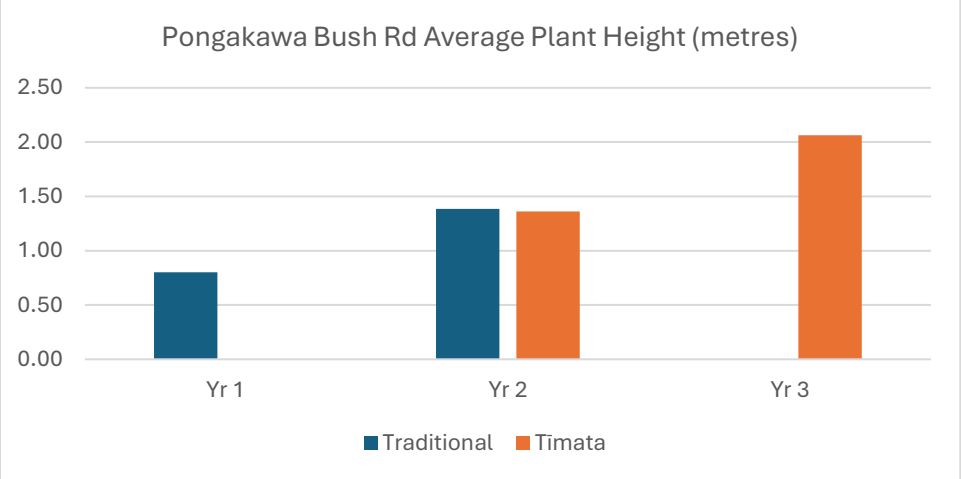
## Plant Average Height

The only site where plants were established in the same year (2021) is Te Mania whereas plantings at the Maniatutu Road and Pongakawa Bush Road sites are one year apart -Tīmata 2022 and Traditional 2023.

With 2 years data we have matched plant height to age as follows:



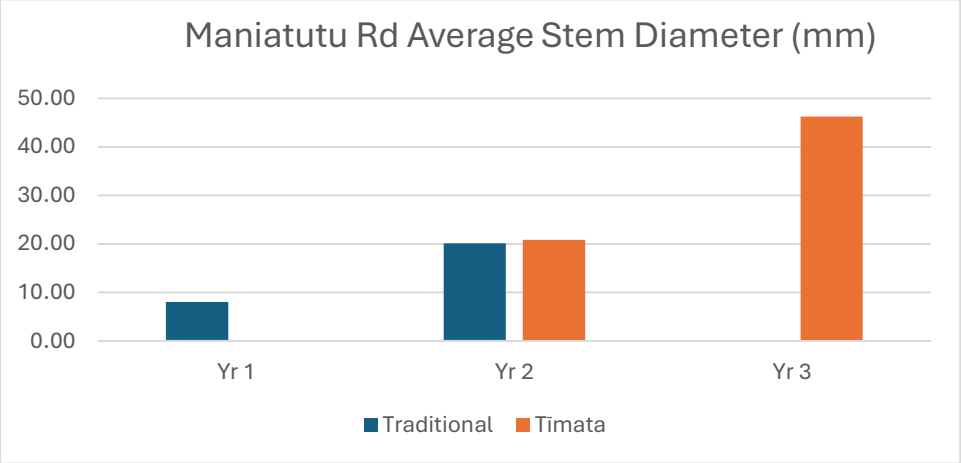
Tīmata plant height is ahead of Traditional at Maniatutu Road and Te Mania with Traditional only slightly ahead at Pongakawa Road.

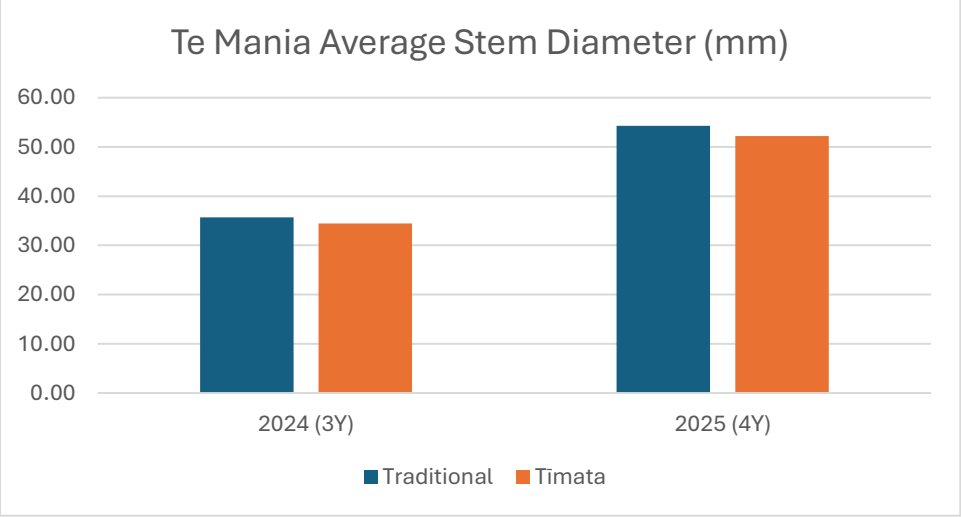
Tīmata year 3 tree heights are similar at Te Mania and Pongakawa Bush Road sites with Maniatutu Road at 3.37m being significantly higher probability being due to a lower altitude.

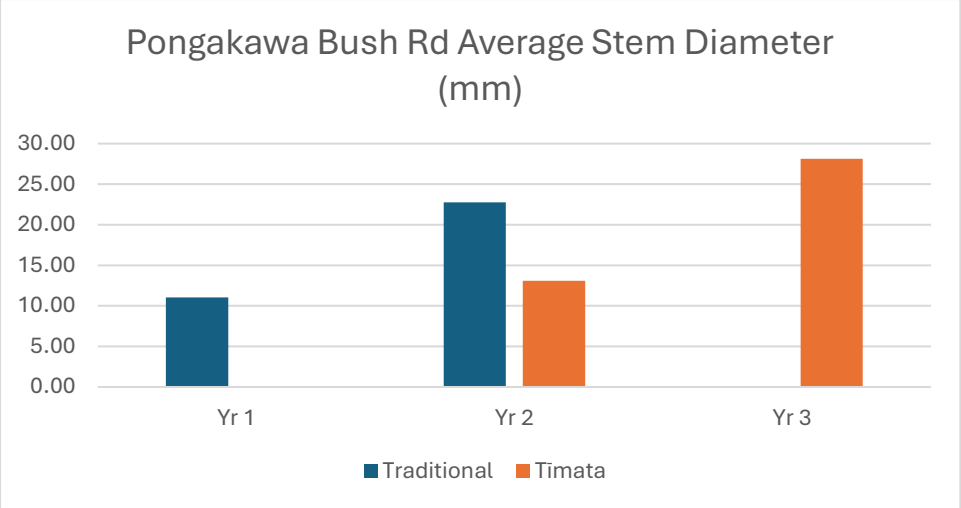
## Average Stem Root Collar Diameter

Stem diameters are similar between Tīmata and Traditional for Maniatutu Road and Te Mania with Traditional significantly greater for Pongakawa Bush Road.

Again, Tīmata year 3 stem diameters are similar at Te Mania and Pongakawa Bush Road sites with Maniatutu Road significantly ahead probability being due to a lower altitude.






# Summary

This is the second year of a long-term study to objectively assess the comparative performance and cost/benefit of traditional high cost versus low cost Tīmata methods used to establish ngahere.

Two years data has enabled same age plot comparison across all 3 sites. Te Mania currently provides the best comparison as both plots were established in the same year. Because Maniatutu Road and Pongakawa Bush Road were planted in different years it is probable that climatic conditions may distort a Tīmata versus Traditional age group comparison however any short-term effects should "even out" over the long term as data is collected.

Initial results along with ground observations are that Tīmata is at least matching Traditional across all 3 sites which is significant given the substantial savings that the Tīmata method provides. Specific observations are:

Te Mania

Red deer browsing damage is affecting the establishment and growth of the broad leaf colonisers at the Tīmata plot however the mānuka and kānuka plantings have been largely unaffected. Control of red deer is ongoing. There is no deer damage at the Traditional plot as it is surrounded by deer fence.

The Tīmata plot results would have been enhanced if either deer were excluded or a higher (100%) mānuka/kānuka had been planted at the outset.

Weed incursion (mainly blackberry and the occasional woolley nightshade plant) at both sites are low and are well controlled with minimal cost. Canopy closure on both sites is expected with 2-3 years.

4Yr Tīmata $4k/ha RHS vrs 4Yr Conventional $12.7k/ha LHS

Maniatutu Road

Because of kikuya, this site was deemed to provide the greatest challenge for forestry grade Tīmata. Three chemical releases were required post planting as well as some blanking. Despite this the Tīmata plantings are doing very well and appear to be outperforming Traditional possibly by virtue of better attention to weed control.

Pongakawa Bush Road

Tīmata and Traditional plantings are level pegging in terms of plant height however Traditional may take a lead in the next period given the stronger stem diameter.

Report compiled by John Burke 3 February 2026

**Traditional Native Plant Grade**

**Tīmata  Forestry Grade Plants**


Kanuka 100 plants
Kanuka 100 plants