**Table 1: Summary of the common native tree species included in the Tāne's Tree Trust plantation survey. Listed are the number of plots established and the number of trees measured for height and DBH.**

| Species grouping | Species name | Botanical name | No. plots | No. trees measured for each parameter | |
|---|---|---|---|---|---|
| | | | | Height | DBH |
| Conifers | Kauri | *Agathis australis* | 112 | 2200 | 1594 |
| | Rimu | *Dacrydium cupressinum* | 46 | 440 | 530 |
| | Kahikatea | *Dacrycarpus dacrydioides* | 44 | 463 | 664 |
| | Kawaka | *Libocedrus plumosa* | 12 | 34 | 51 |
| | Tanekaha | *Phyllocladus trichomanoides* | 18 | 76 | 61 |
| | Totara | *Podocarpus totara* | 111 | 1248 | 2031 |
| | Miro | *Prumnopitys ferruginea* | 11 | 25 | 33 |
| | Matai | *Prumnopitys taxifolia* | 15 | 38 | 16 |
| Beeches | Red beech | *Nothofagus fusca* | 33 | 263 | 499 |
| | Silver beech | *Nothofagus menziesii* | 13 | 62 | 22 |
| | Black beech | *Nothofagus solandri* | 24 | 138 | 266 |
| Other hardwoods | Taraire | *Beilschmiedia tarairi* | 6 | 35 | 29 |
| | Karaka | *Corynocarpus laevigatus* | 14 | 82 | 89 |
| | Kohekohe | *Dysoxylum spectabile* | 8 | 45 | 6 |
| | Rewarewa | *Knightia excelsa* | 16 | 76 | 33 |
| | Puriri | *Vitex lucens* | 38 | 207 | 426 |

**Table 2: Summary of the common native shrub and small tree species assessed during the Tāne's Tree Trust survey of planted stands. Listed are the number of plots established and the number of trees per species for each of the assessment parameters height, RCD and DBH.**

| Species name | Botanical name | No. plots | No. trees measured for each parameter | | |
|---|---|---|---|---|---|
| | | | Height | RCD | DBH |
| Makomako | *Aristotelia serrata* | 11 | 56 | 41 | 7 |
| Karamu | *Coprosma robusta* | 15 | 103 | 91 | 7 |
| Ti kouka | *Cordyline australis* | 26 | 217 | 49 | 194 |
| Akeake | *Dodonea viscosa* | 9 | 49 | 38 | 9 |
| Broadleaf | *Griselinia littoralis* | 14 | 84 | 73 | 2 |
| Houhere | *Hoheria sexstylosa* | 14 | 81 | 39 | 20 |
| Kanuka | *Kunzea ericoides* | 23 | 250 | 208 | 17 |
| Manuka | *Leptospermum scoparium* | 12 | 132 | 113 | 2 |
| Mahoe | *Melicytus ramiflorus* | 14 | 51 | 42 | 3 |
| Mapou, red matipo | *Myrsine australis* | 6 | 17 | 15 | 2 |
| Akiraho | *Olearia paniculata* | 6 | 38 | 40 | 0 |
| Rautawhiri | *Pittosporum colensoi* | 6 | 36 | 34 | 6 |
| Tarata, lemonwood | *Pittosporum eugenioides* | 27 | 213 | 161 | 18 |
| Kohuhu | *Pittosporum tenuifolium* | 28 | 313 | 237 | 7 |
| Manatu | *Plagianthus regius* | 5 | 46 | 34 | 5 |
| Whauwhaupaku | *Pseudopanax arboreus* | 11 | 107 | 43 | 43 |

◄ The subjects of these reports include planted conifers (Technical Article No. 10.2), native hardwood trees (No. 10.3), planted native shrubs (No. 10.4), and carbon sequestration by planted natives (No. 10.5).

Copies of the TTT Handbook and the article based on the native plantation survey are available directly from the Trust office with further information on this and other projects and activities by Tāne's Tree Trust available on the website:

www.tanestrees.org.nz

David Bergin
and
Mark Kimberley,
Scion, January 2012.

**EDITOR'S NOTE:** It is regretted that space constraints have resulted in the unavoidable exclusion of height growth data obtained in the survey. Visit the website or contact the office to obtain the entire survey results.

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EDITORIAL

# TTT supports new workshops initiative

**TĀNE'S TREE TRUST is supporting a new Sustainable Farming Fund series of "trees on farms" workshops coordinated by the New Zealand Farm Forestry Association. Twenty-five workshops based on individual farm forestry branches will be held from 2011-2013.**

The three year programme of regionally-based workshops launched in November last year aims to help pastoral farmers and their advisors identify the economic and environmental benefits of planting trees on their properties and how best to incorporate appropriate species into their land use strategies.

Tanes Tree Trust is helping with:

- Theme input
- Workshop promotion
- Presenters at workshops
- Video clip support
- Branch support

The workshops break new ground with their "whole farm" approach and region-specific content. They are hosted by local branches of the NZ Farm Forestry Association and draw heavily on the expertise and practical local experience of knowledgeable farm foresters. The involvement of local AgFirst consultants, Tane's Tree Trust, Landcorp, regional and unitary councils, Young Farmers and Rural Women ensures that every workshop is tailored to reflect the opportunities and challenges specific to that area, and that tree planting, whether for timber, shelter, erosion control or potential ETS benefits, is viewed in the context of wider farm management practices.

Project manager Ian Nicholas says nearly every farm in New Zealand contains land that is difficult to farm or marginal in some way. "In these situations trees can provide better returns than traditional farming, as well as creating an on-farm asset that, when mature, will provide farmers with a range of real financial options. However, farmers need more information about the multiple benefits, both short and long term, of tree planting, as well as the practical specifics of tree species selection, planting and management.

"Many have put the idea of planting trees in the too-hard basket, partly because of lack of knowledge about what are the best tree species to plant, and where, and also because in recent years many farmers have been in survival mode and tree planting has not been on their radar. More fundamentally, they haven't been able to see where trees fit in to their particular farming operation and how they can contribute directly to the bottom line."

Each day-long workshop will include local case studies, Agfirst experience including use of Farmax modelling, and panel discussions in the morning, with field trips in the afternoon. Video clips of successful farm foresters from the local Farm Forestry Association branch will provide a powerful demonstration of local on-farm success with trees.

As well as written information and hard copies of presentations, workshop participants will receive a CD containing the workshop presentations, interviews with local farm foresters, and electronic handbooks outlining best practice growing and management of the major farm forestry timber species (redwood, cypresses, eucalypts and blackwoods).

A very successful Trees on Farms workshop with the theme "Trees for Profit" was held on the Seymour property at Gisborne on November 17, 2011. With over fifty people attending, the meeting drew participants from Bay of Plenty to Hawkes Bay to hear

CONTINUED ►

■ The Wensleydale property, Gisborne, is an excellent example of farm forestry.

## New workshops initiative

◄ CONTINUED from page 1

presentations from Nick Seymour, Peter Livingston (Agfirst), John McLean (National Beekeepers Association), Ian Barton, (TTT), Ian McIvor, (Plant and Food), Ian Nicholas and Angus Gordon. Topics covered included returns from forestry compared to other land management options, farm economics, Trees for Bees, planting native species, poplars and specialty timber species suitable for the region. Particular highlights were video clips of local successful farm foresters and presentations of local case studies highlighting the potential income from trees, with returns of up to $38,000ha reported. These topics generated excellent discussion on the need for forest planning and understanding where the timber and other products can be marketed. Participants also received a DVD loaded with lots of relevant information.

Following the woolshed presentations a field trip over Wensleydale Station provided a great opportunity to reinforce one of the morning's key messages - that Trees for Profit can complement normal farm operations. Informative talks from District Council staff and local QEII representative Meg Gaddum also provided opportunities for further discussion.

With half the audience non-farm foresters this was a great opportunity to showcase farm forestry to a brand new audience. The workshop was also well written up in the local paper, and it is to be hoped this will stimulate increased interest in joining the local branch of the Farm Forestry Association as a result.

**Ian Nicholas**

**Farm Forestry Association**

**WORKSHOPS**

Future workshops are planned for Wairarapa, Manawatu, Waikato, Waitomo, Taranaki over the first six months of 2012, details can be found on www.nzffa.org.nz as workshop details are confirmed. For more information contact:

Trees on Farms project manager:
Ian Nicholas, tel 07 348 5923
Email: i.nicholas@clear.net.nz
TTT representative; Ian Barton, tel 092392049.
Email ibtrees@wc.net.nz

## Sponsorship Sought 2012

In order to broaden the scope of our research this year we are seeking sponsorship.

Because we want to "boldly go where no one has gone before", in terms of researching native timber for sustainable production (forestry), our projects often fall outside funders' criteria. This means that these projects don't get done, and the state of knowledge isn't advanced in those areas.

An example of such a potential project is making a business case for sustainable indigenous forestry which would consider the economic and environmental benefits to landowners as they review their land usage options.

You (our members) come from a multitude of backgrounds, bringing a wealth of knowledge and connections. We welcome your ideas and suggestions regarding both new research questions and securing sponsorship for Tane's Tree Trust.

Please refer to contact details on page 4.

## Project updates

**Compiled by David and Michael Bergin**

**Tane's Tree Trust Survey of Indigenous Plantations**

As reported in this newsletter, the Tāne's Tree Trust (TTT) nationwide survey of significant plantings of native trees and shrubs is completed. Several articles covering the scope and extent of the survey and performance of the most commonly planted native conifer and hardwood tree species are about to be printed. Refer to our website for ordering your copies of the articles.

**Indigenous Tree Bulletin – The Beeches**

The 6th bulletin in the Scion Indigenous Tree Bulletin series entitled *The beeches – ecology, establishment, growth and management* is at the graphics and design stage. Over 300 splendid photographs taken by Ian Platt based in Canterbury have been collated and captioned and are being used to profile the five beeches and their management and use in this publication. This is a collaborative project undertaken by Landcare Research and Scion with funding from the Ministry of Agriculture and Forestry's Sustainable Farming Fund, TTT and the Diverse Species Programme at Scion via Future Forests Research. In-kind support has been received from the NZ Institute of Forestry and the NZ Farm Forestry Association. Copies will be available from TTT from April.

**Lake Taupo native planting trial workshop a great success!**

Tāne's Tree Trust (TTT) and the Taupo Branch of NZ Farm Forestry Association (NZFFA) held a workshop in early December 2011 at Waihaha, western Taupo, to showcase the Trusts native forestry planting trials on retired steep pastoral hill country within the Lake Taupo catchment and to highlight forestry as a land use option. The planting trials, funded by the Lake Taupo Protection Trust, aim to provide practical guidelines for establishing a range of native tree and shrub species on land retired from pastoral grazing within the Lake Taupo catchment. More specifically, the trials are comparing the performance and relative cost of establishing native plants as bare-root transplants with the standard nursery stock types where seedlings are raised in either PB planter bags or root trainers.

Several speakers representing TTT, NZFFA, Environment Waikato, NZ Institute of Forestry, Lake Taupo Protection Trust, Taupo Native Plant Nursery, Opus, Scion and MAF were there to present latest information related to establishing native forest and land use options relevant to the Lake Taupo catchment. Topics included:

- reducing the cost of establishing native plants
- bare-root vs container-grown natives
- utilising natives to manage nitrogen
- wetland and riparian restoration
- planting natives on steep hill country
- exotic forestry and carbon

Despite the rain, over 40 hardy folks turned out to see the trials and enjoy a pre-Christmas BBQ and discussion in the woolshed provided by local landowners Barney and Tony Strong. Many thanks to all those organisations listed above who helped make the day a success and a great way for Tāne's Tree Trust to finish off International Year of Forests 2011.

**Thinning of kauri stand project – Ian Barton**

"The Sustainable Farming fund approved funding to enable a thinning trial to be established in kauri which were planted at Mangatangi in the mid 1970's. This will be the first thinning done in planted kauri and is expected to result in useful information on kauri silviculture. Two thinned plots, each of 400m2, were established last November. Heights and diameters of all trees were measured and samples of logs from thinned trees taken back to Scion for testing. Two control plots were also laid out in unthinned areas adjacent to the thinned ones and these will be finally pegged and measured this month. A full report will be included in a future issue of the newsletter.



# Tāne's Tree Trust Nationwide Survey of Planted Native Trees

Contrary to popular belief, large numbers of native tree and shrubs have been planted throughout New Zealand for well over a century. The Lands and Survey Department began planting native tree species prior to 1900 with hundreds of thousands of seedlings raised in nurseries and planted out. Planting of native trees was continued with various levels of intensity by the New Zealand Forest Service up to the early 1980s.

Some urban parks have small but significant older stands of native trees established by local authorities. The last decade has seen a resurgence of interest in using natives for ecological restoration and with it renewed interest in establishing native tree species as a future specialty wood supply.

Tāne's Tree Trust (TTT) has recently completed a survey of native tree plantations throughout the country. The aim is to provide growth data and stand management information about existing plantings of native trees and shrubs for those interested in establishing and managing stands of native trees for multiple objectives including that of developing a long-term sustainable resource of high-value timber.

The project was jointly funded by the Ministry of Agriculture and Forestry's Sustainable Farming Fund and TTT with complementary funding from Scion as part of the Future Forests Research Diversified Species Programme.

### Location of stands

A questionnaire was circulated to forestry and farming networks nationwide, requesting information on the location and history of significant plantings of natives and access for measurement. Promising stands were then inspected and measured. Significant plantations covered by an earlier survey by the Forest Research Institute were also re-measured.

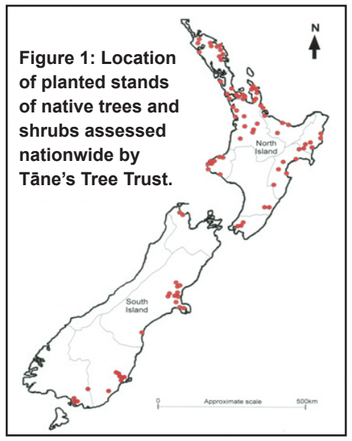


**Figure 1: Location of planted stands of native trees and shrubs assessed nationwide by Tāne's Tree Trust.**

The survey also included a selection of re-vegetation sites planted with native shrub species which are often used as nurse crops for establishment of native trees. Over 120 planted stands of native trees and shrubs were assessed for growth (Figure 1). Although predominantly in the North Island, stands were located in nearly all regions of New Zealand. They ranged from lowland coastal to inland sites over 500 m above sea level.

### Site factors and stand management

Characteristics of each site including: location, elevation, topography, soil type and climate, status of understorey vegetation, and presence of browsing animals were recorded. The history of site and stand management was collated from owners and managers, including planting objectives, site preparation, weed and pest animal control, and silviculture.

### Assessment of trees

In the larger plantations, circular or square Permanent Sample Plots (PSPs) up to 400 $m^2$ were established within representative areas. In smaller stands, inventory growth plots were established. Age of stands since planting was determined from stand records or landowners. Stem density was calculated based on the number of trees within bounded plots or estimated in inventory plots using a sample of intra-tree distances.

Diameter at breast height (DBH – 1.4m above ground level) was measured for all trees in each plot. Root collar diameter (RCD – diameter taken 10cm above ground level) was usually taken for shrub or small tree species which are mostly multi-leadered or coarsely branched from low levels. Height was measured for all trees and shrubs in young stands and for a representative sample of individuals in older stands.

### Reasons for planting

The reasons for planting natives were for amenity and aesthetic reasons. There has also been increasing interest in establishing and managing native timber trees as a long-term resource for wood production, especially for the major conifer species and the beeches. Very few plantations had been pruned or thinned. The most common treatment was a low pruning for improved access. Stockings averaged 1900 stems/ha for trees and 3500 stems/ha for shrubs and small trees.

Shrub hardwood species were planted primarily along riparian areas and on steep hill country recently retired from grazing aimed at improving land use and water quality in pastoral landscapes. While many owners recognised the need to provide a nurse of hardy shrub hardwoods for later planting of native trees, there were few instances where this was undertaken.

### Species planted

Over 60 different native tree and shrub species were identified during the survey. Species were classified into one of four species groups (number of trees in parentheses):

- conifer trees (6,600);
- beeches (800);
- other hardwood trees (900), and;
- and shrubs and small trees (2,200).

The 16 most commonly planted native tree species are summarised in Table 1 overleaf. The major conifers planted are totara, rimu, kauri and kahikatea. Of the beeches, red beech and black beech are most common. Of the remaining hardwood trees, there are relatively high numbers of puriri followed by karaka on a limited number of sites (Table 1 overleaf). Mean stand ages across all plots for the trees species ranged from under 30 years to over 50 years, with a maximum age of over 100 years for four species.

These include karamu, ti kouka, manuka, kanuka, houhere, kohuhu, tarata, manatu and whauwhaupaku (Table 2 overleaf). Mean age for stands of shrubs and small trees in the survey was less than 20 years.

The shrub and small tree species assessed in the survey are representative of the species most often planted for revegetation. These include karamu, ti kouka, manuka, kanuka, houhere, kohuhu, tarata, manatu and whauwhaupaku.

### Tāne's Tree Trust Handbook

More detailed species-specific models of height, diameter and volume growth, as well as carbon sequestration or planted natives have been developed from the survey and are provided in several technical articles about to be published for the Tāne's Tree Trust Handbook. ►