NORTHLAND TOTARA WORKING GROUP **ETTER 2019**











HARIS







UPDATE BRIEFS

Tōtara Industry Pilot (TIP)

The TIP project began in May 2018 and has so far completed sustainable harvests from farms in the Kaeo, Oromahoe and Kawakawa areas, involving a total log volume of 300m³. Those logs have been milled and the timber dried. It is now ready for sale and market testing. Email: enquiries@ totaraindustry.co.nz for timber purchase enquiries.

Some early results from the TIP project are covered in more detail further on.

Cookson SFM Plan Template Trial

Te Uru Rākau and the Northland Tōtara Working Group trialled a Sustainable Forest Management (SFM) Plan template on the Cookson property at Kawakawa. It was clear that for landowners without specialised knowledge or resources, applying and meeting the required standards for forest inventory makes the process very difficult and costly and creates a significant lead time from the point the landowner decides to undertake the process.

This experience was echoed in another case, where the applicant, although capable, did not have indigenous forest management experience. This resulted in an extended timeframe to get the SFM Plan approved.

Nevertheless, Te Uru Rākau maintains that a detailed and site-specific inventory is a requirement of the Forests Act. Therefore, they advise applicants to contact them before commencing in order to get specific guidance on what is required.

Growth modelling

Te Uru Rākau have commissioned a Northland regional growth model for tōtara. This work has now been completed and will increase the accuracy of the annual allowable harvest volumes for future SFM plans. Furthermore, SFM plan holders are now only requested to provide Te Uru Rākau with discs from the ends of harvested logs, as a condition within the SFM plan. This reduces the time and costs associated with the current obligations to establish and re-measure permanent sample plots for the life of the plan.

- Mark Hollis, Manager Indigenous Forestry Team Te Uru Rākau

NTWG – Remember to join! It's Free!

Make sure you stay on the mailing list – register on the NTWG database. Click <u>here</u>.

Who should join? – Everyone with an interest in growing, managing, processing, researching, buying or using farm-tōtara throughout New Zealand.

Tōtara Industry Pilot Project Underway

The Tōtara Industry Pilot (TIP) is a two-year study to test the business case for a new regional industry based on sustainable management of 'farm-tōtara', the naturally regenerating tōtara resource developing on private land over much of Northland.

The TIP project partners are Tane's Tree Trust, Scion, Te Taitokerau Maori Forestry Inc., Northland Inc. and Te Uru Rakau (Ministry for Primary Industries). Peter Berg, who chairs the steering group, says:

"A regional totara timber industry would result in both environmental and economic enhancement in the region along with social and cultural benefits.

On completion of the project we will understand the availability and characteristics of the resource and the supply chain processes and costs. We will have sold some timber and 'seeded' the market with a small volume of product and be able to recommend a suitable structure for a future totara industry."

"It's about more than just timber."

Check out the TIP website and video - here.

"The Northland Tōtara Working Group has long promoted sustainable management of regenerating tōtara as an appropriate land-use to combine conservation and production outcomes on private land. Timber is really just a vehicle in this respect."

– Paul Quinlan

For more information on the TIP project, contact:

Elizabeth Dunningham

Project manager, Tõtara Industry Pilot Scion, Private Bag 3020, Rotorua 3046, New Zealand Email: enquiries@totaraindustry.co.nz



Harvesting & Continuous Cover Forestry

Focus on what is left behind!

Sustainable Forest Management (SFM) Permits and Plans approved under the Forest Act, provide for the harvesting of podocarps like tōtara by selecting and extracting single-stems, or small groups (3-5 trees), from within the forest area. The Act stipulates that trees which are predisposed to windthrow or early death should be targeted. However, in vigorous young regenerating stands of farm-tōtara few trees meet that criterion. Yet, appropriate selection of harvest trees is critical to long-term sustainability of the forest in terms of timber value, productivity, and biodiversity conservation. Taking the biggest and the best trees will ultimately run the quality of the forest down. So, what selection criteria should be used?

A European model of continuous cover forestry known as a 'Plenterwald' may be applicable to farm-tōtara. In short, this aims to manage a mixed species, mixed age and mixed size-class forest structure. Moreover, wherever possible harvests should 'cull' poorer timber trees and keep the forest well-stocked with highquality trees throughout size-classes, from seedlings to large-diameter trees, all in close proximity to each other. So, when one is harvested, another is ready to grow into the canopy gap.

The Totara Industry Pilot project (TIP) adopted a similar approach to the selection of its harvest trees. A key criterion in the selection of individual trees was whether their removal would benefit the immediately surrounding residual stems in terms of their individual form and growth-rates, and in respect to the future log-grade profile of the stand generally. Other considerations included the need to fairly represent the range of tree form, size and log grades in each forest and to minimise damage to the forests and the farms. Trees with high-quality logs were also taken where there were equally as good or better adjacent trees (effecting a 'production thinning'), or where abundant good-guality regeneration existed and leaving the harvest tree to grow on would bring little gain in its timber value.

Overall, we believe that this approach resulted in appropriate and responsible long-term forest management. However, it will be important to substantiate this through monitoring. Totara is a light-demanding species, so ensuring sufficient regeneration of seedlings may be a long-term issue with this management approach. Therefore, trialling other systems such as coupe-felling would be a useful comparison.

Perfecting the management of farm-tōtara is likely to be a process of continual refinement. But the focus of any responsible harvest should always be on what is left behind.



Responsible tree selection focusses on leaving the forest in good shape for the future.



Removing a dominant tree to the advantage of a better-formed neighbour.

How Old Before You Can Harvest?

Ring counts of harvested totara trees reveal age

Scion scientists have studied discs from farm-tōtara trees harvested as part of the Tōtara Industry Pilot (TIP) project. The median age of the trees harvested was 83 years old.

Discs from a random sample of 33 trees harvested from the Cookson property at Kawakawa, were analysed by forest ecologist, Dejan Firm, at Scion.



Figure: 1 – Discs from harvested totara trees prepared for ring counting.

Key findings are:

- The mean diameter at breast height (DBH) was 50cm (49.8)
- The median age was 83 years
- The majority (around 75%), was less than 90 years old
- The mean annual increment for DBH was
 0.59cm
- DBH is a poor predictor of tree age –
 i.e. similar-sized tōtara trees can differ
 markedly in their age. (For example; two
 trees that had almost identical diameters
 of 35.6 and 35.8cm DBH, were aged at 86
 versus 48 years respectively)



Diameter at breast height (cm)

Forest Ecologist, Dejan Firm from Scion, discusses tôtara with Furne Patuwai at Northpine, Waipu.



Figure: 2 – Tree diameter/age relationship.

These results are in line with age estimates based on ring counts from an earlier harvest off the McGee property in Kaeo, which indicated the same mean DBH of 50cm and mean age of 85 years.

These trees were all selectively harvested from stands that have naturally regenerated on farms but have not been tended or managed for timber production. Under continuous cover forest management a range of tree sizes and ages are involved.

These results suggest that in managed plantations of planted trees, on similar sites, harvesting could start well-within 80 years.

Good Conversion from Bad Trees

Harvest tree selection and conversion rates for farm-totara trees

Recent harvests of farm-tōtara by the Tōtara Industry Pilot project (TIP), show that reasonable amounts of sawn timber can be recovered from tōtara trees with relatively poor form and saw-log grades.

When managing a native forest for sustainable timber production wise selection of which trees to harvest is a critical factor. It is important to not just take from the best. Leaving good trees to keep growing is essential (i.e. - timber only grows on timber). In continuous cover forest management systems, harvests can be used as a silvicultural intervention. In other words, the opportunity to remove trees with poor form, to the advantage of better-formed stems often arises. But is this viable?

The first harvest of the TIP project extracted 77 trees. Each tree had been assessed before felling and attributed a tree form-class based on the features of its stem and its likely saw-log quality. Class 1 is the best, comprising tall, straight, branch-free boles. Class 2 includes a few small branches. Class 3 is heavily branched, Class 4 is trees with short boles, less than 2.7m and large knots. And, Class 5 is for multi-stemmed trees with no apparent merchantable log-volume.

In general, the volumes of sawn lumber recovered by class tended to reflect the percentage of that class in the resource. The conversion rates by class from standing volume to sawn volume was best in classes 1-3 (Table 2; Fig 1), however, even class 4 trees produced reasonable conversion rates (32.4%) to sawn volume. This suggests that depending on timber grade recovery and value, these trees may be usefully harvested in future operations.







'Matters of the heart'

Heartwood development in totara trees

Tōtara heartwood is one of the most durable timbers in the world. However, this reputation was built on timber from old-growth forests with trees of great age. Now, as we explore the opportunities to manage younger trees from naturally regenerated stands of 'second-growth' forest, or planted stands, it is important to understand 'matters of the heart'.

Greg Steward of Scion has been researching the vagaries of heartwood content in tōtara trees between 35 and 127 years old. This has proved no easy task due to the high variability between individual trees. However, it appears that increasing stem diameter at breast height (DBH) is the best predictor of heartwood content, with tree and stand age a secondary predictor.

The results show a very steady lineal gradient for heartwood development relative to stem diameter (DBH). This finding suggests that managing natural and planted stands of totara for quicker growth rates may not significantly influence the relative content of heartwood. It is also clear that recovery of significant volumes of heartwood as sawn timber will require large diameter trees. Further research is needed to understand the formation and attributes of heartwood, transition-wood and sapwood in totara trees.

Many thanks to Greg Steward and Scion for sharing the above update.

– Paul Quinlan



Туре	No. stands	Ν	Age (years)		DBH (cm)			Stems/ha
			Mean	Range	Mean	Range	MAI	Range
Planted	7	230	69	52 - 110	31.9	10.5 – 69.0	0.46	975 - 3300
Natural	15	190	78	35 - 127	41.7	10.3 – 86.5	0.53	900 - 2500
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Table 1: Stand characteristics at assessments

NORTHLAND TOTARA WORKING GROUP

Background

The Northland Tōtara Working Group (NTWG) was formed in 2005 to explore the potential to manage naturally regenerated tōtara on farmland for timber and environmental benefits. The group is convened and managed within Tāne's Tree Trust.

The NTWG has five objectives:

- To quantify the resource of naturally regenerating totara
- To establish demonstration trials, evaluating a range of thinning and pruning options
- To determine wood qualities and uses of farmgrown trees
- To investigate the feasibility of developing a supply chain
- To identify and overcome hindrances to sustainable management of naturally regenerating totara.

Check out our NTWG page on the Tāne's Tree Trust web-site (<u>here</u>), and, to ensure you are on the mailing list for updates, please register on the NTWG data-base – it' free!

For more information, contact:

Tane's Tree Trust: www.tanestrees.org.nz or email Paul Quinlan: pdq@pqla.co.nz



Brett Kewene breaking-out on a TIP totara harvest

Acknowledgements

The NTWG gratefully acknowledges the generous support of landowners; John McGee, Geff Cookson and Tapuaetahi Inc. and many organisations including; Tane's Tree Trust, Te Uru Rakau (MPI), Scion, NZ Farm Forestry Association, Reconnecting Northland, NZ Landcare Trust, Northland Inc., The Tindall Foundation, and the Northland Regional Council.

