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Silvicultural intervention enhances timber production potential in NZ

COVER STORY P 16

Totara re-measurement: silvicultural intervention boosts New Zealand's timber production potential

Permanent sample plots yield valuable information on growth rates and carbon sequestration

IN this follow-up to last week's story on the prospects for a sustainably-managed farm-totara industry in New Zealand's Northland, Paul Quinlan of Northland Totara Working Group discusses further developments.

Paul says a recent project (funded by the Ministry for Primary Industries) involved the re-measurement of silviculture trial plots established across a range of pole and semi-mature regenerating totara forest since 2007.

Data from 50 permanent sample plots yielded valuable information on growth rates, carbon sequestration, and management prescriptions for totara timber production.

"The results show that silvicultural intervention – thinning and pruning – enhance timber production potential, indigenous biodiversity and under-storey development when compared with un-thinned plots," Paul said.

He adds that management of naturally regenerating pole-stands indicated lower mortality rates, and a significant increase in volume growth and sequestration rates.

"Most of the totara stands still have considerable potential to sequester more carbon – but because these forests would have established before 1990, they are ineligible to enter the Emissions Trading Scheme," he said.

> "ADVANTAGES IN THINNING STANDS TO SLIGHTLY LOWER STOCKING RATES

Totara re-measurement…Paul Quinlan and David Bergin, along with Helen Moodie, are the founders of the Northland Totara Working Group. Photo: Peter Bruce-Iri.

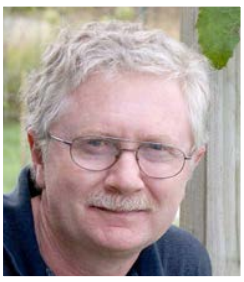
"However, the concept of 'additionality' comes into play when active management can demonstrate some significant and measurable improvement in carbon sequestration/and or biodiversity outcomes above no-management interventions. It would be great if such additionality in pre-1990 forests could be recognised by the ETS."

Paul says another aspect of the project reviewed previous recommendations for thinning totara stands based on Stand Density Index [SDI].

"The latest measurements suggest there may be advantages in thinning stands to slightly lower stocking rates than previously thought," he said. "A revised thinning schedule has therefore been included in the project report.

"Overseas experience indicates that – for a wide range of species – stands are likely to benefit from thinning [down to 25%] when the stocking is greater than 55% of the maximum SDI.

ACROSS THE DITCH



With MICHAEL SMITH

"Ideally, this network of permanent sample plots will be periodically re-measured – say every five to 10 years – for the next 50 years or more. However, each re-measurement relies on a successful application for research funding to enable the work to be done."

It's interesting to note that the ministry had previously approved allowable harvest rates (via sustainable forest management plans) referencing growth models of totara from the Nelson and Wellington area, which were much more conservative than rates observed in Northland.

Elizabeth Heeg, director of forestry system at New Zealand Forest Service, says that in 2018 the service commissioned the creation of a number of growth rate

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co-efficients that can be used for calculating the growth of totara regenerating on Northland farms.

"These tend to predict higher growth rates than the Wellington and Nelson models," she said.

"The data set was a combination of diameter estimates calculated from tree ring assessments from core samples and permanent sample plot data from the Northland region. The NZ Forest Service currently uses these co-efficients to assess the harvest rates on sustainable forest management plans for totara in Northland."

> PARTNERSHIP AIMS TO REDUCE FARM GREENHOUSE GAS EMISSIONS

Significant under-storey development five years after thinning and no grazing. In comparison, an adjacent un-thinned permanent sample plot still has a relatively bare understorey. Photo: Michael Bergin

Paul Quinlan hopes the NZ Forest Service will consider if those growth rate co-efficients should be reviewed again, given the results of the latest re-measurements.

He detects strong interest in the potential for native forestry generally.

"However," he says, "many landowners are also waiting to see how the situation evolves … for example, what will emerge from the discussions concerning the Primary Sector Climate Action Partnership."

This is a partnership with aims to reduce agricultural greenhouse gas emissions at farm level and build the sector's resilience to climate change.

On the cover: Anna Manning, forest engineering student at the University of Canterbury, remeasures a permanent sample plot.