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Summary

20 months into the programme and there are a significant number of projects underway. There are some key results available for the eucalypt species in this quarter.

Eucalyptus nitens OEL was produced with all product achieving a stiffness level of SG12. This offers an opportunity to upgrade some of the *E. nitens* resource to a higher value product.

There is potential to increase the quantity of heartwood and level of extractive content in naturally durable eucalypts (*E. bosistoana*) through breeding. *E. bosistoana* also showed some families having 7 times the level of damage by defoliating insects compared to the best families, again indicating the opportunity to use breeding to make significant improvement in this trait.

RESEARCH PROGRESS: Q2 Year 2

Douglas-fir

The Douglas-fir breeding plan has been updated to include re-assessment of the 1996 progeny trials as form wasn't assessment in the last round of measurements.



Non-durable eucalypts

Eucalyptus nitens logs (see photo – note splitting in logs which significantly impacted the recovery) were used to produce OEL (Optimised Engineered Lumber). The OEL technology produces structural products with known, uniform and reliable properties. It is a laminated and finger-jointed product.



The results of the mechanical testing showed that the *E. nitens* OEL (photo of product below) achieved the strength and stiffness properties of the New Zealand structural grade SG12. The process will need fine tuning for *E. nitens* as standard (*radiata*) set-ups were used for finger jointing and gluing.





SPECIALTY WOOD PRODUCTS PROGRAMME UPDATE

Naturally durable eucalypts

Photo below shows *E. bosistoana* cores removed for heartwood assessment. It was found that there is a strong genetic component to heartwood quantity with some families having no heartwood and others having over 70mm. These trees were only 6 years old and were developing true heartwood.



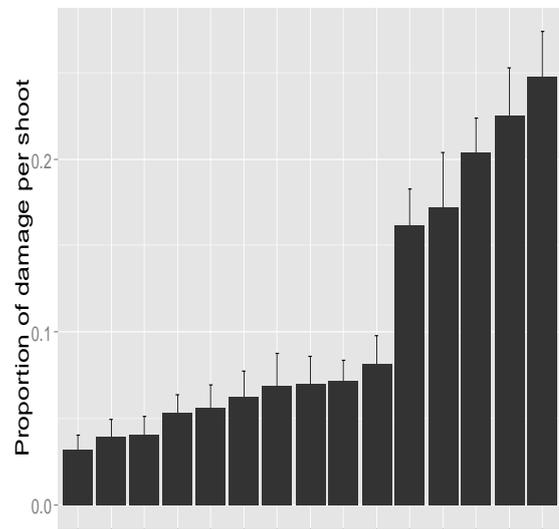
When assessing heartwood quality NIR is used to predict extractive content. There is significant variation between families for extractive content with %s ranging from <5% to >10% at the average family level. This demonstrates the potential to improve the natural durability using breeding.

Cypresses

The third generation of *Cupressus lusitanica* trials will be established this year. The aim is to widen our knowledge of genotype by environment interaction in this species. In selecting the genotypes to be used in the trials there was a strong focus on better crown health by picking the best trees with the greatest tolerance for canker. The SWP TST supported the level of heartwood development being included as part of the ranking process. Trial sites are being confirmed currently.

Pest management

The *E. bosistoana* defoliation trial is examining how well this species tolerates and recovers from defoliation. The figure below shows the variation in genetic susceptibility. There is natural variation in insect attack between families, with the least tolerant families having up to 7 times the proportion of damage per shoot than the most tolerant ones.



Site species matching

A workshop was held in Wellington to present the current results in the site species mapping area and to get feedback from industry members on the required outcomes from this work. The following recommendations were made:

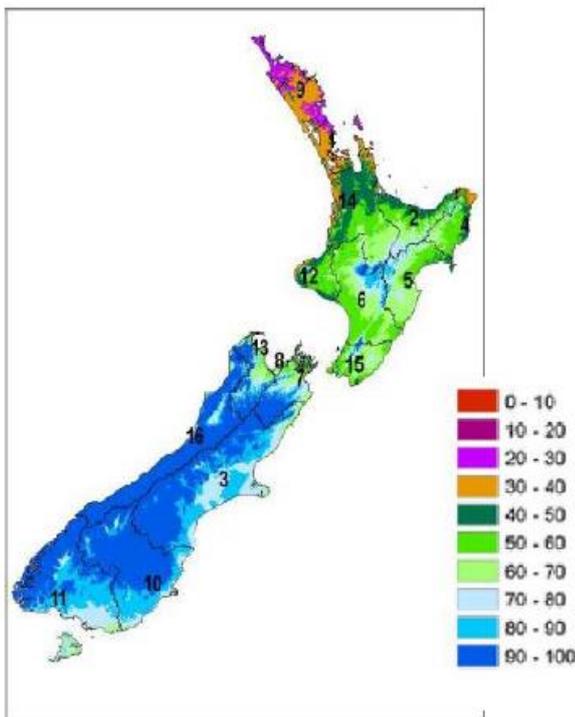
1. Establish commercial-scale demonstration trials of specialty timber species throughout New Zealand
2. Establish additional permanent sample plots (PSPs) for specialty timber species throughout New Zealand
3. Continue the monitoring of existing PSPs of specialty timber species throughout New Zealand



SPECIALTY WOOD PRODUCTS PROGRAMME UPDATE

4. Elicit site-species mapping knowledge from existing experts and papers and incorporate into decision support systems.

The map below demonstrates the needle retention % when trees have Swiss needle cast disease. Information like this can be used to optimise species to sites.



Reports completed

Report No.	Document Title
SWP-T009	Screening Eucalyptus bosistoana for Heartwood
SWP-T010	Economic comparison of Traditional and Genomic breeding programmes for Eucalyptus nitens
SWP-T014	E nitens Optimised Engineered Lumber (OEL) Trial
SWP-T015	Identification of Issues and Opportunities for LVL from NZ Eucalypts
SWP-T016	Review of Eucalypt Wood Processing Issues
SWP-T017	Calibrating NIR spectroscopy for extractive content of E. bosistoana stem cores