

Minimising growth-strain in eucalypts to transform processing

SFF 407602

July 2015 – June 2018

Extension to June 2019

Partners

- MPI
- Proseed
- Nelson Pine Industries
- Juken NZ
- Forest Growers Levy Trust Board
- Timberlands
- Ernslaw One
- Canterbury Foundation Trust
- Vineyard Timbers
- Marlborough Lines
- Murrays Nurseries
- NZDFI

Objectives

- Screening durable eucalypt breeding populations for growth-strain
- Proof of concept: durable eucalypt LVL
- Propagation
- Outreach

Outcomes

Outreach

Workshops

1. Durable eucalypts propagation workshop 3-4 **September 2015**
2. Propagation of durable eucalypts 30 **March 2016**
3. Durable eucalypts on drylands: Protecting and enhancing value 19-20 **April 2017**
4. Durable Eucalypts on Drylands: Workshop/Research Update 19 **June 2018**

Papers

1. Altaner, C., Murray, T. J., and Morgenroth, J., eds. (2017). "Durable Eucalypts on Drylands: Protecting and Enhancing Value," **Proceedings** pp. 1-123. New Zealand School of Forestry, Christchurch, NZ.
2. Davies, N. T., Sharma, M., Altaner, C. M., and Apiolaza, L. A. (2015). Screening eucalypts for growth-strain. **8th Plant Biomechanics International Conference Nagoya**.
3. Schroeder, P., and Altaner, C. (2016). Propagation - a bottleneck in tree breeding programmes? **New Zealand Tree Grower November, 35-36**.
4. Guo, F., and Altaner, C. M. (2018). Properties of rotary peeled veneer and laminated veneer lumber (LVL) from New Zealand grown *Eucalyptus globoidea*. **New Zealand Journal of Forestry Science 48, 3**.
5. Millen, P., van Ballekom, S., Altaner, C., Apiolaza, L., Mason, E., McConnochie, R., Morgenroth, J., and Murray, T. (2018). Durable eucalypt forests – a multi-regional opportunity for investment in New Zealand drylands. **New Zealand Journal of Forestry 63, 11-23**.
6. Davies, N. T., Apiolaza, L. A., and Sharma, M. (2017). Heritability of growth strain in *Eucalyptus bosistoana*: a Bayesian approach with left-censored data. **New Zealand Journal of Forestry Science 47**.
7. ...

Presentations

1. SWP 2015-
2. FOA research committee 2016
3. NZFFA field day April 2017
4. U3A 2017
5. FGLT field trip 2017
6. Minister of Forestry's visit to SoF 2018
7. ...

Outcomes

LVL

Feasibility of peeling and LVL was demonstrated for *E. globoidea* and problems identified (gluing, effect of growth-strain on yield)

4 NZDFI breeding populations characterised for

- **Wood properties:** Growth-strain, stiffness, density, volumetric shrinkage at young age
 - previously unknown and can now be selected for
 - mean stiffness of *E. bosistoana* & *E. argophloia* >11.2 GPa at age 2
 - collapse appears to be no issue for *E. bosistoana* & *E. argophloia*
- **Early growth/survival**
- **Ease of propagation**

Propagation

- Vegetative propagation of *E. bosistoana* & *E. argophloia* now possible and fastest route to deploy improved material

Outcomes

Improved material

Clonal

- Individual within family selection for low growth-strain did not work
- Clones from most families for trials
 - rouged for worst/inbred individuals
- Clones from superior families for deployment

Superior families

- Growth, form, heartwood (quantity & quality) from older trials
- Low growth-strain, density and shrinkage, high stiffness at young age

Best option at time

- no old trees are available
- More improvements will occur in the next breeding generation