

SWP 200 PROJECT WORKSHOP

EVALUATION OF *E. MACRORHYNCHA* AND CLASS 1 DURABLE RED TIMBER EUCALYPTS FOR NZ ENVIRONMENTS

WORKSHOP NOTES

PROJECT SCIENCE TEAM MEETING

Zoom meeting at 1.00-3.00pm, Friday 18th August 2023

Start 1.00pm. Attended; Paul Millen (Chair – NZDFI), Clemens Altaner (UC), Monika Sharma (UC), Steve Pawson (UC), Vega (UC), Ruth McConnochie (MRC), Gary Fleming (NZFFA), Marco Lausberg (FGR)

Apologies: Kevan Buck (MRC), Harriet Palmer (MRC), Ash Millen (MRC),

Based on attendee's feedback and discussion about the various species, the species were given the following ranking for further research.

1. *E. tricarpa* – Red iron bark

There was a total of 33 PSP's assessed across fourteen of the 2011, 2013 and 2014 demonstration trials. In addition, the 2011 progeny trial at Dillons was fully assessed and the PSP measured in the progeny trial at Avery.

This species has demonstrated its overall form, adaptability and productivity by its survival and performance across many NZDFI trial sites. This is despite very high Paropsine defoliation being recorded in the NZDFI's Hawkes Bay and Marlborough trials.

There is a significant natural population of *E. tricarpa* located inland principally from mid-west Victoria and throughout eastern Victoria. This is largely discontinuous with the natural distribution of *E. sideroxylon* (also called 'red ironbark') that naturally occurs north of *E. tricarpa* principally in drier regions of inland NSW.

NZDFI have two breeding populations planted in 2011, at Dillons and Avery, both in Marlborough. 'Red ironbark' timber is renown in Australia and internationally. There is a small Australian breeding programme that NZDFI may be able to collaborate with. It is a popular farm forestry species in Victoria. The major risk for large scale commercial deployment could be greater defoliation by Paropsines or other insect pests.

This may not be an issue if grown in smaller woodlots by farm foresters growing high value timber and the potential to plant in mixtures to reduce this risk needs further research.

However, little is known about the early onset of heartwood. If improvement of wood properties is to be possible then there needs to be some trees producing heartwood by age 12.

While NZDFI's breeding population at Dillon's and Averys only includes a total of 17 families these are 12 years old and large enough for core sampling and analysis. This would provide an initial evaluation of the species wood properties that will guide further research investment.

2. *E. macrorhyncha* – Red stringybark

There has been a total of 40 PSP's assessed across 16 sites for this project. This included 2011, 2013, 2014 and 2018 demonstration trials as well as one early trial planted in Marlborough in 2005 at MRF Waikakaho. Two further sites in Marlborough will be visited to complete the field work.

Overall, this species has demonstrated good form, survival, adaptability and productivity across many trial sites. It has proven to have low level of Paropsine browse on most sites except MacNeill and Rotoehu.

There have been 23 individual seedlot collections made from *E. macrorhyncha* plus trees that were selected on growth and form from across five of the trial sites assessed.

This included collections from the MRF Waikakaho trial that include trees that represent only five different provenances of the species very large natural distribution. However, these represent a small part of the natural distribution which extends inland in NSW to inland Victoria with a small disjunct population in South Australia.

The Waikakaho site has been used as a seedling seed stand since 2015 with the 2018 demo trials planted using seed from here. Recent measurement of these trials has shown the potential for a 50% gain in productivity versus the provenance seedlots planted in the 2011 and 2014 trials.

However, the species heartwood properties are reported to be only average when compared to other durable eucalypts. There is also little known about the early onset of heartwood and also about wood collapse which can be a problem with some stringybarks.

In addition to the MRF Waikakaho site, there is another 2005 trial at MRF Para that includes trees from five provenances. An initial species level evaluation of wood properties could be undertaken by taking cores at both these sites.

The major biological risk for wide commercial deployment is the potential for a pathogen including *Phytophthora* or brown leaf spot having a significant impact particularly if there are large scale plantings.

There have already been significant pathogen outbreaks killing eucalypts in New Zealand so gaining a greater understanding of these risks could be undertaken in collaboration with other eucalypt growers. Trends point to a likely increasing risk in regions that become wetter and warmer.

Also, the recent loss of a replicate trial block in the Landcorp Kapiro site due to the two wet summers highlight the need for site species matching to ensure long term success.

The trees at Waikakaho are becoming tall and difficult to collect seed from. A seedling seed stand could be established using some of the seed from the 23 plus tree seedlots collected. This could be an immediate low-cost step to providing a future seed source with moderate genetic improvement. The seedlots can also be stored for deployment in a breeding programme that would require sourcing at least 100 additional seedlots from across the natural distribution of the species to establish large scale replicated progeny trials.

3. *E. longifolia* – Wolly butt

There has been a total of 17 PSP's assessed in 2011 and 2014 demonstration trials. The seedlot was from a small NZ grown stand of unknown genetic origin.

Overall, this species has demonstrated good survival, adaptability and productivity across many trial sites. However, it has heavy persistent branches and produces double and multi leader trees. On some low rainfall sites it tended to produce a mallee type form.

No further work on *E. longifolia* is planned due to the narrow genetic base deployed in the demonstration trials.

The species has a relatively limited natural distribution in coastal NSW. There is no commercial interest in the species in Australia.

4. *E. argophloia* – Western white gum

There has been a total of 10 PSP's assessed in six of the 2011 demonstration trials and a PSP in the 2011 progeny trial at Cuddon-Whyte property. This species has a very small natural distribution with a mixed seedlot deployed in the demonstration trials and pedigreed trees in the breeding trial.

No further work on *E. argophloia* is planned due to its poor survival, form and productivity.