

Breeding and deployment for multi-rotation production systems of *Eucalyptus globulus*



Amount: \$30,746 (2015 rate) tax free scholarship with possible 6 month extension plus project operational funds

Location: Hobart, Tasmania

Eligibility: Domestic and International students with First Class or Second Uppers Honours/ Masters or equivalent

Submission dates for applications are listed on <http://www.utas.edu.au/arc-forest-value/phd-project-opportunities>

About the Centre

This research project is part of the ARC Centre for Forest Value. The Training Centre will build the capacity to shift the forestry and wood products sector from a traditional, resource driven, low-technology base to a market-driven, precision-manufacturing focused industry that applies modern technologies and business approaches to the value chain from germplasm to commercial buildings, and from production to restoration plantings.

Learn more at www.utas.edu.au/arc-forest-value



Project Overview

This project aims to enhance plantation productivity and profitability of Australia's main plantation species by better matching genotypes to environments and silviculture. It will link closely with partner breeding and seed production programs. It aims to determine:

1. Patterns of genotype-by-environment interactions to better define germplasm deployment zones;
2. The sustainability of genotype performance under multi-rotation coppice regimes; and
3. The genetic opportunities and trade-offs amongst traits affecting industrial objectives (e.g. for chip, pulp, timber, engineered wood products and energy production) and risk traits (drought/pest/disease risk)

Specific Project

To date, *Eucalyptus globulus* breeding programs have focused on maximising profits based on single-rotation silviculture. However, a large proportion of world's plantations are coppiced (vegetatively regenerated from shoots which originate from cut stumps) without replanting over multiple rotations.

Such multiple-rotation silvicultural systems are favoured for bio-energy production (an important use of eucalypts worldwide) and are increasingly being adopted in plantations targeting pulpwood and solid-wood products. This is certainly the case for *E. globulus* in Australia, which challenges conventional approaches to *E. globulus* breeding and deployment, which assume a single-rotation seedling system.

The proposed research will assess coppice presence/absence and vigour in multiple *E. globulus* genetics trials that have recently been harvested (e.g. in collaboration with the STBA and its *E. globulus* members). Genetic variation in these traits will be estimated along with genetic relationships with first-rotation traits (e.g. diameter at breast height and wood basic density). The project will review bio-economic models for coppicing in the light of this new information and determine the relationship between single and multi-rotation breeding values and whether changes in current genetic evaluation models are required.

The ARC Industrial Transformation Training Centre for Forest Value is supported from the Australian Research Council's Industrial Transformation Training Centres scheme (project number IC150100004).

To submit an expression of interest or for general information, please contact the Centre for Forest Value at forest.value@utas.edu.au

For information related to this project please contact Professor Brad Potts Brad.Potts@utas.edu.au or Professor Mark Hunt Mark.Hunt@utas.edu.au for more information.

Partner Organisations

