

PhD Scholarship, University of Tasmania

Project Title: Maximising and maintaining site productivity

Australian Research Council Training Centre for Forest Value
Discipline of Biological Sciences
School of Natural Sciences
College of Science and Engineering
University of Tasmania

Closing date: 30 November 2021

The Project

The Australian hardwood plantation estate is a critical part of Australia's wood supply for both fibre and increasingly for solid wood products. To maximise the potential of this resource there is a need to determine the drivers of site productivity to maximise tree production and to understand optimal site management practices that maintain site productivity.

This project will address these two knowledge gaps by bringing together research on above- and below-ground tree processes with site management practices.

This PhD project will be conducted in two parts.

1. *A review of the current state of knowledge of factors that provide increased productivity in hardwood plantations:* In the first part of this project the candidate will conduct a review to benchmark the current productivity of the national Australian hardwood plantation estate. This review will highlight the factors that determine site productivity including large scale geographic environmental variation, site specific factors and site management factors (e.g. herbicides, fertilisers). A review of other factors that may influence productivity (e. g. below-ground processes) will also be conducted.
2. *Investigation of the interactive effects of nutrients and water on tree productivity in hardwood plantations:* Recent research from the Centre for Forest Value has demonstrated that optimal leaf area is maximised by intermediate levels of fertiliser, not maximum. What is not known is how nutrient application influences water use of the trees and how nutrient application influences below-ground processes which may be critical to plant productivity. Bringing together factors identified in part 1 of this project, this project will investigate:
 - a. Does nutrient application influence below-ground processes that affect productivity?
 - b. Does nutrient application influence water use and what are the implications for different irrigation and fertiliser scenarios?
 - c. Does repeated application of nutrients continue to stimulate productivity?
 - d. How do below-ground responses and water use influence feedback loops to alter the nutrient-productivity relationship?

The outcomes of this project will enable the refinement of site management protocols to maximise productivity in hardwood plantations.

Research Environment

Candidates will work in the ARC Training Centre for Forest Value within the Discipline of Biological Sciences at the University of Tasmania. The Centre for Forest Value is a research centre focused on forests and forest industries research, working across native, restored and plantation forests and across the full forest industries supply chain . Students in the Centre for Forest Value work closely with external stakeholders including industry partners and not-for-profit organisations to conduct collaborative research with real-world impact. Biological Sciences provides a stimulating academic environment, conducting world class research and teaching and learning in Plant Biology, Zoology, Ecology and Evolutionary Biology – all areas that scored the highest rating in the most recent Excellence in

Research for Australia submission – Australia’s national research evaluation framework. Biological Sciences has a vibrant and fun postgraduate community with events organised by the Postgraduate Society for Biological Sciences to connect individuals and research groups within the Discipline.

This project is funded by the University of Tasmania in collaboration with the Growers Research Advisory Committee of Forest and Wood Products Australia and will have strong links with industry collaborators. Candidates will be expected to spend a proportion of their candidature working closely with industry.

Primary Supervisor: Professor Mark Hovenden (mark.hovenden@utas.edu.au)

Funding

The successful applicant will receive a scholarship which provides:

- a living allowance stipend of \$28,597 per annum (2021 rate, indexed annually) for 3.5 years;
- a relocation allowance of up to \$2,000;
- \$10,000 per annum support for project costs for 3 years; and
- a tuition fees offset covering the cost of tuition fees for up to 4 years (domestic applicants only)

International applicants may receive a University of Tasmania Fees Offset for up to four years.

The scholarship supporting this project is funded by the University of Tasmania, Forest and Wood Products Australia Limited and the Australian Government through the Research Training Program.

Eligibility

The project is open to domestic (Australia and New Zealand) and international applicants who are already in Australia (onshore) at the time of submitting their application.

Due to current Australian COVID-19 travel restrictions the University cannot accept applications from International applicants who are currently overseas (apart from applicants from New Zealand as noted above).

Applicants should review the Higher Degree by Research [minimum entry requirements](#) and the following additional eligibility criteria specific to this project/scholarship:

- ability to meet minimum English requirements (international applicants)
- A minimum of a First Class Honours Degree, Masters by Research or equivalent

Selection Criteria

The project is competitively assessed and awarded. Selection is based on academic merit and suitability to the project as determined by the College.

Application Process

There is a three-step application process:

1. Select your project, and check you meet the eligibility and selection criteria;
2. Contact the Primary Supervisor, Professor Mark Hovenden (mark.hovenden@utas.edu.au) to discuss the project before submitting an application; and
3. Click [here](#) to submit an application by the closing date listed above.
 - Copy and paste the title of the project from this advertisement into your application.

- As part of your application you will be required to submit a covering letter, a CV including 2 x referees and your project research proposal, after discussion with the primary supervisor.

Following the application closing date applications will be assessed within the College. Applicants should expect to receive notification of the outcome by email.