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Summary

Australian timber plantations have increased by approximately 150% with total area of two million hectares. Hardwood plantations make up 49% of the total managed plantations. For commercial purposes, it is essential to produce high quality logs at an early age. Pruning and thinning processes are required during the early stage of the plantation, in order to increase available light, moisture and nutrients for the rest of trees. Approximately, 50% of the trees are typically cut from the third year during the first thinning, with another 30% removed in the second thinning (10 to 15 years). The removed trees during the second thinning are usually considered as low commercial value products due to their low mechanical quality. To ensure the continued expansion of Australian hardwood plantation industries, higher value products need to be developed to satisfy the current market. The use of the low commercial value thinned logs appears to be an opportunity to improve the industry profitability and win new markets.

Therefore, this study is proposed to develop an appropriate optimisation model for Australian hardwood plantation thinning products lifecycle optimisation with a comprehensive set of design objectives by including the objectives of minimisation of life cycle cost and environmental impacts.

Research Expertise

- Life cycle Assessment (LCA)
- Life cycle costing Analysis (LCC)
- Optimisation
- Australian Hardwood plantation
- Engineered wood production
- Bioenergy conversions