Overview

The East New Britain balsa industry is one of Papua New Guinea’s success stories. Smallholder growers working in partnership with processing companies produce 9% of the world’s balsa, a wood with remarkable strength-for-weight qualities that is used increasingly in high-technology composite materials, such as wind turbine blades and transportation applications.

The PNG balsa industry also faces challenges, including productivity and sustainability, certification and legality verification, and product development and diversification. Key issues for smallholders are the optimal incorporation of balsa growing into their farming system, the availability of labour, plantation management capacity and the nature of supply arrangements with processors. Key issues balsa plantation management are optimising germplasm and silviculture, and realising management standards for forest certification. Key issues for processors are optimising value recovery strategies, enhancing market analysis and innovative product development.

Project researchers worked with major processors, research and training organisations, smallholder organisations and district government to address each of these challenges.

ACIAR project number FST/2009/106
Start date and duration (years) 01 June 2011; 4.5 years
Location East New Britain Province, Papua New Guinea
Budget $954,153

Project leader(s) and Commissioned Organisation
Professor Peter Kanowski
The Australian National University

Partner country project leaders and their institutions
Mr Neville Howcroft
University of Natural Resources & Environment
Dr Martin Golman
PNG Forest Research Institute

ACIAR Research Program Manager
Mr Tony Bartlett

Balsa-lation by Vault Industrial Design.
Research
The aim of the project is to enhance the value, value recovery and international competitiveness of the PNG balsa industry and, by doing so, optimise its benefits for smallholder growers. The key research activities include:

» Investigate the role of smallholders in the balsa value chain, and the role of balsa in smallholder livelihoods.

» Establish what extension, communication and capacity building activities could best support development of the balsa industry in East New Britain.

» Optimise germplasm and crop management for smallholder balsa growers.

» Explore new balsa products and market strategies.

Achievements
In the final year of the project, activities focused on consolidating and communicating the knowledge and learning generated over the life of the project. From a smallholder perspective, balsa remains an attractive complementary crop to other East New Britain commodities; however, smallholders’ access to superior genotypes and knowledge of crop management regimes to maximise value recovery are less than for other major crops.

The project addressed these constraints by establishing and managing seed orchards of new genotypes, and be developing a simple crop management regime and log measurement system for smallholders. This knowledge was packaged into a ‘balsa module’ as part of a farmer training package delivered by the University of Natural Resources and Environment’s Integrated Agricultural Training Programme; and into a series of six fact sheets that will be made available through that Programme, balsa processors, government offices and a local web portal.

The project investigated within-tree and management-induced variation in balsa wood density. This knowledge allows improvement in processing efficiency through batching logs of like density, and better prediction of the relationship between balsa crop characteristics, management and product value. The project also investigated the mechanical, acoustic and thermal properties of balsa to enable development of novel balsa products.

Project researchers developed award-winning new product concepts for balsa, including interior design applications for balsa panels. These panels have superior acoustic performance and weight properties, and are especially suited to use in high-rise buildings. The development offers prospects of expanding balsa markets into one of the fastest-growing product sectors globally.

Impact story
The “balsalation” wood panelling developed by project researchers at Swinburne University of Technology demonstrates superior sustainability, thermal and weight properties, and adequate acoustic absorption. These balsa panels can meet design requirements and product specifications in the rapidly growing multi-story apartment market, where the inherent properties of balsa add value but not weight.

Project researcher Nathan Kotlarewski’s balsa panels and design concepts were recognised in the Victorian Premier’s Design Award 2015 (finalist), and in winning the 2015 International Green Interior Design Award. This panelling represents an entirely new market for balsa products – a rapidly-growing market in which balsa’s sustainability credentials are as highly valued as its product qualities.