



Forestry

Domestication and breeding of sandalwood in Fiji and Tonga



Overview

Native sandalwood (*Santalum yasi*) is an important forest product throughout its natural range in Fiji and Tonga. However, years of overharvesting have seriously depleted this resource, and has significantly reduced the genetic diversity within local stands.

This has led to problems of inbreeding which has negative consequences for plantations established with seed from local seed sources. However, ongoing demand for high-quality sandalwood and sandalwood oil creates an opportunity to develop a sustainable, planted resource in Fiji and Tonga.

The project aims to secure the future of the species and underpin an industry by developing conservation and seed production stands based on genetic materials collected from a wide range of sites within Fiji and Tonga. The project will also develop a formal conservation and genetic improvement strategy as well as a roadmap for further development of the sandalwood industry in both countries.

KEY FACTS

ACIAR Project No. FST/2016/158

Duration: January 2017 to June 2020 (3 years)

Target areas: Fiji and Tonga

Budget: AU\$600,000

Project Leader

Dr David Bush, CSIRO

Key partners

- Tonga Ministry of Agriculture & Food, Forests and Fisheries, Forestry Division
- Fiji Ministry of Fisheries and Forests, Department of Forestry
- SPC Land Resources Division
- Pacific Reforestation (Fiji) Ltd

ACIAR Research Program Manager

Dr Nora Devoe



Research/Objective

The project aims to establish the foundation for conservation and domestication of native sandalwood (*S. yasi*) in Fiji and Tonga to support the development of a sustainable planted sandalwood industry.

The project's objectives are to:

- Improve understanding of the breeding biology and genetic diversity of key traits in *S. yasi*;
- Enhance the genetic conservation status of *S. yasi* in Fiji and Tonga;
- Develop strategies to enhance the quality and availability of *S. yasi* germplasm and support development of sandalwood industries in Fiji and Tonga; and
- Disseminate the practical outcomes and implications relating to objectives 1-3 to growers and practitioners.

Expected scientific results

- A new domestication and tree breeding strategy for *S. yasi* developed for Fiji and Tonga.
- Information from studies of sandalwood oil chemistry undertaken as part of this project to be integrated as part of the ongoing domestication strategy for *S. yasi* beyond project completion.
- Information on regional variation in oil characteristics to guide selection of short-term seed sources.
- Community seed orchards and gene conservation stands established to contribute to safeguarding the genetic diversity of *S. yasi*.
- A better scientific understanding of the genetic variation of key economic traits relating to oil yield and composition.

Expected outcomes

- Capacity of government agencies and their staff in Fiji and Tonga to carry out domestication and tree breeding activities strengthened.
- The development of strong, well-considered policy positions in Fiji and Tonga on *Santalum* industry development with respect to indigenous and exotic sandalwood species to provide clarity to industry stakeholders, including prospective investors, and the avoidance of unintended consequences.
- Conservation of remnant genetic resources for *S. yasi*, to secure the future for this crucial commercial species and also provide a foundation for development of *S. yasi* as a sustainable, economic agroforestry tree crop.
- Smallholders and commercial investors likely to benefit from the availability of *S. yasi* germplasm for planting material with greater genetic diversity and productivity.

