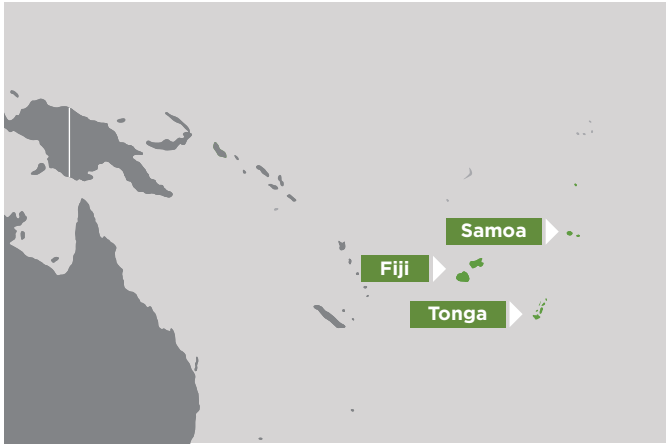
Australian Government
Australian Centre for International Agricultural Research

Horticulture

# Enhanced fruit production and postharvest handling systems for Fiji, Samoa and Tonga




## Overview

**Fruit production in the Pacific represents less than 10% of their overall horticultural output. This is despite favourable climates, increasing market opportunities and efforts to address Tonga's high-rates of non-communicable diseases.**

The prevalence of low-intensity and semi-commercial fruit production systems, poor postharvest handling practices and limited value chain development are also factors contributing to a decline in product output.

The need to expand fruit production has been widely acknowledged and is supported by an emerging focus on fruit crops that enhance and diversify horticultural production to capture domestic and export market opportunities. These crops include: papaya, pineapple, mango, breadfruit, and citrus.

Improved economic and disaster resilience of domestic and/or export fruit value chains in Fiji, Samoa and Tonga will also aid rural economic development, alleviate poverty and create more resilient and diverse domestic food security.

The rapid expansion of the Fiji red papaya industry provides clear evidence that the Pacific can establish internationally competitive niche fruit export industries.

To date, 359 citrus trees have been successfully imported into Tonga at three sites, the Houma and Ha'atua communities on Eua Island and at Nishi trading on Tongatapu Island. The economic impacts should be realised from 2020 onwards, when the trees start to reach bearing-age.

## KEY FACTS

**ACIAR Project No.** HORT/2014/077
**Duration:** January 2016 to December 2019 (4 years)
**Target areas:** Fiji, Samoa and Tonga
**Budget:** A$2.3 million

**Project Leader**
Steven Underhill, University of the Sunshine Coast, Australia

**Key partners**
- Fiji Ministry of Agriculture
- Scientific Research Organisation of Samoa
- Ministry of Agriculture and Fisheries, Samoa
- Ministry of Agriculture, Food and Forests, Tonga
- University of Queensland
- Pacific Community Nature's Way Cooperative, Fiji
- Fiji National University
- MORDTTT, Tonga

**ACIAR Research Program Manager**
Irene Kernot

## Objective

**The project's overall aim is to increase the economic and disaster resilience of selected tropical fruit value chains in Fiji, Samoa, and Tonga. The fruit selection is based on the five regionally significant fruit crops of papaya, pineapple, mango, breadfruit, and citrus.**

**The project's specific objectives are to:**

- Increase the efficiency of fruit value chains through improved productivity and postharvest handling practices.
- Improve climatic resilience of breadfruit through improved canopy management and investigating the diversity of breadfruit tree form.
- Provide targeted capacity building to the private sector and government extension services in support of identified fruit value chains.
- Enhance the engagement of smallholder farmers and communities in functional supply chains to maximise pro-poor and livelihood resilience.

## Expected scientific results

- Phenotypic studies to characterise genetic variation, infer species-specific adaptations and agronomic performance.
- Design of new strategies for selection/prediction of important traits, such as dwarf characters, fruit yield, stress and disease resistance in breadfruit.
- Canopy management of breadfruit will provide practical protocols in support of breadfruit production intensive.
- Quantifying ethylene sensitivity and optimum storage temperatures for a range of local cultivars to identify horticultural commodities suitable for co-storage.
- Characterisation of mango varieties for pest/disease and phenology of flowering and fruiting to better identify high-risk cultivars, and those cultivars suitable for extending the production season.
- Social science research to identify risks and impediments that prevent smallholder farmers from participating successfully in value chains
- Evaluate arrangements that encourage smallholder engagement and equitable sharing of benefits.
- Development of a community-engagement model.

## Expected outcomes

- Increased experience and technical knowledge of Extension Officers in support of mango, pineapple, and citrus production in the region.
- Strengthened capacity building of staff to provide post-project technical support to farmers through smallholder farmer-training workshops.
- The establishment of a tropical tree fruit block in Tonga to provide a long-term asset for industry demonstration and future fruit agronomic and postharvest training.
- Support for SROS – Scientific Research Organisation of Samoa to be a regional leader in food and postharvest horticultural research, focused on breadfruit and pineapples research activities.
- Postharvest research undertaken in Fiji through the Fiji National University to promote wider institutional capacity building.
- Opportunities through the Centre for Pacific Crops and Trees to undertake additional capacity building training associated with molecular-based methods used in this project.
- The establishment of a local packing shed on `Eua, and a new community-owned fast ferry between `Eua and Tongatapu Islands to provide critical infrastructure and logistics.

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