



# Developing integrated options to accelerate scaling up of agroforestry for improved food security and resilient livelihoods in Eastern Africa- Trees for Food Security - 2



## Overview

More than 10 million people in Ethiopia, Rwanda and Uganda depend on smallholder farming. Most rural households are resource poor, food insecure and vulnerable to climate change, a situation exacerbated by rapid population growth, declining farm productivity, over-exploitation of trees in agricultural landscapes and deforestation.

The second phase of the ACIAR Trees for Food Security project (T4FS) continues to demonstrate the importance of trees in fields and farming landscapes for enhancing and sustaining food security in eastern Africa. During the first phase of the project, several promising climate smart agroforestry practices were developed, improving crop yields and in the longer-term soil health, water use efficiency, carbon storage and livelihood outcomes. The capacity to reliably predict tree and crop yields across a range of soil and climate was also developed within CSIRO's Agricultural Production Systems Simulator model. While farmers want greater diversity of trees on their farms, the lack of access to appropriate knowledge, financing options and markets, limited water resources, free-range grazing and weak local institutions are among the adoption constraints. This second phase will build on the activities from T4FS by focusing on tree diversity as the cornerstone of smallholder system intensification and integrating tree management with value chain development, better water management and new approaches to govern livestock management.

## KEY FACTS

**ACIAR Project No.** FST/2015/039

**Duration:** January 2017 to December 2020 (4 years)

**Target areas:** Ethiopia, Rwanda and Uganda

**Budget:** AU\$5,011,211

### Project leader

Prof Catherine Muthuri, World Agroforestry Centre (ICRAF)

### Key partners

- Commonwealth Scientific and Industrial Research Organisation (CSIRO)
- Ethiopian Environment and Forest Research Institute (EEFRI)
- Rwanda Agriculture Board (RAB)
- National Forestry Resources Research Institute (NaFORRI)
- World Vision
- African Network for Agriculture, Agroforestry and Natural Resources Education (ANAPE)

### ACIAR Research Program Manager

Dr Nora Devoe

## Research/Objective

### The project aims to improve food security and smallholder livelihoods through the adoption of appropriate locally adapted agroforestry systems in key agricultural landscapes in Ethiopia, Rwanda and Uganda.

#### The specific objectives are to:

- Enhance knowledge of the impact of tree cover changes on crop productivity, water, nutrients and livelihoods.
- Integrate water management technologies and sustainable grazing options with promotion of appropriate agroforestry practices.
- Establish communities of practice in the promotion of locally adaptable agroforestry options supported by functional inputs systems.
- Strengthen smallholders and other market actors' ability to participate effectively and profitably in tree product value chains.
- Strengthen capacity of academic institutions in developing and implementing innovative agroforestry curricula.

#### Expected scientific results

- Knowledge tools and approaches developed from major research components (field experiments, farmer trials and modelling, water management and development of controlled grazing strategies, and communities of practice) incorporated into curricula of academic institutions through an innovative agroforestry curriculum review across the region.
- Greater understanding of the interactions, synergies and trade-offs among components of mixed agroforestry production systems and the capacity to model the impacts of alternative management of these systems on smallholder farmers' livelihoods and ecosystem services, resulting in better targeting to increase resilience and reduce climate-induced risks.
- Enhanced APSIM agroforestry model allowing for simulations of impacts and benefits from a wider range of tree-crop agroforestry options and contexts in the project sites and beyond, providing knowledge about combinations that yield more profitable production systems for sustainable development.
- Increased understanding of the various financing and organisational options available to improve the returns and increase the participation of stakeholders in domestic and international markets.

- Identification of key financial options and value chain organisational practices that can better fit specific contexts (including the specific attributes of the products, characteristics of the actors, environment and accessibility to physical markets).
- National dissemination of robust evidence on technical and financial options, appropriate gender responsive extension methodologies and appropriate enabling policy instruments enabling the scaling up of agroforestry in the partner countries by policy-makers, investors, planners and other relevant actors.
- Key science-driven policy changes at local and national scales with potential knock-on effects regionally and globally.

#### Expected outcomes

- Greater capacity among various stakeholders, including researchers, farmers, businesses, extension personnel and staff and students in tertiary education, to apply the knowledge learned from the various agroforestry options, and facilitate business opportunities and commercialisation pathways.
- Research immediately benefiting 30 million rural people in Ethiopia, Rwanda and Uganda who depend upon smallholder farming in the target agro-ecologies, and ultimately relevant to the livelihoods of 110 million rural people in the three countries.
- Improved productivity and household income through uptake of locally adapted agroforestry options by 50,000 households, across 420 villages in three countries, impacting over 83,000 ha and the food security of 222,000 people.
- Improved business skills of 200 traders and businesses directly and 5,000 indirectly, of which at least 30 per cent are women.
- Around 5,000 students and extension professionals trained in modern agroforestry.
- Cumulative economic benefits to smallholders overtaking the AU\$5 million investment at year four and reaching AU\$25 million four years beyond the project life, by which time 100,000 people would have achieved food security and 120,000 exited poverty..

