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# “Fruiting Africa” for health and wealth

Since 2006, IFAD and the European Union have partnered to invest over EUR 230 million in agricultural research programmes carried out through the CGIAR system. This collaboration aims to support research and scientific innovation with the active involvement of smallholder farmers themselves. Thus, the European Union-IFAD financing has produced solutions that are demand-driven and context-specific, leveraging the agricultural research capacity of the CGIAR system to advance both food security and climate change adaptation.

## Context, challenges and opportunities

In sub-Saharan Africa, fruit tree cultivation is important for several reasons. It offers small-scale farmers opportunities to diversify their crops and generate more income. In addition, fruits can greatly contribute to food and nutrition security as an important source of energy and micronutrients. Despite the diversity of fruit tree

### QUICK FACTS

**PROJECT** Tree Crops Development in Africa and Asia to Benefit the Poor – Fruit Component

**FOCUS COUNTRIES** Kenya and Mali

**LEAD IMPLEMENTING INSTITUTION** World Agroforestry Centre (ICRAF) – CGIAR partnership

**GOAL** Reduce rural poverty by promoting the wealth and health of poor farming communities through enhanced cultivation, processing, marketing and consumption of a diversity of fruit trees

**BENEFICIARIES** Resource-poor farming communities, fruit tree value chain actors, and urban and rural consumers

**DATES** 2011-2015 (phase 1)\*

**FINANCING** EUR 2.18 million 2011-2015 and EUR 0.9 million is under implementation

\*A second phase of the project was implemented in 2014-2016.

species – including wild and domesticated, indigenous and exotic – many factors constrain the region's fruit production and consumption.

On the production side, a major challenge is the erosion of traditional knowledge and local agrobiodiversity as food systems become less diverse. Inefficient and overcentralized tree seed and seedling supply systems limit farmers' access to quality planting material and improved seed varieties. Other factors include inadequate farming practices, a scarcity of tools for on-farm tree propagation and management, a lack of processing facilities, and poor linkages along fruit value chains. Environmental factors such as climate change are likely to limit productivity in this sector further unless ecologically suitable species and varieties are promoted.

From a consumption perspective, the main limitations are a lack of awareness about the health and nutritional benefits of fruit consumption, difficulties in distribution due to the high perishability of fruits, and other challenges related to seasonal availability, fruit diversity and high costs in markets.

Demographic and economic growth in sub-Saharan Africa represents an important opportunity for fruit markets. Spreading awareness about the many benefits of indigenous fruits and supporting fruit producers and processors has the potential to trigger a virtuous circle of year-round production and consumption, with a positive impact on rural households' livelihoods, health, food security and environments.



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## Setting objectives

The fruit component of the **Tree Crops Development in Africa and Asia to Benefit the Poor – Fruit Component** project (commonly referred to as “Fruiting Africa”) was designed to reduce rural poverty in Kenya and Mali by promoting the wealth and health of poor farming communities through enhanced cultivation, processing, marketing and consumption of a number of fruit varieties. The overall objective of the project was to support the transition of small-scale farming systems from subsistence farming to intensified semi-commercial farming, and to transform small-scale tree nurseries and microprocessors into more business-oriented and profitable enterprises. After analysing the fruit sector in these countries, the project identified gaps, challenges and opportunities, as well as developed impact-oriented interventions and site-specific fruit tree portfolios.

## Solutions and results

The fruit tree crops development project targeted 3,500 small-scale farmers and nursery managers in Kenya and Mali. It included a specific focus on women farmers by promoting fruit species that are preferred by women and suitable for cultivation in farm niches that women can use, such as home gardens. To achieve its goal and overall objective, the project developed and disseminated site-specific nutrient-sensitive fruit tree portfolios, built on the results of the baseline survey conducted. A total of 725 households in Kenya and Mali were surveyed during the two phases of the project.

Several communication, extension and training materials were developed in Kenya during the project time frame. These were used to disseminate information on site-specific fruit tree portfolios, fruit tree propagation, farm-management practices for exotic and indigenous priority species, and fruit species' nutritional value. During the training-of-trainers sessions, 104 community resource persons (82 in Kenya, 22 in Mali) were trained to reach an additional 2,360 farmers in their communities. Trainings focused on fruit tree propagation and management, fruit production and protection, and nursery establishment and management. Small-scale farmers received training on fruit-processing technologies, value addition and hygiene while handling and storing produce; representatives of nursery groups were trained in value chain development, marketing and business skills, and organizational strengthening. As a result, poor small-scale farmers were provided with: (i) better access to quality fruit tree planting material; (ii) knowledge about



propagation, on-farm management and post-harvest technologies of priority fruit species; and (iii) better linkages to markets for fresh and processed fruits.

Under the project umbrella, the ICRAF gene bank collaborated with the Kenya Agricultural and Livestock Research Organization (KALRO) on the introduction, evaluation, maintenance and multiplication of fruit germplasm. The project introduced 25 improved varieties of 15 species in Kenya. On-station trials were successful, with species established in mother-blocks hosted by KALRO in three stations across Kenya to evaluate agroecological suitability. As of 2018, multiplication and distribution are ongoing for farmer field trials.

Farming systems were diversified by integrating different fruit species, introducing around 10 exotic and indigenous species per site. Forty community nursery managers in Kenya and 20 in Mali received training on establishing and managing a nursery, sourcing and collecting high-quality seeds, and encouraging successful germination and grafting. In addition, the trainees received lessons on facilitation skills to enhance their effectiveness as farmer trainers. The training-of-trainers approach allowed a spillover effect for about 640 additional farmers in Kenya and more than 700 in Mali.

The project also achieved important results in addressing the challenges of insufficient knowledge about post-harvest handling and lack of storage facilities. In the past, these issues led to the loss of about 50 per cent of harvested fruits. The project worked with the national university to train county government extension agents on processing and value addition, including post-harvest handling and storage. New fruit-processing units and microprocessing groups were established, thus contributing to reducing fruit losses. Together with ICRAF's partner World Vision, a pilot cottage fruit-processing unit was established in Mwala, Machakos, for future training events. It enabled four microprocessor groups to process up to 70 kilograms of dried fruits every two days, benefiting a total of 200 fruit farmers. Finally, media campaigns in Kenya and Mali raised awareness among urban and rural consumers about healthy diets and the nutritional value of fruits, encouraging greater fruit consumption. Multiple training and information dissemination approaches were utilized in the project, including: (i) nutrition training on healthy foods and diets (165 group representatives); (ii) Shamba Shape Up – farming television (3,782,000 viewers/consumers reached to date) with 937 follow-up enquiries to the Fruiting Africa featured episode; and (iii) the Healthy Learning Programme implemented with partner Feed the Children (1,000 schoolchildren plus 400 community members).



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## From research results to impact

By addressing the different stages of production, marketing and consumption, the project was able to improve the fruit value chain as a whole and address the challenges of seasonal food availability. The project also directly improved tree species abundance and diversity: following project interventions, a total of 106,885 tree seedlings were recorded in seven nurseries, compared with 63,504 tree seedlings prior to the project.

To better incorporate fruits into farming and food systems, ICRAF developed a methodology called *fruit tree portfolios* for selecting ecologically, sociocultural and nutritionally suitable fruit tree species for production on farms. These portfolios combine indigenous and exotic fruit tree species that can be consecutively harvested, potentially providing fresh fruits year-round to fill specific “hunger gaps” or food-insecure periods, and fill “nutrient gaps” in diets. This approach generated benefits particularly in terms of farmers’ incomes and people’s nutrition. One main effect was an improvement in child dietary diversity. In addition, the amounts of fruit consumed by children and women within groups who benefited from the project increased significantly compared with households outside the project scope. Farmers who participated in the project’s activities increased their knowledge of fruit tree grafting. The use of this new technique boosted their production and thus translated into higher incomes. This allowed rural households to increase their financial stability, generate savings and access new opportunities, such as better schooling prospects for children.

Today, Alex is a “Trees for Food” ambassador: he has witnessed the importance of fruit cultivation and consumption for health and wealth and he strives to create awareness about it.

Five years ago, however, Alex’s source of income was mostly occasional work. His farm produce was meager, and he was unable to supply food for his family, let alone pay for his children’s education. Through the training for nursery operators and managers from the Eastern Kenya region, within the framework of the Fruiting Africa project, Alex was able to make significant changes in his life. After establishing a community satellite nursery on his farm, Alex was able to sell more than 30,000 seedlings of assorted fruit trees to his community and to the county government, as well as donate thousands of seedlings to the local schools. In addition, he has planted more than 100 avocado fruit trees on his farm and plans to double this number. He has also diversified his fruit orchard with various food trees and crops. His fruit tree portfolio is a combination of location-specific indigenous and exotic fruit trees species that can provide year-round harvest of vitamin-rich fruits to help fill the “hunger gaps” and specific “nutrient gaps” of his household.

Today, Alex provides food for his family and generates income for other necessities. He has been able to educate all his children and he is able to generate savings from the sale of fruits and pay-for-service from neighbouring farmers, to whom he has offered extension services. In this way, Alex’s work is not only benefiting his household, but is also contributing to the well-being of his entire community. Alex strives to pass on the knowledge he gained, and he leads by example.

## Innovations

The project implemented the Rural Resource Centre (RRC) approach, developed and pioneered by ICRAF and partners in a pilot project in West Africa. RRCs are hubs where high-quality tree-planting material is produced and distributed, and new techniques are developed and disseminated. They also serve as centres where farmers, nursery managers, small-scale processors and extension officers are trained in propagation, on-farm management, participatory domestication, and processing and marketing of fruits. The project equipped each of these centres with seed storage facilities, seed-raising structures, demonstration plots, and facilities for collecting, drying, processing and storing fruits. The establishment of “mother-blocks” at the RRC and satellite nurseries provides the RRC and nurseries with future sources of quality seeds. This approach has allowed the establishment of sustainable decentralized fruit tree seedling supply systems, providing high-quality planting material adapted to local socio-economic and ecological conditions. RRCs are managed directly by the local community, and their structure encourages and promotes knowledge exchange. During the project time, one RRC was established in Kenya and two in Mali. As of 2017, these RRCs are still operational and providing services to small-scale farmers.

## Future directions

The successes of the first phase of the project provided an excellent basis for initiating a second phase, also supported through European Union-IFAD funds. Building on the insights and lessons learned from the 2012-2014 project implementation, the second phase enhanced efforts in filling data gaps, developing and testing site-specific agriculture, and integrating nutrition into interventions. Building on the fruit tree portfolio approach, these projects have increased the geographic scope for data generation to fill critical knowledge gaps on household socio-economics, farm and food systems diversity, food insecurity, food consumption patterns and nutritional status. The data are necessary to inform scaling up and adoption of the expanded portfolio approach, which includes staple crops and vegetables. Moving forward, the project continues to expand and adapt approaches to increase fruit production and consumption, mainstreaming their contributions to local food systems.

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December 2018