



RTB-ENDURE: Expanding Utilization through Research

Expanding utilization of roots, tubers and bananas and reducing their postharvest losses

A 3 year project (2014-2016) implemented by the CGIAR Research Program on Roots, Tubers and Bananas (RTB) with funding by the European Union and technical support of IFAD

Increasing the contribution of root, tuber and banana crops to food and income security

In Sub-Saharan Africa, root, tuber and banana crops are an important source of food and income. However, their full potential has not yet been realized due several constraints, including bulkiness and high perishability of the crops, poor postharvest management and lack of storage and processing facilities. These constraints result in high postharvest losses (PHL), short marketing channels and limited value adding. It is widely recognized that there is considerable scope for repositioning RTB crops as added-value cash crops through improved postharvest management, expanding processing and targeting changing needs of emerging urban markets.

The RTB-ENDURE project is being implemented in Uganda in a bid to address the above mentioned challenges and exploit the emerging market opportunities in the potato, sweetpotato, banana and cassava value chains. Its ultimate goal is to contribute to improved food security for RTB-producing communities in eastern and central Africa, including producers and other value chain actors.

What do we want to achieve?

We want to contribute to improve food availability and income generation through better postharvest

management and expanded utilization of RTB crops. In particular, RTB-ENDURE will test and validate a number of gender responsive technological, institutional and commercial innovations for improved handling, processing, storing and marketing of selected RTB crops.

How are we making it happen?

The project design lays firmly on a multi-stakeholder approach where Research and Development organizations and value chain actors work together to identify, assess and test best-bet options for expanding utilization and reducing PHL of RTB crops. Through carefully facilitated processes, the project's research teams will explore postharvest innovations that have potential to satisfy food consumption and income generation needs.

The project consists in four sub-projects. Although each research sub-project is unique in design, substantial complementarities exist in approach and participatory methodologies for value chain development, thus offering opportunities for cross-crop learning and integration.

Where are we working?

Although the project is fully implemented in Uganda, we plan to document and share experiences and lessons learnt for wider uptake in other eastern and central African countries.





● **Reducing postharvest losses and promoting product differentiation in cooking banana value chain**

The cooking banana value chain is characterized by high PHL due to short shelf-life of bananas, highly seasonal production and poor postharvest handling. Furthermore, there are opportunities to promote product differentiation through different presentation forms of bananas and new marketing approaches. This sub-project will i) explore ways to reduce PHL and even out annual supplies through use of diverse varieties and sucker staggering; ii) investigate options for upgrading storage, transport and marketing in response to changing consumers' preferences; iii) study the feasibility of introducing a weight-based pricing mechanism; and iv) strengthen capacities of value chain actors to respond effectively to emerging market opportunities.

The research team is led by Bioversity International and comprises IITA, CIRAD, NARO, the Ssemwanga Centre for Agriculture and Food Ltd., Kaika InvestCo, Mbarara District Farmers Association (MBADIFA) and other value chain actors in Isingiro, Rakai and Kampala districts.

● **Improving the utilization of sweetpotato and other root and tuber crops residues for pig feeds**

Feeding is one of the main production constraints for smallholder pig farmers due to the seasonality, high cost and poor quality of feeds; coupled with limited knowledge of supplementation strategies. As a coping strategy, farmers extensively use crop residues, grasses, weeds and kitchen leftovers to feed their animals. Sweetpotato vines are the most commonly used fodder but they are highly seasonal and perishable. Simple silage making for feed conservation combined with strategic supplementation is an easy and affordable option for pig feeding during periods of feed scarcity and will contribute to reduce wastage of sweetpotato residues. This sub-project will i) investigate options for silage making and supplementation; ii) identify models for proper organization of value chain actors for production, conservation and marketing of sweetpotato-based feeds; iii) strengthen the existing linkages between pig farmers and sweetpotato traders; and iv) build business capacity for profitable silage making and pig raising.

The research team is led by CIP and comprises the International Livestock Research Institute (ILRI), NARO, VEDCO, CHAIN-Uganda, Iowa State University, Makerere University, Uganda Martyrs University, Pig Production and Marketing Ltd. and other value chain actors in Masaka and Kamuli districts.

● **Postharvest innovations for better access to specialized ware potato markets**

In eastern Uganda there are two potato cropping seasons. The market supply is highly seasonal, with period of gluts and scarcity and, therefore, high price fluctuations. The team aims at exploring the opportunity to take advantage of the higher price during the off-season by expanding the cropping period and introducing storage technologies. This will ensure higher and more stable income for small-scale farmers and consistent market supplies. In particular, this sub-project will i) assess effect of variety, local climatic conditions, pre-harvest and harvest practices on storability of ware potatoes; ii) exploits varietal differences in maturity and dormancy to prolong harvest and marketing periods; iii) strengthen business skills and collective marketing; and iv) identify gender-sensitive approaches to ensure gender equity in exploiting new market opportunities.

The research team is led by CIP and comprises NARO, Self Help Africa, Makerere University and other value chain actors in Kapchorwa, Mbale and Kampala districts.

● **Extending the shelf-life of fresh cassava roots for increased incomes and postharvest loss reduction**

Cassava roots are characterized by very short shelf-life due to rapid postharvest physiological deterioration (PPD). This results in substantial level of price discount during marketing. Innovations that prolong the shelf-life of fresh roots are demanded by farmers and traders to reduce PHL, relieve marketing pressures and target new markets. Using lessons learnt from West Africa and Latin America, the project will assess the feasibility of introducing two shelf-life extension technologies, namely high relative humidity storage and waxing of the fresh roots. This sub-project will i) identify the market segments for fresh cassava and best marketing models; ii) assess PPD of different varieties and study the effectiveness of the shelf-life extension technologies; iii) investigate the effect of the treatment on eating quality and safety; and iv) promote South-South collaboration and knowledge sharing for capacity strengthening.

The research team is led by IITA and comprises CIAT, NARO, International Institute of Rural Reconstruction (IIRR), Makerere University, Gulu University and value chain actors in Masindi, Kabarole and Kampala districts.



The CGIAR Research Program on Roots, Tubers and Bananas (RTB) is a broad alliance led by the International Potato Center (CIP) jointly with Bioversity International, the International Center for Tropical Agriculture (CIAT), the International Institute for Tropical Agriculture (IITA), and CIRAD in collaboration with research and development partners. Our shared purpose is to tap the underutilized potential of root, tuber and banana crops for improving nutrition and food security, increasing incomes and fostering greater gender equity, especially among the world's poorest and most vulnerable populations.

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