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## RTB-ENDURE: Expanding Utilization through Research

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

### Increasing shelf-life of cooking banana: Which presentation forms offer the best value for farmers, traders and consumers?

Actors along the cooking banana value chain suffer high losses due to short shelf life. This project aims at testing, validating and promoting product differentiation of cooking banana through upgrading storage, transport, and marketing; so as to increase farmers' margins and value added along the chain.

#### What is the problem?

Cooking banana is the main staple crop in Uganda with a total annual production of four million tonnes. It is mainly produced by smallholders who depend on it as a source of food (60% of total production is auto-consumed) and income (35% is sold to rural and urban consumers). However, actors along the cooking banana value chain face risks of high postharvest losses due to short green life of bananas and damage arising from poor postharvest handling. The forms in which bananas are handled and marketed after harvest promote losses; the bananas are transported to markets mainly as bunches on bicycles or stacked on trucks and unprotected. They are also transported as fingers tightly packed in poorly aerated polythene bags that build up heat around the bananas in transit. The bunches are supplied to retailers operating in an open space, where they are subject to loss causative agents. Unit prices are determined by visual inspection, which is subjective and arbitrary and therefore presents risks for offering relatively lower prices. Losses due to ripening are also

associated with production gluts, which are partly due to seasonal scheduling of follower sucker selection. Gluts cause drastic price reductions and lead to surplus production being fed to livestock, used as mulch/manure or just disposed off. In order to reduce postharvest losses, traders prefer varieties with intrinsic longer shelf-life that are less susceptible to physical damage and weight loss such as Kibuzi. Additionally, smallholder producers get the least share of the profits in the banana value chain due to a large number of middlemen, for example a 40kg bunch sold at UGX 25,000 (\$7.14) in Kampala; its farm gate price is UGX 4,000 (\$1.14), yet the transport costs for the same bunch is UGX 2,000 (\$0.57).

\* 1 USD = Uganda shillings 3,500 as at September 2015.

#### What do we want to achieve?

We want to contribute to reduction of postharvest losses through (a) presentation forms that are



A farmer demonstrating to fellow farmers how to uproot a macro-propagated plantlet (credit M. Batte)

less susceptible to damage such as clusters and /or fingers that are graded by variety, finger size, shape, colour and packed in cushioned (using locally available materials) wooden or plastic crates before transportation to identified market segments coupled with a weight-based price determination system to increase transparency; (b) promotion of varieties with intrinsic longer shelf-life and better postharvest handling practices; (c) promotion of sucker staggering for evening-out banana production across seasons; and (d) linking the different actors along the value chain to benefit from the untapped market opportunities based on product differentiation.

### How are we going to make it happen?

We are using a multi-stakeholder approach where actors in the cooking banana value chain and other stakeholders have been brought together to form thematic groups. The thematic groups will spearhead gender responsive technical, commercial and institutional innovations. Economic feasibility, gender responsiveness and general social acceptability of the proposed innovations will be assessed and appropriate adjustments effected. The project will strengthen the capacities of farmers, traders, researchers and extension agents in cooking banana pre-and postharvest practices. Furthermore, selected value chain actors will have their skills strengthened in entrepreneurship and agribusiness. Finally, collective marketing of selected value chain actors will be developed in order to improve the quality and consistency in supply of cooking bananas to the domestic and export market.

### Where are we working and who are we working with?

We are working in Isingiro and Rakai districts in western Uganda, but with firm contacts with traders in the rural areas and Kampala. The project is led by Bioversity International and implemented in collaboration with NARO's National Agricultural Research Laboratories (NARL), Makerere University, CIRAD, KAIKA International, Uganda Fruits and Vegetables Exporters and Producers Association, Local Government officials and farmers associations in Isingiro and Rakai as well as other private sector players.



Poor postharvest handling practices through loading, transporting and marketing cause high postharvest losses (credit M. Arikiza)

### What have we achieved so far?

We are supporting farmers' access to varieties with a longer shelf-life through establishment of farmer based macro-propagation nurseries in Western Uganda. Participating farmers have been trained in the macro-propagation techniques and maintenance of seed quality. We will further demonstrate more methods of field multiplication of suckers including nutrition and decapitation to give the farmers more usable options. One wholesale trader, who purchases banana from the project farmers, has started selling protected banana bunches (with no/limited postharvest damages due to poor transportation) to Kampala traders. Postharvest experiments are ongoing using varieties that have better postharvest attributes and high consumer acceptability. This is done to understand the length of storage as well as temperature and humidity regimes required for proper storage of unpeeled and peeled banana (bunches, clusters and fingers). Sucker staggering trials to prolong banana marketing periods have also commenced. Through interactions amongst the actors in the thematic groups, trade linkages are evolving for local and export sales. The thematic groups are set to form the basis of a banana multi-stakeholder platform that will drive the innovation agenda in the future. A market and value chain study has been conducted as well as a gender analysis baseline study both of which will contribute to strengthening the sub-project gender strategy. Market trials for improved packaging and branding of banana clusters that are sold on weight basis have commenced with selected retail outlets.

### What's next?

Shelf-life and economic studies as well as willingness-to-pay studies are planned for early 2016 to pave the way for commercialization of the various forms of presentation (like peeled bananas). We shall also work with the field based stakeholders to develop planting material access models suitable for the communities. We shall also finalize and share the gender strategy with all our partners to ensure that our research initiatives meet the needs of female and male chain actors. We also plan to support development of gender responsive business plans for selected innovations which will guide their commercialization and launch to the general public.



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[www.rtb.cgiar.org/endure](http://www.rtb.cgiar.org/endure)

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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