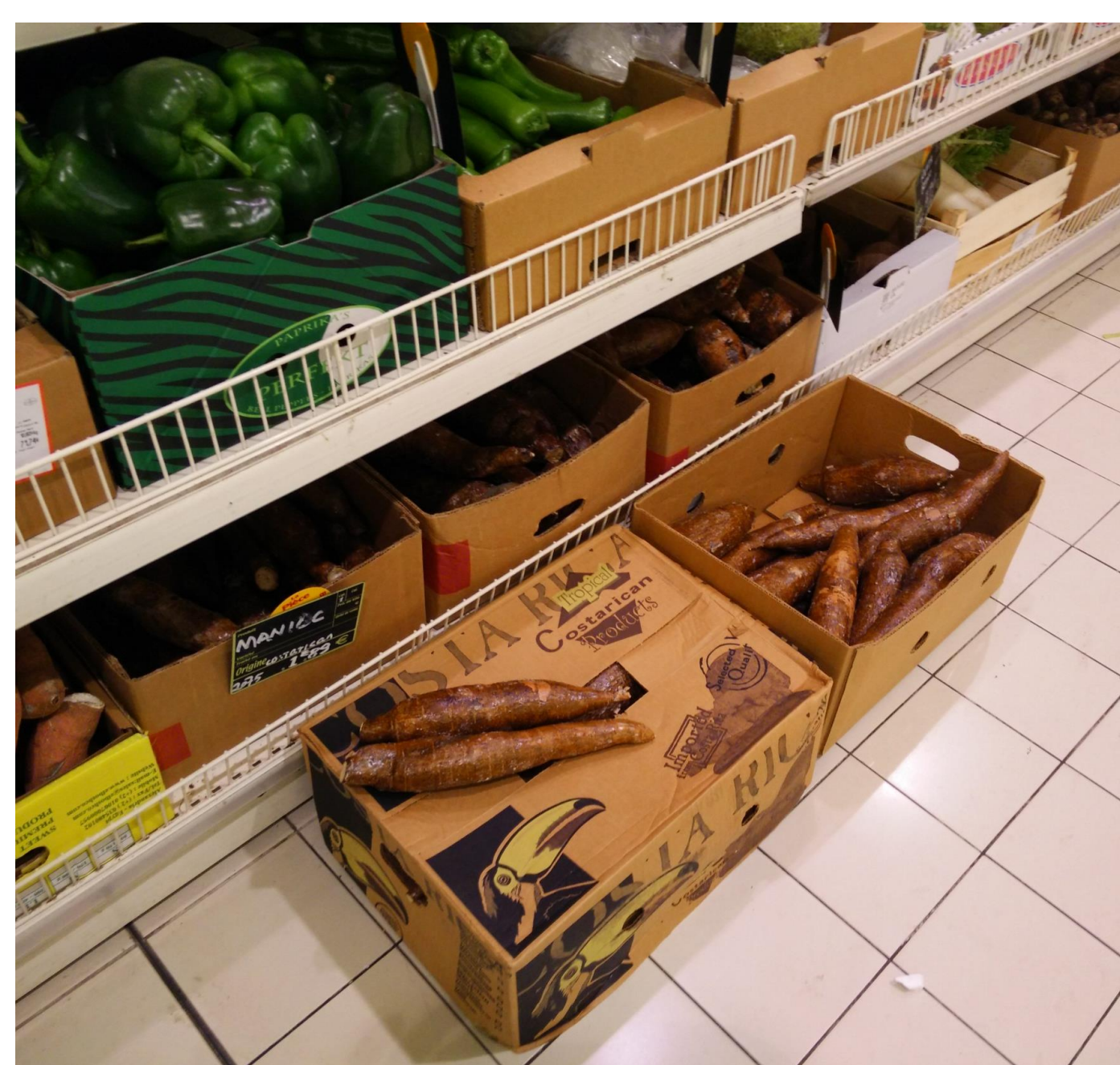


# Waxing: A technology for extending the shelf-life of fresh cassava roots in Africa

## TECHNOLOGY DESCRIPTION

- Rapid post-harvest physiological deterioration (PPD) is a major challenge facing cassava, making the roots to lose market value within 24hrs and spoil after 72hrs. Simple coating of fresh roots with melted wax (140-160°C; 12.5kg wax/ton or \$0.016/kg root) is commercially used in Latin America to extend the shelf life of fresh roots for export.
- It has been tested successfully in Uganda. The technology keeps cassava root quality in its fresh form for at least 14 days, making it possible to market it over longer distances and minimize postharvest losses, with potential to contribute to higher incomes to growers and traders.



Waxed cassava roots from Costa Rica sold in France at 1.89€/kg



A researcher buying a box of waxed cassava roots from a supermarket

## END USERS AND BENEFITS

- The primary users of the technology are traders, processors and farmers' associations who buy cassava roots from farmers and apply the waxing technology to extend the shelf-life of fresh cassava roots to take advantage of emerging market opportunities in supermarkets, hotels and restaurants within the major cities.
- Commercial waxing enterprises exist in Colombia and recently in Uganda. Through the RTB-ENDURE project, two enterprises have adopted the technology and are currently selling waxed cassava roots to traders, restaurants, supermarkets, and consumers in Uganda.

## SCALING STRATEGY

The following scaling strategy will be used:

- Based on the data generated from the operations of the waxing enterprises in Uganda and Colombia, bankable business plans will be developed.
- Local entrepreneurs will be encouraged to make investments in the technology by providing to them the business plans
- Partnership with community banks will be vital for the business financing.
- An appropriate marketing model will be developed in support of the out-scaling effort.
- Partnerships will be established with dynamic youth groups who can use ICT to engage in marketing and distribution of waxed roots to the market.

## LEVEL OF ADOPTION OR USE

- The technology has been in commercial use in several Latin American countries since the 1970s. Two enterprises for cassava root waxing exist in Uganda. At least 144 Ugandan farmers, traders, researchers, and students have benefited from the establishment of the two waxing packhouses.
- More than 30 restaurants, food vendors, hotels and other marketers were engaged in 2016. It was estimated that nearly 400 consumers have consumed or purchased waxed cassava roots in 4 months only.
- The urban consumers were willing to pay US\$0.71/kg for the waxed roots against US\$0.31-0.42/kg for non-waxed roots.
- By 2020, 40 waxing enterprises are expected to operate in East Africa where the need and commercial interest for the technology are highest. About 40,000 value chain actors could be linked to the enterprises and 540,000 consumers could be buying and consuming waxed cassava roots regularly.

## CRITICAL GAPS AND NEXT STEPS

- The commercial success depends on farmers learning and willing to apply careful harvesting, handling, packing and transporting of roots meant for waxing.
- More awareness is needed to reduce the current concerns about the effectiveness of waxing technology. However, the Uganda and Latin America case studies demonstrated that waxing is an innovation that can alleviate the negative impact of the rapid spoilage of cassava on farmers' income.
- The next step is to out-scale the innovation and adapt the business model to other East Africa countries such as Tanzania.
- Finally, financial linkages for interested entrepreneurs are needed.



Commercial waxing operation at a Packhouse in Uganda



A researcher holding waxed and non-waxed cassava roots

## KEY PARTNERS FOR SCALING

NARO (Uganda)

TFNC (Tanzania)

IIRR (Uganda)

TADB (Bank)

CGIAR Centers (IITA, CIAT, CIRAD and CIP)

