

Does it Make Sense to Store Fresh Roots?

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Africa is rapidly urbanising. Fresh sweetpotato roots are already an important part of urban diets in many countries. Exciting new initiatives include the use of orange-fleshed sweetpotato (OFSP) puree in bread recipes by a major supermarket chain in Kenya. However, a year-round supply of fresh sweetpotato roots and sweetpotato products is required to meet these urban consumers' demands. Research indicates that storage of fresh OFSP roots to cover periods of low supply makes sense in certain settings.



Fig. 1 Sweetpotato root washers, packers, traders, loaders and transporters along the roadside in Migori County, Kenya. (credit T. Stathers)

What is the problem and what do we want to achieve?

A major supermarket chain in Kenya has begun to include OFSP puree in its bakery products. Urban customers are enjoying the OFSP bread loaves and rolls, and want to be able to purchase them throughout the year. An OFSP processor, identified through a competitive process, has begun to produce OFSP puree in Homa Bay County and is supplying it to the supermarket's bakeries in Nairobi. To ensure this exciting OFSP business opportunity, the puree processor needs a constant supply of fresh OFSP roots. Even in areas without long dry spells, there are several months each year when fresh roots are in low supply, and therefore expensive. Sweetpotato roots begin to deteriorate after harvest, especially if they are damaged during the harvesting, handling or transport. But given the right conditions and where damage is avoided, fresh roots can be stored for up to 9 months. Fresh root storage could help ensure the constancy

and quality of OFSP root supply to ventures such as puree production in Kenya. However, no commercial fresh sweetpotato root storage facilities currently exist in Africa outside of South Africa.

In Mozambique, a group of farmers want to store OFSP roots to benefit from higher sales prices later in the season and to have better access to premium markets such as supermarket chains. A small-scale processor is interested in using OFSP roots in several products and wants to ensure his supply of raw materials throughout the year. A need for fresh root storage at household level has been identified in drought-prone northern Ghana to provide year round access to OFSP in order to combat vitamin A deficiency.

How are we making it happen?

To better understand whether fresh root storage might offer opportunities with the Kenyan OFSP supply chain a detailed study was undertaken involving 59 stakeholder and focus group interviews across eight focal counties in Kenya to understand existing sweetpotato value chains, their seasonality, farmers' production trends and constraints, traders' root sourcing and trading patterns, price dynamics, retailing behaviours, and consumers' preferences.

It was found that large quantities of yellow-fleshed sweetpotato roots are traded from Kabondo and Migori to the large urban markets in Kisumu, Nakuru and Nairobi, with traders sequentially purchasing roots from different areas during the year in order to smooth the supply (Fig. 1). Price varies between the peak and low supply seasons by up to 70%, suggesting that storage has the potential to reduce cost to the consumer.



Partners:

Natural Resources Institute (NRI), University of Greenwich, UK
Organi Ltd., Homa Bay, Kenya
International Potato Centre (CIP) - Kenya, Mozambique and Ghana

The findings of this study were combined with different OFSP puree and fresh roots requirement scenarios to calculate the storage capacity needed for the processor to hold at least one month's stock of OFSP roots to control and smooth their supply chain, and reduce the impact of price rises during the low season. Based on this, a medium scale (10 - 30 tonnes) fresh root storage facility has been constructed at the processor's site in Homa Bay (Fig 2). In addition, storage life trials have been designed to test practical postharvest handling methods to minimise damage during harvesting, handling and transport. These methods will inform a series of follow-up trials to identify optimum fresh sweetpotato root curing (healing of any wounds inflicted during harvest or transport) and storage conditions.

In Manica and Maputo Provinces of Mozambique, a similar value chain study found a much smaller scale of sweetpotato trading to urban markets. In the absence of middlemen, farmers were selling roots directly to retailers or acting as retailers themselves (Fig. 3). The fresh root buying price varies between peak and low supply seasons by 30 to 130%. Two fresh root storage opportunities have potential: the first to support a group of commercial farmers in Namachaa district to provide a year-round supply of OFSP roots to urban consumers in Maputo city; the second to support a processor in Manica Province who is exploring the potential of OFSP-based products.



Fig. 3 Sweetpotato retailers at Mercado 38 in Chimoio, Manica Province, Mozambique (credit I. Tedesco)



Fig. 2 Organi Ltd Production Manager, Gabriel Oduor and Andy Marchant, NRI engineer, in recently completed storage facility (credit J. Low)

Household level fresh root sand box storage is being explored in Northern Ghana. A layer of sand is placed between each layer of roots in a mud-walled box built inside the home.

Where are we working?

- Kenya: Homa Bay, Busia, Migori, Siaya, Kericho, Kisumu, Nakuru, Nairobi Counties
- Mozambique: Manica and Maputo Provinces
- Ghana: Bawku, Upper East Region

What have we learned so far/ achieved during the first year of Phase 2?

Storage of one month's supply of fresh OFSP roots can help the OFSP puree processor in Kenya smooth and secure a constant supply of raw materials. With a minimum root buying price increase of even 20% between peak and low supply season, it is cost-effective for the processor to invest in constructing a 20 - 30 tonne fresh root storage facility.

What next?

A 10 tonne capacity fresh root storage facility is being trialled at the OFSP puree processor's site in Homa Bay County, Kenya. Studies to extend the storage-life of fresh OFSP roots through improved postharvest handling, packaging and transport techniques, curing and storage regimes have also been initiated. In Mozambique, a small-medium scale store will be designed with the farmer group wishing to supply the Maputo market with OFSP roots throughout the year. In Ghana, the household level sand storage box technique for fresh root storage will be trialled for a further season.



The Sweetpotato for Profit and Health Initiative (SPHI), launched in 2009, seeks to improve the lives of 10 million African households in 17 SSA countries by 2020 through providing access to improved varieties of sweetpotato and their diversified use.

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