

Rwanda Sweetpotato Super Foods Market Chains that Work for Women and for the Poor

AUGUST
2014

A TV advertisement promoting the Golden Power Biscuit, in which 43% of wheat flour is replaced by orange-fleshed sweetpotato puree, a nationally recognized product.



■ Golden Power Biscuit on sale (credit K. Sindi)

✦ What was the problem?

Per capita sweetpotato production in Rwanda is among the highest in SSA—over 80 kgs per capita. Major growing areas have bi-modal rainfall regimes and year-round consumption of the crop. However, market chains are poorly developed; roots are bulky and costly to transport long distances. There are seasonal gluts when prices plummet with farmers complaining of lack of markets. Processing of sweetpotato into products offers the opportunity to increase demand for the crop and create value-addition, thereby expanding the incomes of smallholder producers.

Rwanda is densely populated at 430 persons per square kilometer and a population expected to double by 2020, with the percentage of the population living in urban areas increasing from 20% to 30% of the total population. Urban consumers demand more processed, faster cooking foods with less energy demand than their rural counterparts. There is expanding demand for wheat-based products, but wheat flour is relatively expensive and its world price steadily increasing. Our research in Rwanda has shown that boiled and mashed sweetpotato (puree) can profitably substitute significant percentages (30-50%) of wheat flour in bakery products and contribute nutritionally significant amounts of pro-vitamin A.

What has been lacking is getting the appropriate research-public-private sector partnership to move from small-scale efforts to marketing sweetpotato products on a commercial scale. Solid evidence regarding which organizational structure actually would benefit poorer smaller farmers and in particular women farmers in such a partnership is minimal. There is also concern that as sweetpotato is increasingly commercialized men will dominate and control the proceeds from sales of this crop, or families will shift consuming nutritious crops at home to selling to the market.

✦ What do we set out to achieve?

This project sought to build an effective public-private sector partnership. We seek to provide solid evidence that sweetpotato processed products are profitable and acceptable to urban African consumers. We have learnt lessons on how to develop efficient and/or gender-equitable organizational model(s) for sweetpotato value chains and enhance revenues for 500 participant households during the last 3 years. The project is testing whether:

1. The development of a value-chain for processed products with a private sector actor leads to improved returns to rural smallholder sweetpotato growers.
2. Whether men and women farmers benefitted more by being organized in groups and backstopped by non-governmental organizations, who facilitated the link to the agro-processor, than by just being linked as individuals to the agro-processor.
3. Sweetpotato will become a high value crop in target areas through effective marketing of sweetpotato-based products among urban and semi-urban consumers.

✦ Where are we working?

We implemented the project in four districts in Rwanda: Rulindo, Gakenke, Muhanga, and Kamonyi.



Partners include:

- Rwanda Agricultural Board (RAB), co-lead
- International Potato Center (CIP), co-lead
- Urubwitso (SINA) Enterprises, private sector agro-processor
- Catholic Relief Services (CRS) Rwanda, international NGO
- Imbaraga, local NGO specializing in agricultural produce marketing
- Young Women Christian Association of Rwanda (YWCA), local NGO
- Kigali Institute of Science and Technology, Food Science & Technology (KIST) (Now part of University of Rwanda)

❖ What have we achieved so far?

We worked with a local private sector firms in Rwanda like Urwibutso (SINA) Enterprise, a juice and bakery products processor in Rulindo and other bakeries in Kigali, in collaboration with RAB, CRS, YWCA, IMBARAGA, and KIST (now part of University of Rwanda) to develop high quality sweetpotato-based processed products and profitable value chains.

Two organizational models were tested. Model one (*contract farming*) builds on SINA's current practice of contracting individual farmers to produce their raw material (desired crops) and doing all the processing at their factory. In Model two (*farmer group value addition*), CRS and its implementing partners (YWCA and IMBARAGA) organize farmers into groups. For model two, we work with 20 farmer groups with 80% female membership. SINA has directly contracted 45 (65% women) model one individuals to supply its factory.

The Super Foods component began in SASHA's year 2 (August 2010). In year 1, research concluded that puree was superior to flour in terms of product quality and profitability. Recipes were developed and test marketed for four initial products: biscuits, *mandazi* (doughnuts), bread, and queen cakes. Specialized packaging was developed for and a launch event held for the Golden Power Biscuits in November 2012. Factory sales by SINA Enterprises of *Golden Power Biscuits* and *mandazi* made with orange-fleshed sweetpotato in the period 2012/2013 attained a gross value of USD \$146,490. In 2013/2014 project year, SINA sold OFSP based products worth US \$ 195,384.

Therefore, in two years the factors had a gross income of US \$ 341,874 from sales of OFSP based products.

To enable consistent supply, farmers need high enough yields and staggered production plans. Provision of disease-free "clean" planting material and training farmers on proper agronomic practice has increased the production of sweetpotato roots by project farmers from 4 to 12 tons per hectare. Building up supplies of disease-free planting material has been a major effort led by RAB's tissue culture and screen house technicians, who have produced over 8 million cuttings of virus-free planting material. Farmer multipliers were trained on how to maintain quality planting material. To assure more sustained access to quality foundation material, 51 vine conservations tunnels using anti-insect netting have been constructed with the groups and key private sector farmers.

Between July 2012 and June 2014, farmers in the project produced 236 tons of sweetpotato. SINA's factories received 36% of these roots; the local market 19%; and 31% were consumed at home. The remaining 15% of roots were processed by groups into OFSP products for sale, mostly *mandazi*. The factory used these sweetpotatoes to produce *mandazi*, 3 bread types, Akarabo Golden Power biscuits, and cakes. The Golden Power Biscuit has 43% of wheat flour replaced by OFSP puree and is sold either in sachets or tubes, with 4 or 8 biscuits. Due to the OFSP and eggs in the product, it can be marketed as an excellent source of vitamin A (Table 1).

Table 1. Nutrient Composition* of the Golden Power Biscuit

	Per 100 gms	Per Serving**
Vitamin A (micrograms or mcg)	340	157
Protein (grams)	7.5	3.5
Carbohydrate (grams)	65.1	30
Fat (grams)	15.8	7.3
Dietary fiber (grams)	3.0	1.4

*Analysis by ALS Food & Pharmaceutical Laboratory, Cambridgeshire, England

**One serving = 4 biscuits = 46 grams total

Child under 9 years old requires 400 mcg daily

Non-pregnant woman requires 700 mcg, adult men 900 mcg

In total, the team conducted more than 60 media events on radio, TV, newspaper and online media. We also have a monthly newsletter, with 23 issues to date. In 2013/2014, we invested in developing a sweetpotato juice, and the product *Orange Delight* is expected to be launched in late 2014. Two cooperatives have set up units that will purchase OFSP roots from surrounding farmers, process puree hygienically, and then market the puree to processors.

The major challenge to date has to been to ensure consistent supply of roots to the factory and that the factory consistently produces the product. The private sector processor has not been able to keep up with the demand of products in the market. Considerable investment has been made in developing production schedules and improving the management of packaging inventory.

Baseline data collected in November 2011 will enable the true impact of the project to be evaluated after end-line data that was collected in August 2014 with a final report expected in October 2014.



❖ Kiri Sindi introducing farmer's group during Global Biofortification Conference field trip in April 2014 (credit J. Low)



❖ Factory owner Sina Gerard describing OFSP products to visitors (credit J. Low)



❖ New packaging for commercializing doughnuts made by cooperative (credit J. Low)

CONTACTS

Jean Ndirigue (RAB)
ndrick3@yahoo.fr

Kiri Sindi (CIP)
k.sindi@cjar.org