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 yield is highly dependent on the crop. However, market chains are poorly developed; roots are bulky and costly to transport long distances. There are seasonal glut when prices plummet with farmers complaining of lack of markets. Processing of sweetpotato products offers the opportunity to increase demand for the crop and create value-addition, thereby expanding the incomes of smallholder farmers.

 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.

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 gender-equitable organizational models for sweetpotato value chains and enhance revenues for 100 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 benefit more by being organized in groups and backstopped by 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 Kayonza.

Partners include:
- Rwanda Agricultural Board (RAB), co-lead
- International Potato Center (CIP), co-lead
- Undiscover SINA Enterprises, winner of agro-processing competition
- Catholic Relief Services (CRS), recipient of grant for local NGO
- IMARAPA, local NGO specializing in agricultural good practice marketing
- Young Women Christian Association of Rwanda (YWCA), local NGO
- Higher Institute of Science and Technology Food Science & Technology (HIST) (now part of University of Rwanda)

What have we achieved so far?

We worked with a local private sector firms in Rwanda like Urebutuzina SINA Enterprises, a juice and bakery products processor in Rulindo and other bakeries in Kigali, in collaboration with RAB, CRS, YWCA, IMARAPA, and RIST (now part of the 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 (cleaned roots) and doing all the processing at their factory. In Model two (farmer group value addition), CRS and its implementing partners YWCA and IMARAPA organize farmers into groups. For model two, we work with 20 farmer groups with 80% female membership. SINA has directly contracted 45% (100 index model) of individuals to supply its factory.

The Super Foods component began in SAINA’s year 2 (August 2010). In year 1, research concluded that puree was easier to deliver in terms of product quality and profitability. Recipes were developed and tested marketed for four initial products: biscuits, mandazi, doughnuts, 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 was made with orange-flavoured sweetpotato in the period 2012-2013 to an average of 116,490 USD. 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 surplus supply of sweetpotato roots from surrounding farmers, process puree hygienically, and then market the puree to processors.

The major challenge to date has been to ensure consistent supply of roots to the factory and that the factor 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 a product that will maintain this demand.

Between July 2012 and June 2014, farmers in the project produced 256 tons of sweetpotato. SINA 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, Akerabo 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 tubs, 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).
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.

**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 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 models 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 benefited more by being organized in groups and backstopped by governmental organizations, who facilitated the link to the agroprocessor, 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.

**What have we achieved so far?**

We worked with a local private sector firms in Rwanda like Ubumweko SNA Enterprise, a juice and bakery products processor in Ruhandi and other bakers 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 SNA's current practice of contracting individual farmers to produce their raw material (dried 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. SNA has directly contracted 45 (90%) farmer 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 tested marketed for four initial products: biscuits, mandazi (fritters), 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 SNA 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, SNA sold OFSP based products worth USD $119,384.

Therefore, in two years the factors had a gross income of USD $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 crown house technicians, who has produced over 8 million cuttings of virus-free planting material. Farmer multipliers were trained on how to maintain quality planting material. To assure consistent supply of roots to the market, 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. CR Wakefield 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 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. CR Wakefield 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.

**Between July 2012 and June 2013, farmers in the project produced 236 tons of sweetpotato. SNA’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 sweetpotato to produce mandazi, 3 bread types, Akerabo 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>
<thead>
<tr>
<th>Vitamin A (micrograms or mg)</th>
<th>7.5</th>
<th>3.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protein (grams)</td>
<td>65.1</td>
<td>10</td>
</tr>
<tr>
<td>Carbohydrate (grams)</td>
<td>15.6</td>
<td>7.3</td>
</tr>
<tr>
<td>Fat (grams)</td>
<td>3.0</td>
<td>1.4</td>
</tr>
<tr>
<td>Dietary Fiber (grams)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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 marketing 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.**

**Between July 2012 and June 2013, farmers in the project produced 236 tons of sweetpotato. SNA’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, Akerabo 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).**

**CONTRACTS**

Joe Ndirungu (RAI) ndirungu@cgiar.org
Kirsten Sindi (CIP) k.sindi@cgiar.org