The Sweetpotato Action for Security and Health in Africa (SASHA) is a five-year initiative designed to improve the food security and livelihoods of poor families in Sub-Saharan Africa by exploiting the untapped potential of sweetpotato. It will develop the essential capacities, products, and methods to reposition sweetpotato in food economies of Sub-Saharan African countries to alleviate poverty and undernutrition.
Objectives

1. To develop, compare, and evaluate the relative efficiency of two sweetpotato product value chains and their potential to increase farmer income with gender equity.

2. To re-position white and orange fleshed sweetpotato (OFSP) and its products in the rural, urban and semi-urban consumer markets.
Project sites

Rwanda - New Province / Regions and New Admin District Boundaries

1. Musanze
2. Burera
3. Musanze
4. Kigali
Models developing

4 sweetpotato models developing

Model 1:
Contracted individual farmers linked directly to processors
(Urwibutso enterprises has 46 farmers)

Individual farmers supply raw roots directly to the processors

Processors develop high value products for the urban market

High value sweetpotato based products available in rural and urban markets

Model 2:
Farmer groups with collective and individual SP plots linked to processors
(20 farmer groups in 4 districts)

Farmer groups supply raw roots directly to the processors
Farmer groups supply raw roots to the markets

Roots to local market

Farmers groups process high value products
HOW DID WE DO IT?
First start by developing a quality “clean” seed system

In-vitro plantlets multiplication at Rubona lab we are multiplying 10 OFSP and 1 WFSP

Over 50,000 plantlets were produced and hardened at Rubona

Plantlets hardening

Transfer of plantlets to the field

Farmers have access to quality planting material
Vines distributed

• About over 8 million cuttings were produced from primary multiplication
• A further 1,199,200 cuttings were distributed to 2nd tier partners like NGOs, Local governments, and large scale private growers
• Hence a total of over 9,199,200 cuttings were produced and distributed to different partners
Is this seed system development worth its?
Yield assessment trials last season at farmers condition

<table>
<thead>
<tr>
<th></th>
<th>Cacearpedo</th>
<th>Vita</th>
<th>Kabode</th>
<th>Gihingamukungu</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SPVD</td>
<td>YFSR (T/ha)</td>
<td>SPVD</td>
<td>YFSR (H/ha)</td>
</tr>
<tr>
<td>Location 1</td>
<td>1</td>
<td>11.75</td>
<td>1</td>
<td>12.78</td>
</tr>
<tr>
<td>Location 2</td>
<td>2</td>
<td>8.52</td>
<td>1</td>
<td>8.98</td>
</tr>
<tr>
<td>Location 3</td>
<td>-</td>
<td>7.71</td>
<td>-</td>
<td>11.86</td>
</tr>
<tr>
<td>Location 4</td>
<td>3</td>
<td>14.63</td>
<td>1</td>
<td>8.17</td>
</tr>
<tr>
<td>Average</td>
<td>2</td>
<td>10.65</td>
<td>1</td>
<td>10.45</td>
</tr>
</tbody>
</table>

The yields trials were affected by long dry period.
SPVD scale 1-Lowest 9-Highest
Previous trials had an average of 12 t/ha
What is the results so far from our seed system effort

<table>
<thead>
<tr>
<th>Variety</th>
<th>Highest production Kg/ha</th>
<th>Average yields in three crop cut sites average Kg/ha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cacearpedo</td>
<td>19,366.39</td>
<td>12,539.74</td>
</tr>
<tr>
<td>Naspot 9</td>
<td>18,606.44</td>
<td>13,279.87</td>
</tr>
<tr>
<td>Naspot 10</td>
<td>19,578.31</td>
<td>15,446.78</td>
</tr>
<tr>
<td>Gihingamukungu</td>
<td>16,529.29</td>
<td>12,575.50</td>
</tr>
<tr>
<td>Local variety</td>
<td>15,849.12</td>
<td>10,285.89</td>
</tr>
</tbody>
</table>
Vines conservation strategies

- Farmers were taught on how to keep clean planting materials through negative selection and this improved the ability of farmers keeping vines from season to season.
- 45 tunnels were constructed and are still being maintained by farmer groups with 3 maintained by SINA for his contract farmers.
Vine Conservation tunnels in Rwanda

Building tunnels

Planting

Covering with anti-aphid netting

Finished tunnel

Inspecting the tunnels
Product development

• Can we develop commercially viable products based on Orange Flesh Sweetpotato?

• What are the necessary conditions that will attract private sector to spearhead incorporating OFSP into their commercial products?
Necessary conditions

1. Raw material need to be available throughout the year
2. OFSP products must be acceptable by targeted consumers because they are better or at least equally as good as competing products
3. Private sector need to make money from the OFSP based products (check the bottom line)
   a) By lowering cost of production
   b) Or/and increasing their bundle of attributes (selling point)
4. Technology developed must be easy to adapt
Products are as good as the raw material

1. Roots quality
   – Time of harvesting (Too early or too late)
2. Grading before delivery
   – Trainings are necessary
3. In time roots delivery to the processor
4. Farmers trainings and commercial processing, assist in understanding roots quality and supply chain concerns
How do you choose private sector collaborator?

• Several considerations
  – Experienced Vs New (creation)
  – Large Vs Small

• All these have consideration in the level of investment
  – Machinery, technical backstopping, supply chain, development, marketing support

• With all collaborators you cannot be hands off, for a successful project you have to be engaged as needed
Does it make economic sense to incorporate OFSP sweetpotato puree into bakery products?

- **Bread** (30% SP+70% wheat)+others
  - 7% decrease in per unit production cost
- **Doughnuts** (Mandazi) (40% SP+60% wheat)+others
  - 15% decrease in per unit production cost
- **Biscuits** + other cookies (45% SP+55% wheat)+other
  - 12% decrease in per unit production cost
Start at the level of the processor i.e. we build capacities of partners

Making of sweet potato puree

Team having sensory test of products at Urwibutso factory at Nyirangarama, Rwanda
Capacity building process

Urwibutso industry development in four years

Farmer groups processing taken longer but getting there
Urwibutso factory product development and gross sales

• Products development lead time was long and involved scientific work (sensory tests, packaging design tests, product testing)

• Product developed are:
  – Biscuits, Mandazi (doughnuts), Bread, Queen cakes and Sweetpotato juice.

• 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.
Did the project work benefit only a large firm in processing?

• The answer is NO

• It’s difficult to create entrepreneurs

• Four farmer groups started processing after trainings and are still selling mandazi

• The project formed two cooperatives that will be used for processing and semi-processing

• The buildings have been set up but the machinery is not yet installed hopefully it will be done in September
Does investing in a value chain lead to most of the production going to the market?

**Initial evidence from Rwanda case study**

<table>
<thead>
<tr>
<th>Province</th>
<th>Total harvest (Kg)</th>
<th>Sold to SINA (Kg)</th>
<th>Sold to local market (Kg)</th>
<th>Home consumption (Kg)</th>
<th>Group processing (Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southern</td>
<td>21,981</td>
<td>5,198</td>
<td>5,343</td>
<td>11,440</td>
<td></td>
</tr>
<tr>
<td>Northern</td>
<td>37,300</td>
<td>15,900</td>
<td>5,700</td>
<td>7,00</td>
<td>8,700</td>
</tr>
<tr>
<td>Total</td>
<td>59,281</td>
<td>21,098</td>
<td>11,043</td>
<td>18,440</td>
<td>8,700</td>
</tr>
<tr>
<td>% Utilization</td>
<td>36</td>
<td>19</td>
<td><strong>31</strong></td>
<td></td>
<td>14</td>
</tr>
</tbody>
</table>

Home consumption % remains very similar over the years
Product presentation

• Product presentation gives a message

• Generally we buy
  – Dreams
  – Aspirations
  – Image
  – Attributes (healthy alternative vit A)

• Customers and policy makers don’t really care about OFSP, they care about
  – Vitamin A
  – food security
  – Incomes
  – Image
Our products packaging
Law #6: Court Attention At All Cost by Robert Greene (48 Laws of Power)

- Participated in the 2\textsuperscript{nd} Global Bio-fortification Conference in Kigali where our products were displayed and given to all participants
- Products distributed in many countries and events
- 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.
- Organized road shows and mandazi days and advocacy tools

Please court attention only if you have something to shout about
Launch of Akarabo Golden Power Biscuits
Achievements

- At least two products acceptable to the consumers being processed
- At least 4 groups processing and selling to local markets
- Built two value chains in Rwanda
- Changing perception of OFSP in Rwanda among the local officials, Ministry of Agriculture
- 44 tunnels still operational
- Gakenke mayor has set aside Frw 4 million to assist sweetpotato cooperative as part of the performance contract
- Rulindo Mayor has put OFSP has part of his performance contract with the president to develop road side marketing for OFSP
- Paper on Akarabo sensory test published
- Another paper under review on products development
### End line survey

<table>
<thead>
<tr>
<th></th>
<th>Control + Baseline</th>
<th>Beneficiaries + Beneficiaries</th>
<th>Spill over</th>
<th>Contract Farmers</th>
<th>Beneficiaries</th>
<th>Group members dropouts</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expected</td>
<td>250</td>
<td>257</td>
<td></td>
<td>45</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interviewed</td>
<td>207</td>
<td>212</td>
<td>262</td>
<td>39</td>
<td>81</td>
<td>57</td>
<td>858</td>
</tr>
</tbody>
</table>

Currently the first data entry is expected to be finalized this week and next week we start 2\textsuperscript{nd} data entry. We are planning also in the next two weeks to conduct consumer survey and a group survey.
Partners

- International Potato Center (CIP)
- Rwanda Agricultural Board (RAB)
- Catholic Relief Services (CRS-Rwanda)
- Young Women Christian Association (YWCA)
- IMBARAGA
- SINA GERARD/URWIBUTSO enterprises
- Kigali Institute of Science and Technology University
- Rwanda Bureau of Standards
- Rwanda Environment Management Authority
- Jomo Kenyatta University of Science and Technology
Murakoze
(Thank you)