Technologies for African Agricultural Transformation

TAAT INVESTORS FORUM

Showcasing TAAT Technologies

15 February 2022: 1000 -1600 (WAT)

CIP INTERNATIONAL POTATO CENTER

CGIAR

AFRICAN DEVELOPMENT BANK GROUP
GROUPE DE LA BANQUE AFRICAINE DE DÉVELOPPEMENT

ORANGE FLESHED SWEETPOTATO (OFSP) PUREE TECHNOLOGY

CIP's Historical Interaction with the Private Sector

List of OFSP puree processing equipment in Africa facilitated through CIP projects

Country	Location	Recipient	Type of Equipment	Year Partnership Initiated
Kenya	Homabay	Organi Limited	Puree processor, vacuum sealer	2014
	Nairobi	Burton and Bamber	Root washer, steamer, conveyor belt, puree processor, Nomatic system and Cartabol filler	2019
	Nairobi	Euro Ingredients Limited	Puree Filling Machine, Dough divider and rounding machine	2018
Uganda	Kampala	Lishe@Biofresh	Root washer, steamer, puree processor, vacuum sealer	2018
Tanzania	Dar es salaam	AFCO Investments	Puree processor	2018
Ethiopia	Hawassa	Duwame Bakery	Root washer, steamer, puree processor, vacuum sealer	2018
	SNNPR	Jara Agro Processing	Puree processor	
Rwanda	Kigali	Euro Ingredients Limited	Root washer, steamer, puree processor, vacuum sealer	2021
	Northern Region	Urwibutso Enterprises	Puree processor, vacuum sealer	
Nigeria	Abeokuta	Federal University of Agriculture (FUNAAB)	Puree processor	

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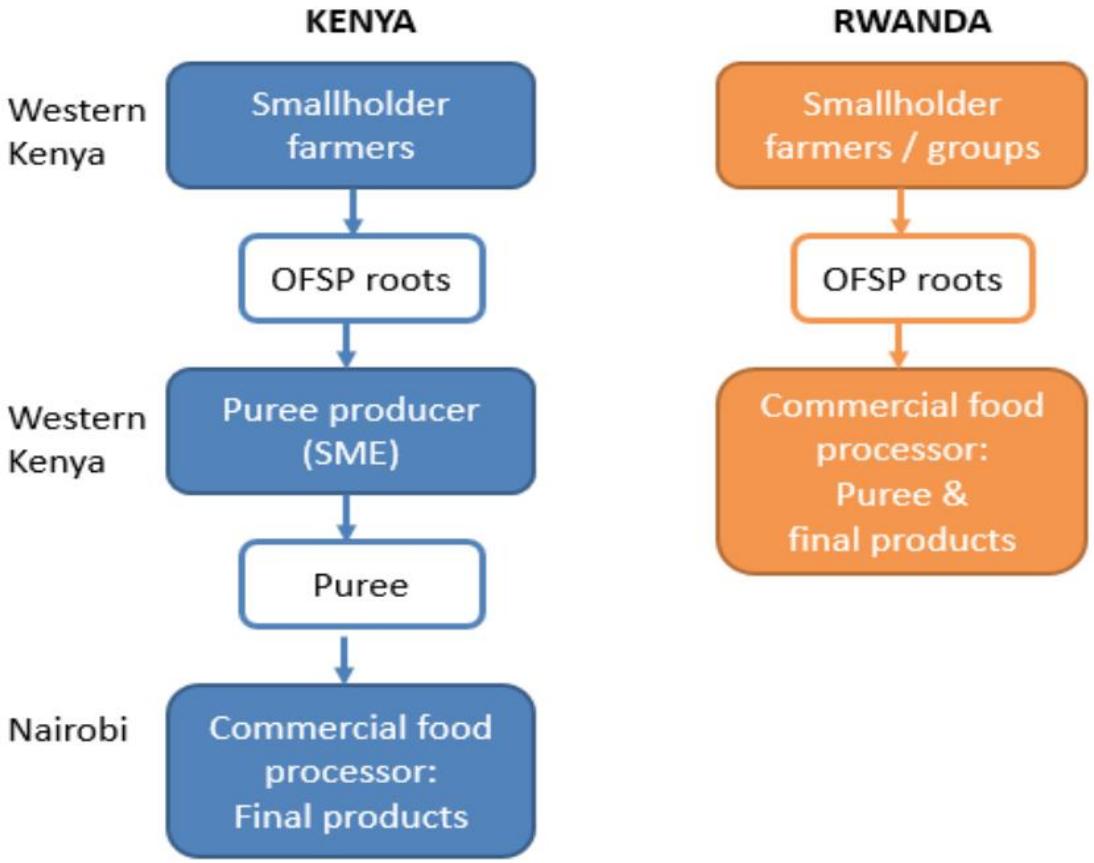
Ghana	Tema	Ansedu Ltd	Puree processor, Puree Filling Machine, steamer, paste mixer/blender, vacuum sealer	2021
Malawi	Blantyre	Tehilah Enterprise	Puree processor	
	Blantyre	Universal Industries	Puree processor	
	Lilongwe	Perisha Agro-processing	Puree processor, steamer, vacuum sealer	
Mozambique	Chimoio	Zebra Farm	Puree processor	
	Maputo	Maputo Research Station	Puree processor	
	Alto-Molocue	Pandaria Maria	Puree processor	
	Lichinga	Mozambique Institute of Agricultural Research (IIAM)	Puree processor	
	Lichinga	Pandaria Maria	Puree processor	

ORANGE FLESHED SWEETPOTATO (OFSP) PUREE TECHNOLOGY

An update on our work with OFSP puree in Africa



ORANGE FLESHED SWEETPOTATO (OFSP) PUREE TECHNOLOGY

TAAT Technology:
Orange-fleshed sweetpotato (OFSP) puree

Technology

- OFSP roots are conventionally bred to contain high levels of β-carotene, which is converted to Vitamin A in the human body
- Growing consumer demand and a high rate of urbanization in SSA has opened avenues for incorporating OFSP in other foods
- OFSP puree is made from roots which are boiled/steamed and mashed to a paste
- Utilized as a functional ingredient in bakery products
- Unpeeled roots are used to make high fiber puree
- OFSP puree can replace the use of wheat flour by up to 60% in different baked and fried products
- Bakery products incorporating OFSP puree as an ingredient have received favorable consumer feedback
- OFSP puree can be made in different forms
  - Fresh without preservatives, vacuum packed and stored frozen
  - Shelf-stable with preservatives
  - Aseptically packaged, shelf-stable puree without preservatives

OFSP products on the African market

Commodities
- OFSP puree

Value Chain Position
- Processing

Who is it for
- Populations vulnerable to VAD
- Consumers of bakery products

Problems Solved and Benefits
- Nutritionally enriching the diets of populations vulnerable to Vitamin A deficiency (VAD)
- Increase demand for OFSP fresh roots by creating a market for the produce through puree processors leading to reduced post- harvest losses and increased income for the farmers
- Reduced production costs for bakeries through wheat replacement which is imported at high prices
- Capacity development and creation of employment opportunities along the OFSP value chain
- Improved sensory characteristics of bakery products, preferred by the consumers

Costs/ROI
- Average investment needed is between $30,000 to $43,000 for medium scale enterprises due to puree processing equipment being sourced outside Sub Saharan Africa
- The ROI is more than 100% for the puree processors and the payback period is a maximum of 3 years

Geography
Kenya, Ethiopia, Mozambique, Uganda, Nigeria
Tanzania, Ghana
Rwanda, Malawi

ORANGE FLESHED SWEETPOTATO (OFSP) PUREE TECHNOLOGY

Links to Technology Documents

Orange-fleshed sweetpotato puree for nutritious food products
https://cipotato.org/cip-50/innovations/orange-fleshed-sweetpotato/

Scaling up the use of Orange Fleshed Puree for Baked and Fried Products
https://www.rtb.cgiar.org/news/scaling-up-the-use-of-orange-fleshed-puree-for-baked-and-fried-products/

Orange-fleshed sweetpotato (OFSP) Purée and Bread Production in Kenya
https://www.youtube.com/watch?v=k_MZe3u3biA

Orange-fleshed Sweetpotato Puree for Bakery Applications in East Africa. Delivering more vitamin-A through consumer-demanded products
https://cgspace.cgiar.org/handle/10568/115462

Innovations to boost production of safe and nutritious sweetpotato products in Kenya.
https://cgspace.cgiar.org/handle/10568/115707

Making storable orange-fleshed sweetpotato purée a commercial reality
https://www.rtb.cgiar.org/news/making-storable-orange-fleshed-sweetpotato-puree-a-commercial-reality/

OFSP SILAGE TECHNOLOGY

CIP's Historical Interaction with the Private Sector

Program / Project / Company	Objective / Outcome	Country	Donor/ Collaborator	Year
CIP's CGIAR Research Program on Roots, Tubers and Bananas (RTB) with Farmer Groups, Youth & Women Enterprises	Utilization of roots, tubers and bananas to reduce post-harvest losses. Utilization of sweetpotato vines, roots and peels as pig feeds	Uganda	European Union	2016
Kyakuwa Urban Dairy Farm	Silage production	Uganda	TAAT	2020 - 2021
6 Youth groups in Southern and Central Uganda	Silage Production	Uganda	TAAT	2021

TAAT Technology: SWEETPOTATO SILAGE TECHNOLOGY

- Feeds contribute over 60% of the total cost of production in a profitable dairy cattle enterprise.
- Due to small land holdings, and shortage of land, farms does not have planted pastures.
- The animals depend entirely on:
  1. Purchased feeds and;
  2. Feeds processed using wastes from farms, markets & agro-industries.
- Sweet potato residues are left in urban markets after sale of the roots
- The International Potato Center (CIP) together with other collaborators developed a "Sweet potato vine silage technology" to conserve sweet potato residues for use during periods of scarcity.

Commodities
- OFSP Silage

Value Chain Position
- Feed Processing

Geography:

UGANDA

Problems Solved and Benefits

- Perishability, about 599 kg of vines/season is wasted (Kyalo et al., 2017)
- Easy transportation
- Cheaper storage
- Correct multi-nutritional deficiency
- Easy handling
- Reduces feeding cost as locally available feed ingredients can be utilized
- A source of income for youth groups and;
- Can be stored for a year and therefore is helpful in seasons of feed scarcity

Who is it for
- Animal feed / Dairy cows, pigs
- Feed industry

Costs/ROI
Average investment needed is around USD 1,225 for small feed processor with around 65% ROI and the payback period is a minimum of one year.

Links to Technology Documents

Turning sweetpotato residues into a sustainable feed resource
https://drive.google.com/file/d/1v7rxogtK2Ta4jIdMDqRqfZhXnz8KwmMK/view
https://cipotato.org/publications/nutritious-and-affordable-sweetpotato-based-silage-the-feed-solution-for-small-scale-pig-farmers/
https://www.rtb.cgiar.org/news/silage-from-sweetpotato-vines-proven-benefits-for-livestock-farmers-and-feed-suppliers/

ACKNOWLEDGEMENTS

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Thank You!

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