

Report of the Sweetpotato Support Platform – West Africa

Sweetpotato Breeders Meeting 2014,
Blantyre, Malawi

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Sweetpotato Support Platform West Africa



Breeding Objectives:

- Population improvement program at a sub-regional level
- Link with participatory varietal selection at the national level



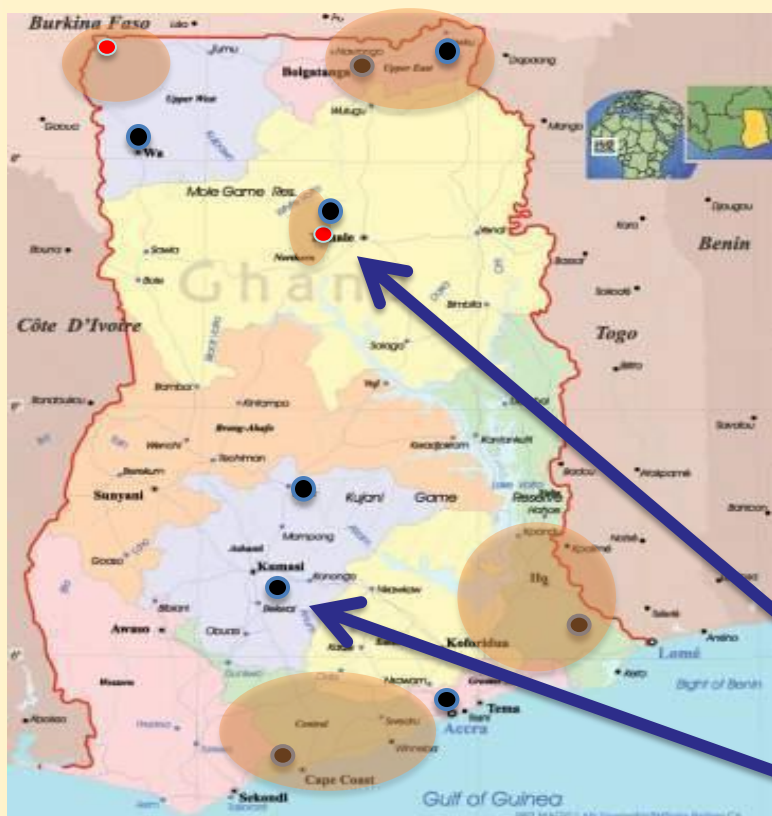
SPHI Target Countries in W. Africa:

Ghana, Nigeria, Burkina Faso, Benin

SASHA Currently Supports Breeding, Germplasm Distribution, and Platform Partnerships for R4D and impact:

- AGRA, WAAPP, MoFA, FMARD, INERA
CRP Dryland Systems

Sweetpotato Breeding Selection Sites and Target Zones in Ghana



Target areas where sweetpotato is currently important, or benchmark sites for CRP Dryland Systems

Breeding selection sites

Consortium Research Program (CRP) benchmark sites

CSIR - Savanna Agricultural Research Inst.

CSIR – Crops Research Inst.

Some characteristics of selection sites in Ghana



Region	AEZ	Role of sweetpotato	Preferred type of SP (vars)
Ashanti	Forest	Insignificant	Not preferred
Central	Coastal Savanna	Commercial	Yellow skin, yellow flesh (Blue Blue)
Volta	Coastal Savanna	Commercial/Food security	Red skin, white flesh (CRI-Ogyefo)
Upper East	Guinea/Sudan Savanna	Food security/less commercial	Skin color less important, OFSP exist (not improved)

Constraints: **Drought** can be a constraint in any AEZ, but tends to be worse in savanna AEZs, **SPVD** tends to be worst in forest zone, **Soil fertility** tends to be low in most places, **Weevils** are a significant constraint.

Accelerated Breeding Scheme Ghana



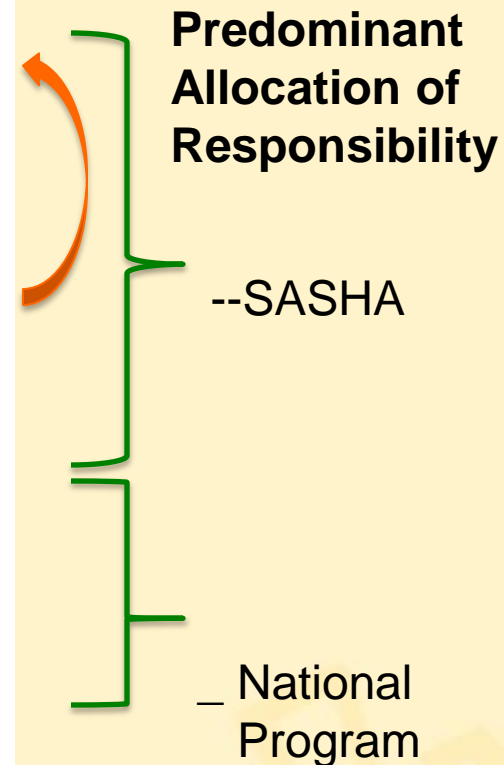
Year 1	Crossing block (50 parents)					
Year 2	Seedling nursery (~240 families, 5000 genotypes)					
	OT - Kumasi (virus + proximity)			OT – Tono (key production area)		
	~250 clones selected with top selections going for recombination					
Year 3	PT – UE	PT – CR	PT – VR	PT - AR		
	~25 clones selected					
Year 4	AT + OFT	AT + OFT	AT + OFT	AT + OFT	AT + OFT	AT + OFT
	Decentralized testing and multiplication					
Year 5	Official release					

OT – Observational Trial (3-plant plots, no reps)

PT – Preliminary Trial (>14-plant plots, 2 reps)

AT – Advanced Trial (75 plants, 2 reps); OFT – On-farm Trial

UE – Upper East, CR – Central Region, VR – Volta Region, AR – Asante Region



Sweetpotato Breeding Trials Ghana, 2014



Region	Location	Hybrid	Seed Nurs	OT	PT	AT	OFT
Asanti	Fumesua	1 1	1	1	1	1	
G. Accra	Pokuase					1	
Volta	Ohawu				1	1	x
Central	Komenda			1	1	1	x
Upper East	Nav+Bawk	1		1	1	2	mb*4
Northern	Nyankpala					1	mb*3
Upper West	Wa					1	mb*4
Total		3	1	3	4	8+	14

SASHA, WAAPP, Other sources; mb=mother/baby

Moving toward:

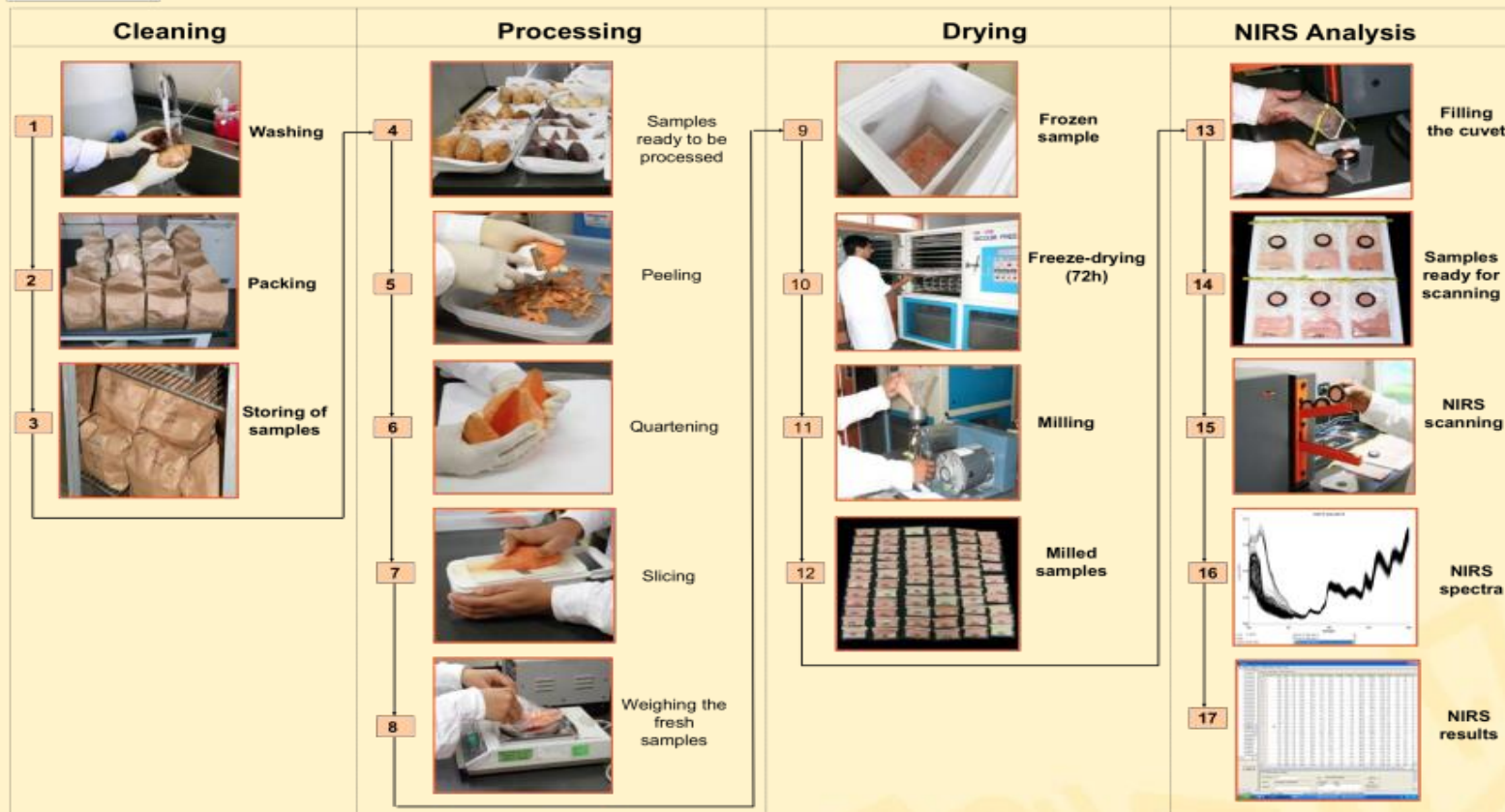


- More than one selection cycle per year (dry season seedling nursery; possibly trials)
- Two populations, A and B, in order to exploit heterosis in coming years
- Separation of early and later-maturing material at PT in order to ensure advance of OFSP
- Strengthening breeding capacity in northern Ghana through expansion of ATs and OFTs linked to seed program
- Recurrent selection of breeding populations while also identifying good parents

Rapid proximate analysis for minerals, sugars and β -carotene done using NIRS



Workflow for sample preparation and NIRS analysis of sweetpotato samples at Quality and Nutrition Laboratory



Barcode Labels and PDAs for Use at SSP-WA



Capacity Building – Students



Ernest Baafi, WACCI



Vivian Oduro, WACCI



Victor Amankwaah,
AGRA

Not shown:

- SOME Koussao, WACCI; Solomon Afruape, WACCI
- Eric Owusu-Mensah evaluating amylase activity in relation processing potential, Ph.D, Food Sci + Technol KNUST
- Jebeh Samba, Hybridization efficiency. MS-AGRA, KNUST
- John Saaka, net tunnels, Undergrad thesis, UDS
- Yussif Alhassan, MS – Root system architecture
- Daniel Akansake MS – Evaluation for dual purpose management

Objective under Seed Systems Research Program



- Establish a regional platform for safe and efficient exchange and maintenance of germplasm
 - Improved indexing, virus cleaning, in vitro maintenance and genetic fingerprinting in each sub-region
 - ISO 17025-compliant germplasm indexing and distribution capacity
 - Upgrade in vitro facilities and tissue culture staff to ensure safe receipt and shipment of germplasm

Regional germplasm distribution SSP-WA by October June 2014



**SCREENHOUSE FOR PRODUCTION OF CLEAN
PLANTS**



**REFURBISHED HOUSE FOR GRAFTING/
QUARANTINE**

In vitro maintenance and multiplication routine, and 4 PT clones confirmed. Ongoing cleanup of remainder of Ghana, BF and Nigeria

Clean foundation seed is Integral to success of the breeding effort



Jumpstarting OFSP in West Africa through Diversified Markets



3 year project targeting selected areas of
Ghana, Nigeria and Burkina Faso

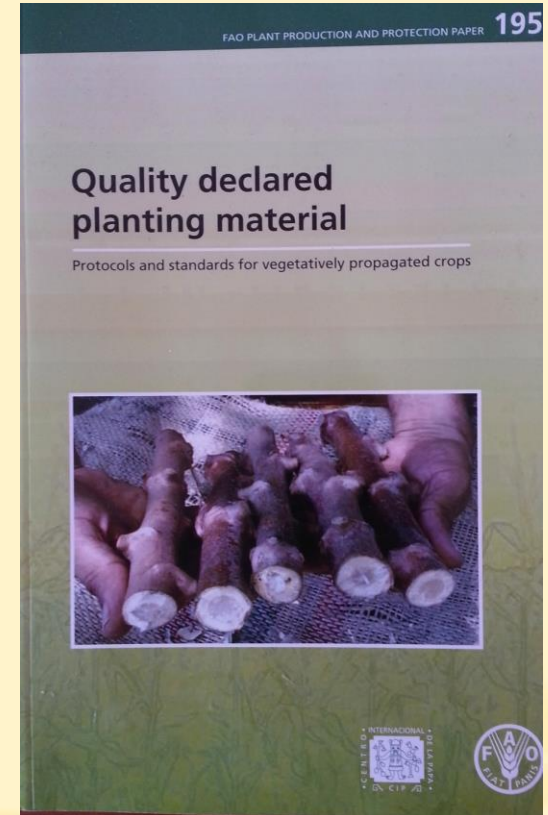
Key Concept: Test the hypothesis that it is possible to simultaneously develop value chains for OFSP and maximize nutritional benefits to vulnerable populations.

Major Outcomes

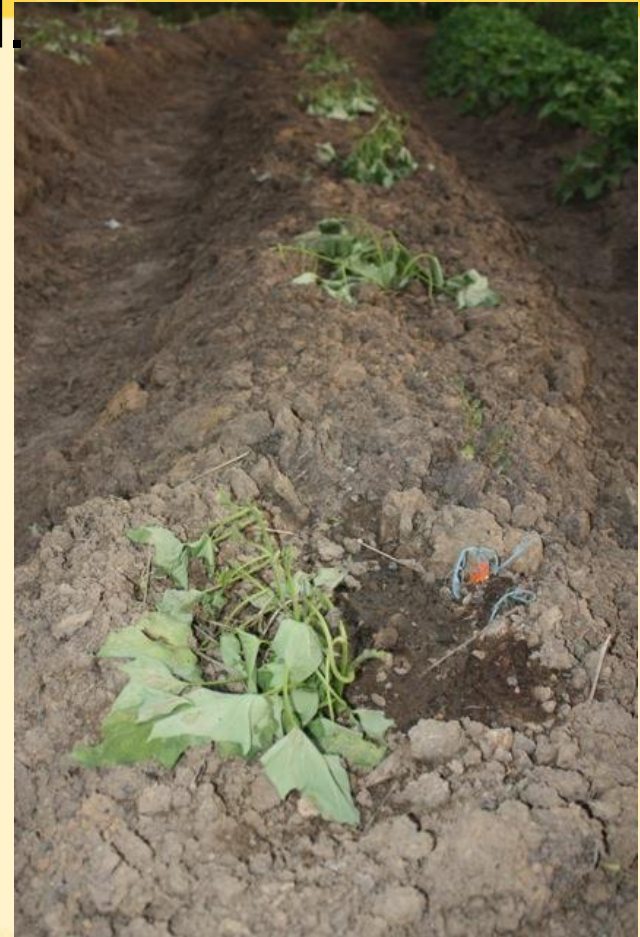


1. Institutional and other diversified market opportunities for OFSP developed in project pilot areas in Ghana, Nigeria, and Burkina Faso.
2. Commercial seed system functioning in target areas and capable of expanding in response to increased demand.
3. Most at-risk households and individuals in target areas have increased vitamin A intakes.
4. Commercial sweetpotato seed and root farmers are benefitting from participation in OFSP value chains.

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Sweetpotato Support Platform (SSP-WA)

- Breeding
- Seed (germplasm/exchange)
- Community
- Breeding + Seed
- BMGF or SP Country
- Jumpstarting

Thank you



Our vision is roots and tubers improving the lives of the poor



CGIAR

Science for a food secure future

