Phase 1 Achievements at the Sweetpotato Support Platform–West Africa

5th Annual Meeting SPHI
Nairobi, Kenya

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SWEETPOTATO ACTION FOR SECURITY AND HEALTH IN AFRICA

Sweetpotato Support Platform West Africa – Breeding, Seed, CoP

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

Important Partners Include(d):
AGRA, WAAPP, MoFA, FMARD, INERA, universities, NGOs, RAC, CGIAR - Dryland Systems

Sweetpotato Breeding Selection Sites and Target Zones in Ghana

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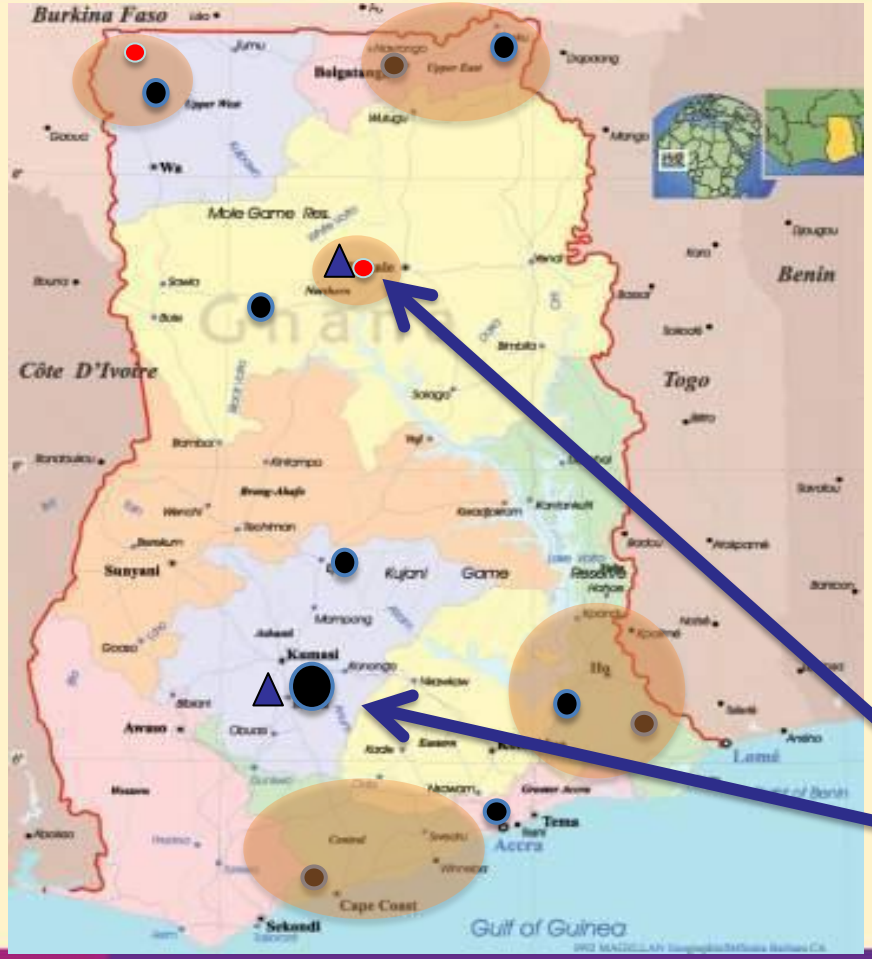

Target areas where sweetpotato Is currently important, or benchmark sites of the CGIAR Research Program on Dryland Systems

- Primary breeding site
- Secondary breeding site
- Phenotyping site
- Consortium Research Program (CRP) benchmark sites

CSIR - Savanna Agricultural Research Inst.

CSIR – Crops Research Inst.

Some characteristics of selection sites in Ghana

Region	AEZ	Important constraint	Preferred type of SP (vars)
Ashanti	Forest	SPVD	Not preferred
Central	Coastal Savanna	SPVD, Drought	Yellow skin, yellow flesh (Blue Blue), OFSP
Volta	Coastal Savanna	Drought	Red skin, white flesh (CRI-Ogyefo)
Upper East	Guinea/Sudan Savanna	Drought	Skin color less important, OFSP exist

Low Soil fertility and **Weevils** are significant constraints

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

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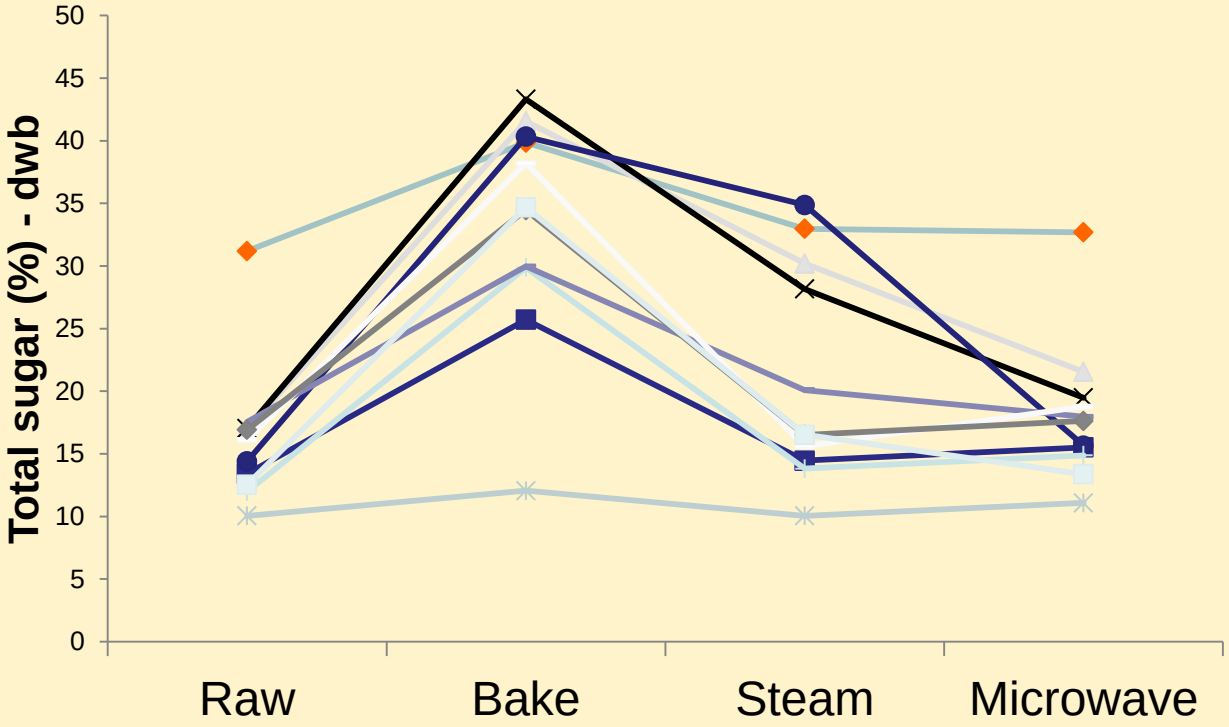
Workflow for sample preparation and NIRS analysis of sweetpotato samples at Quality and Nutrition Laboratory

>15,000 samples since 2012

Cooking effects on sugars vary by method and genotype



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

Predominant Allocation of Funding

--SASHA

_ National Program (WAAPP)

Swetpotato Breeding Trials Ghana, 2014

Region	Location	Hybrid	Seed Nurs	OT	PT	AT	OFT
Asanti	Fumesua	1 1	1	1	1	3	
Brong Ahafo	Ejura					3	
G. Accra	Pokuase					3	
Volta	Ohawu+ Kpeve				1	6	
Central	Komenda			1	1	3	
Upper East	Nav+Bawk	1		1	1	2+2	5 (119)
Northern	Nyankpala					1+1	2 (120)
Upper West	Wa					1	2 (137)
	Total	**3**	**1**	**3**	**4**	**25**	**9 (376)**

Principal Support: SASHA, WAAPP, Other

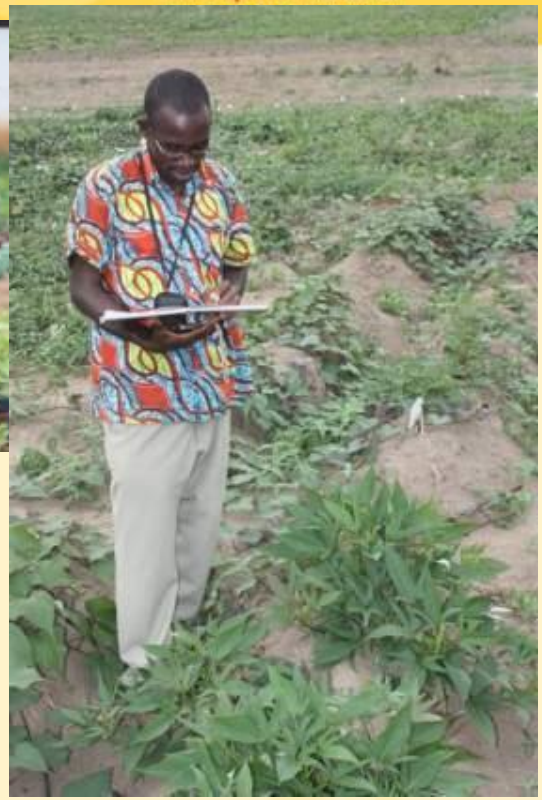
Moving toward:

- More than one trial 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
- Reducing postharvest perishability
- Strengthening breeding capacity in northern Ghana through expansion of ATs and OFTs linked to seed program
- Phenotyping under the new Genomic Tools for Sweetpotato Improvement at 2 sites in Ghana

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 QUARANTINE

In vitro maintenance and multiplication routine, and 3 PT clones available. Ongoing cleanup of remainder of Ghana, BF and Nigeria released and advanced materials

Clean foundation seed is Integral to success of the breeding effort

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Jumpstarting OFSP in West Africa through Diversified Markets

SASHA Sweetpotato Action for Security and Health in Africa

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

Key Concept: It is possible to simultaneously develop value chains for OFSP and maximize nutritional benefits to vulnerable populations.

Two new IRS:
Erna Abidin, Seed Specialist to Ghana and
Justus Lotade-Manje, M+E Specialist to Nigeria.

Commercial seed systems capable of in responding to increased demand

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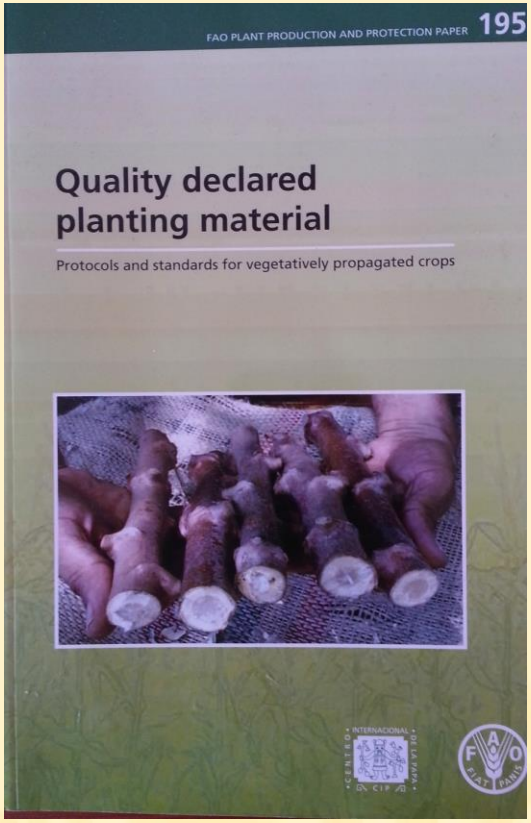
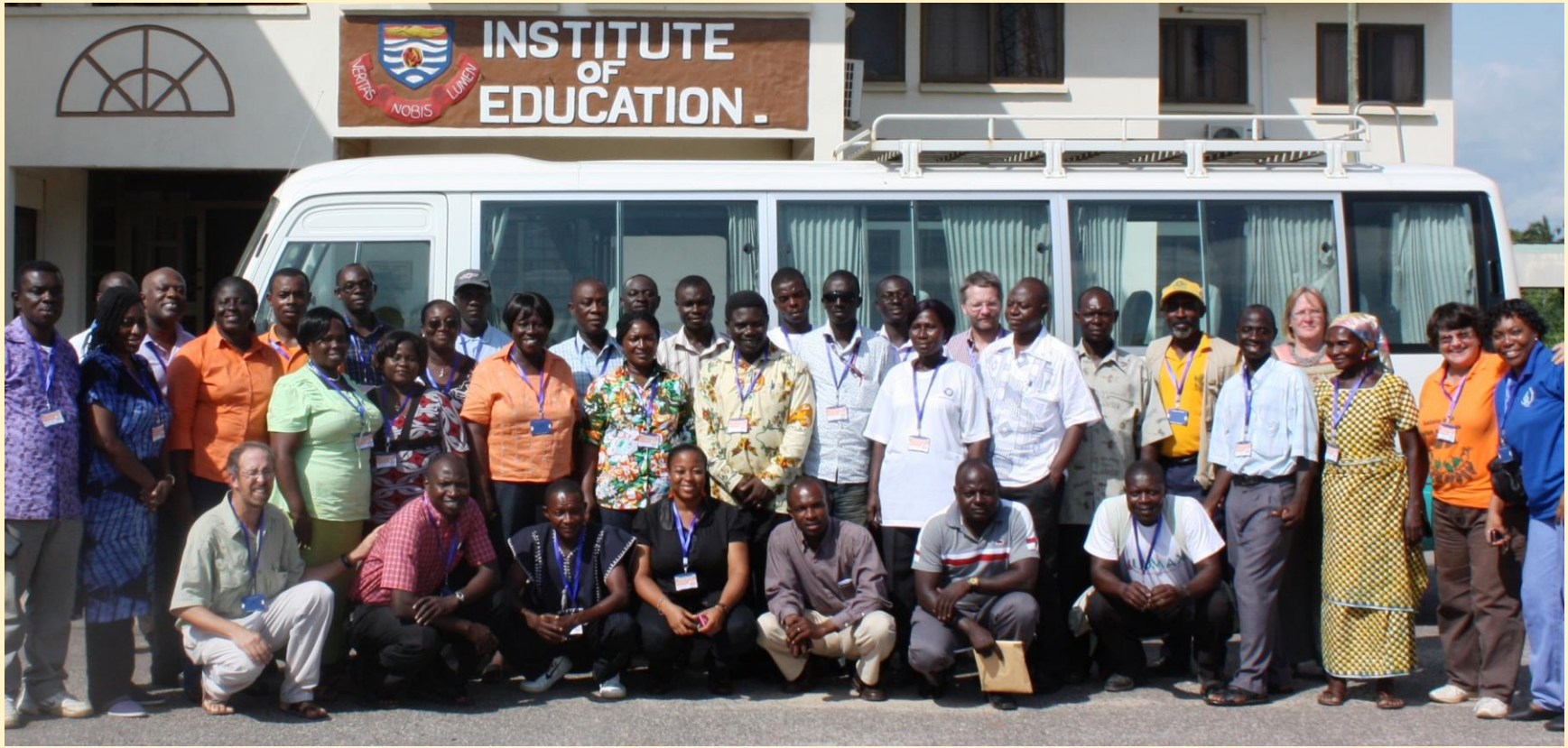


Regional stakeholder platform served a function under SASHA 1



Thank you

SASHA
Sweetpotato Action for Security and Health in Africa

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

CGIAR
Science for a food secure future

CENTRO INTERNACIONAL DE LA PAPA
CIP

COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH
CSIR
GHANA

INERA

ARCN
...today's research is tomorrow's wealth