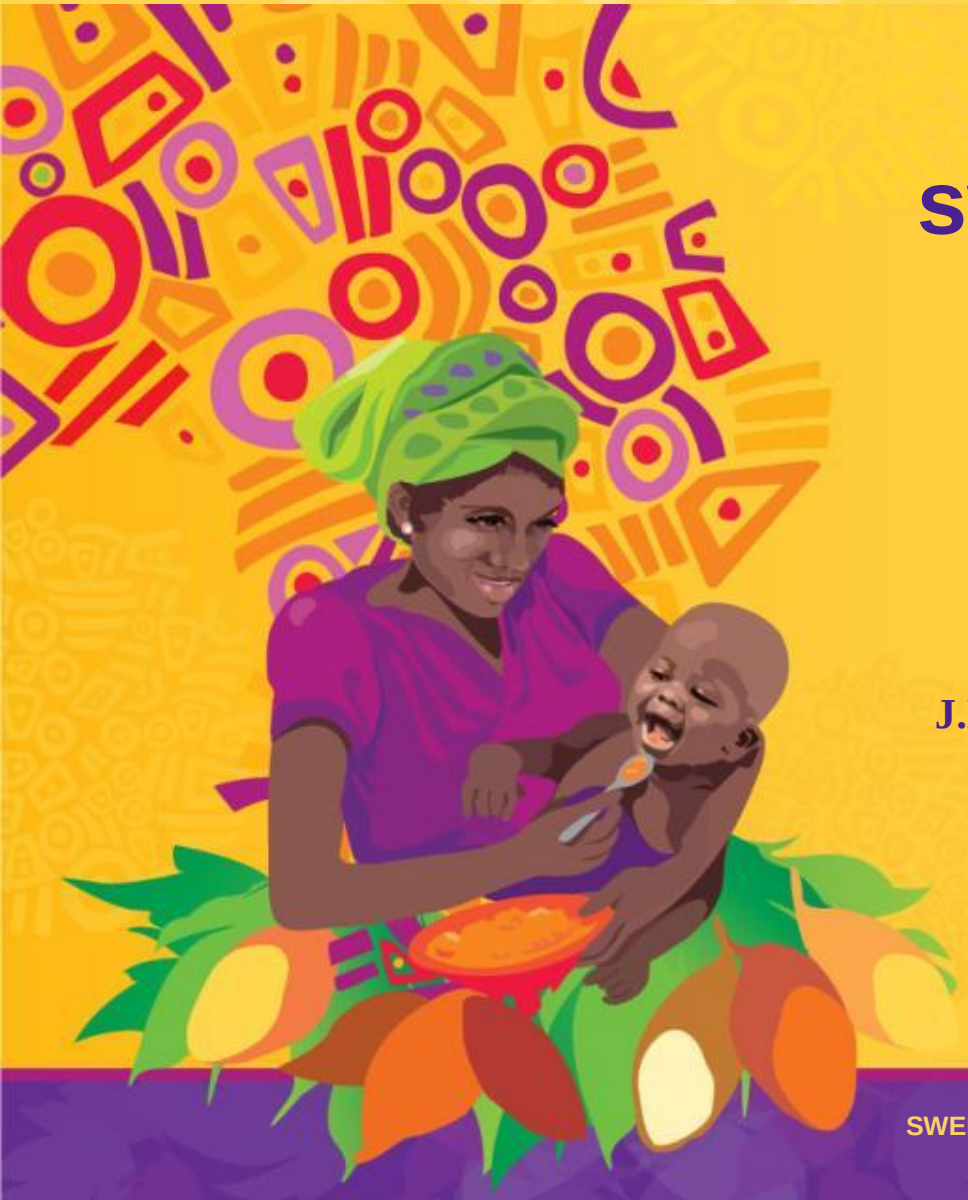
CSIR-CROPS RESEARCH INSTITUTE

RESEARCH FOR DEVELOPMENT

SASHA
Sweetpotato Action for Security and Health in Africa

GHANA

GHANA SWEETPOTATO IMPROVEMENT PROGRAMME



Progress report on sweetpotato breeding in Ghana

J.N. Asafu Agyei, Kwadwo Adofo, Edward Carey, Ebenezer Obeng Bio, N. Asamoah Obeng,

J.K. Awoodzie

SWEETPOTATO ACTION FOR SECURITY AND HEALTH IN AFRICA

CSIR-CRI SWEETPOTATO IMPROVEMENT PROGRAMME

Development of high and stable yielding consumer preferred and accepted sweetpotato varieties.

Production and distribution of healthy primary (breeder) planting materials for technology transfer.

Promotion of improved varieties for consumer acceptability and utilization.

Development of high and stable yielding consumer accepted sweetpotato varieties

SASHA Sweetpotato Action for Security and Health in Africa

Specific Objectives:

To develop varieties that are

- **high and stable yielding**
- **disease and pest resistant (SPVD and Cylas sp.)**
- **high nutritional and processing attributes (*less sweet, high dry matter, high β-carotene, high starch and flour yield*)**
- **consumer acceptable and preferred**

Production and distribution of clean and healthy planting materials

Specific Objective:

To produce and distribute clean and healthy planting materials (breeder seed) for our target clientele to facilitate high technology (varieties) transfer and adoption

Promotion through utilisation (value addition) and marketing

Specific Objective:

To develop

- **diversified products from the consumer accepted varieties**
- **create market niches for Sweetpotato products from preferred varieties**

POST HARVEST RESEARCH
Innovative products from Sweetpotato developed at CRI

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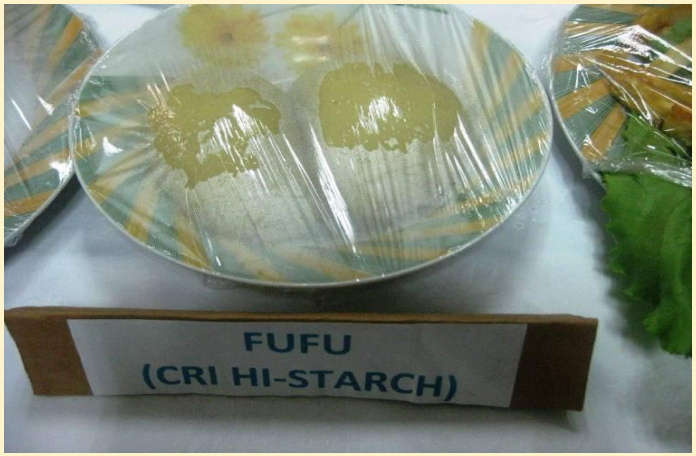
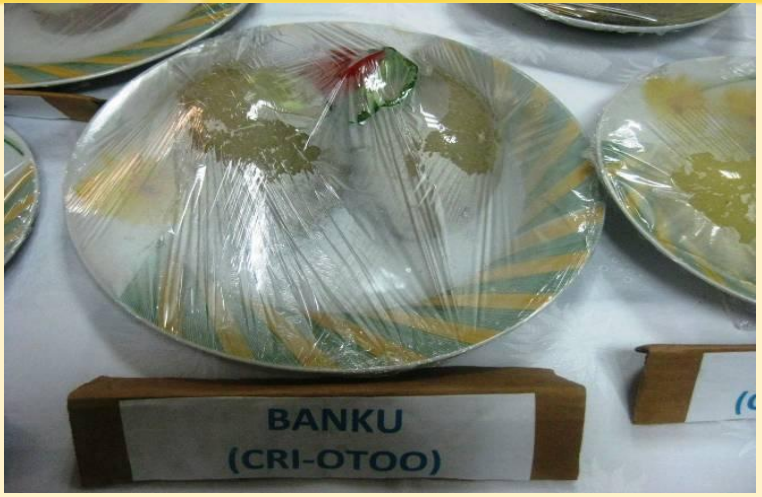
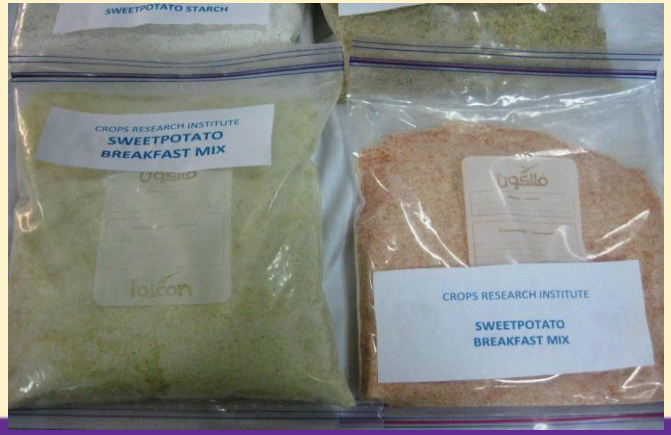
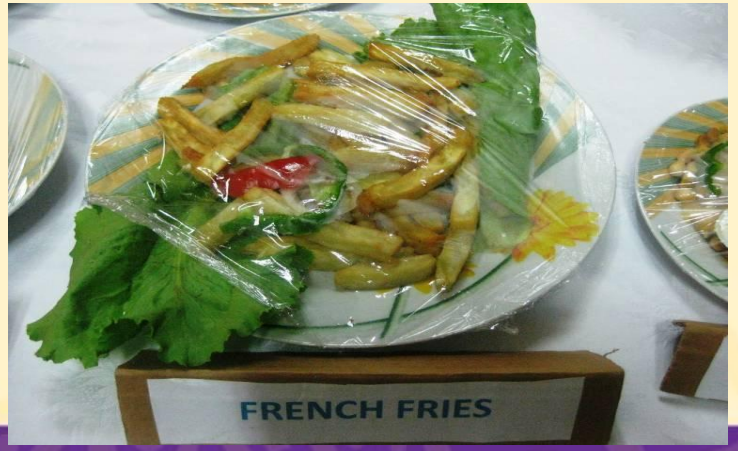
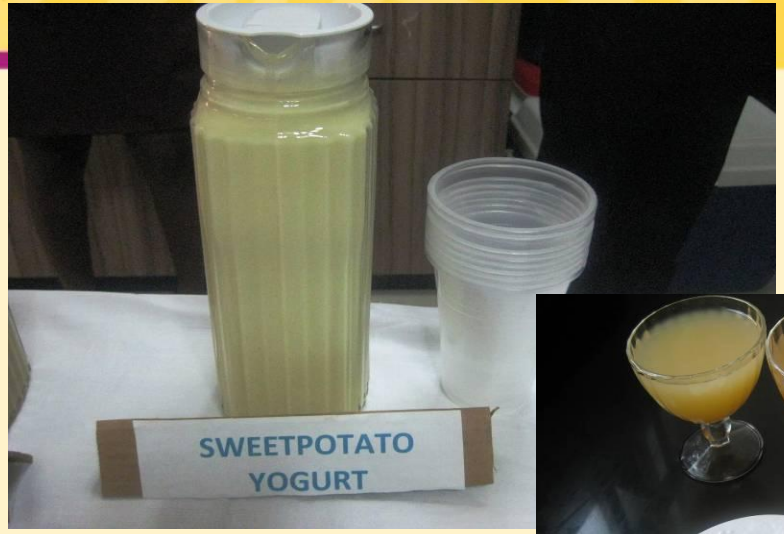


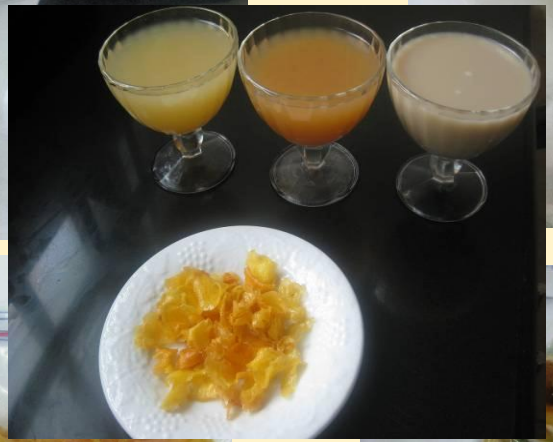


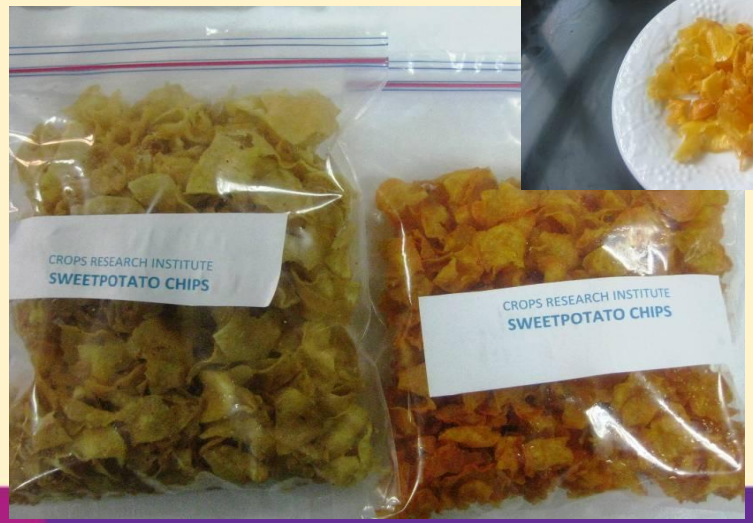


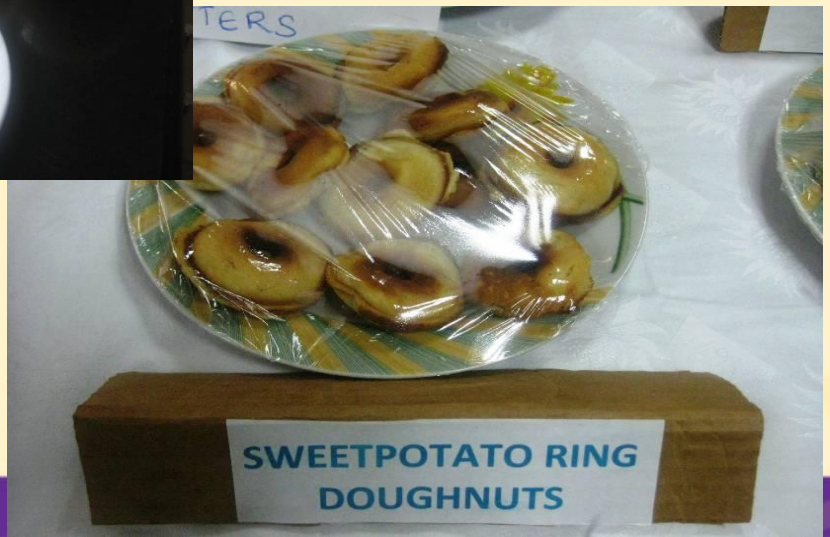


Sweetpotato's potential in the Ghanaian food industry









SWEETPOTATO RESEARCH CURRENT PROJECTS

Under the

West Africa Agricultural Productivity Programme (WAAPP) with support from SASHA (GHANA),

1. Development of high and stable yielding consumer accepted sweetpotato varieties.

2. Production and distribution of healthy primary (breeder) planting materials.

3. Promotion of sweetpotato utilization (Product development).

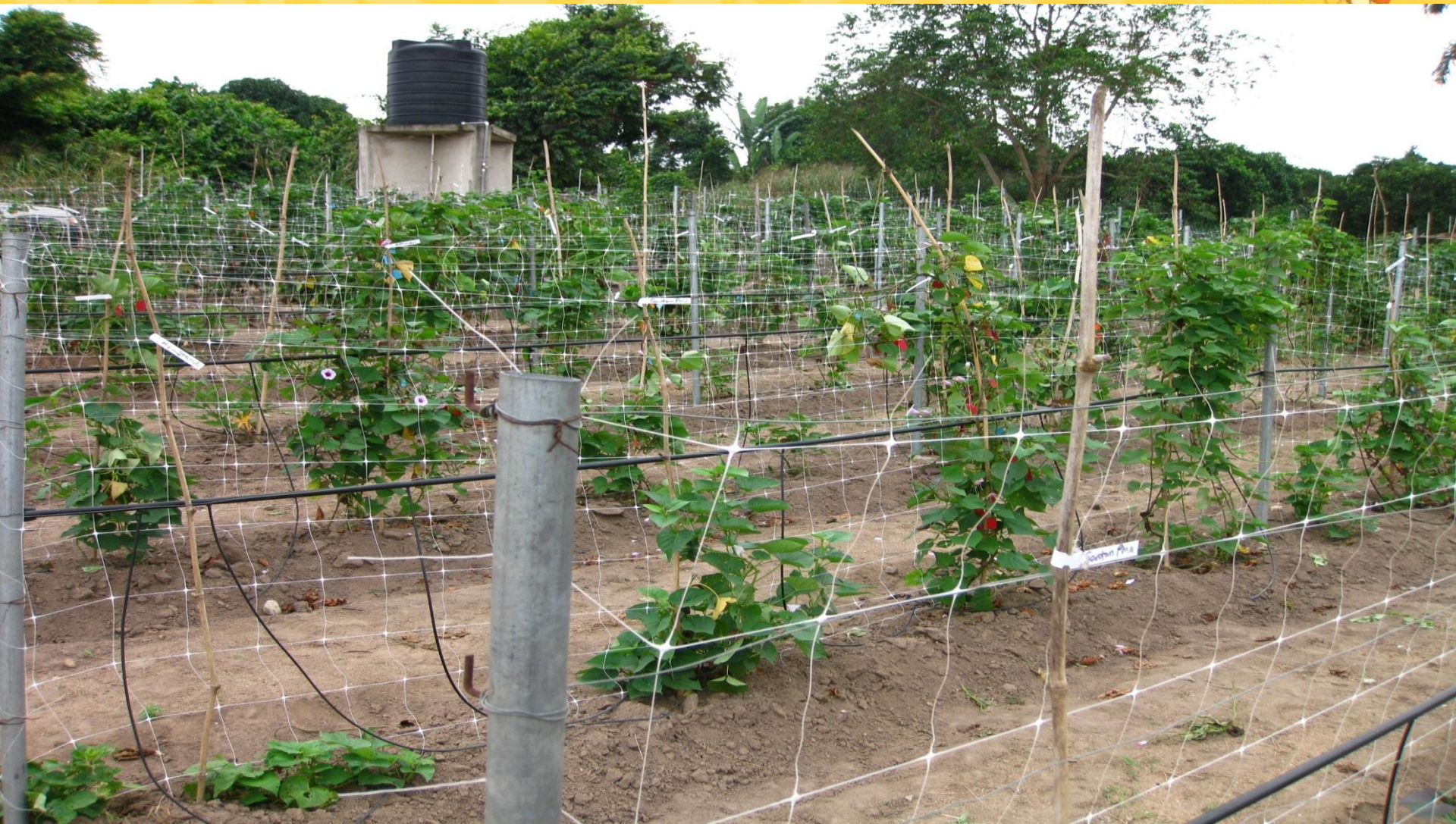
4. Studies on the availability, marketing and consumption of sweetpotato in Ghana.

Type of sweetpotato trials 2012/13

Type of trial		Details	2009	2012 / 13
Crossing blocks				
	1	No. of parents in crossing block		*9 / 48
	2	No. of seed collected from OP		*5864 / 0
		a. Total no. of families of OP seed		*6 / 0
	3	No. of seed collected from crosses		*3938 / 3763
		a. Total no. of families of controlled crosses		*30 / 359
Seedling nursery				
	1	No of seeds planted		2647
	2	No of seedlings established		2262
	3	Total no. of families planted		176

*=National programme/SASHA

SWEETPOTATO HYBRIDISATION BLOCK AT CSIR-CRI



Type of sweetpotato trials 2012/13

Type of trial		Details	2009	2012/13
Observation trial				
(OT)	1	No of clones planted		2269
	2	No of checks (check clones) planted		2
	3	No. of locations		2
Preliminary yield (PT)				
	1	No of clones planted		169
	2	No of checks (check clones) planted		2
	3	No. of locations		4
Advanced yield trial (AT)				
	1	No of clones planted		*12/7/4
	2	No of checks (check clones) planted		*2/2/3
	3	No. of locations		*5/4/4

*= Advanced Yield Trial/Introductory Trial/Varietal Trial


CSIR - CRI / CIP-SASHA
PRELIMINARY YIELD TRIAL
DESIGN: CR
REPS: 2
ENTRIES: 169
PLANTED: 26-04-2012

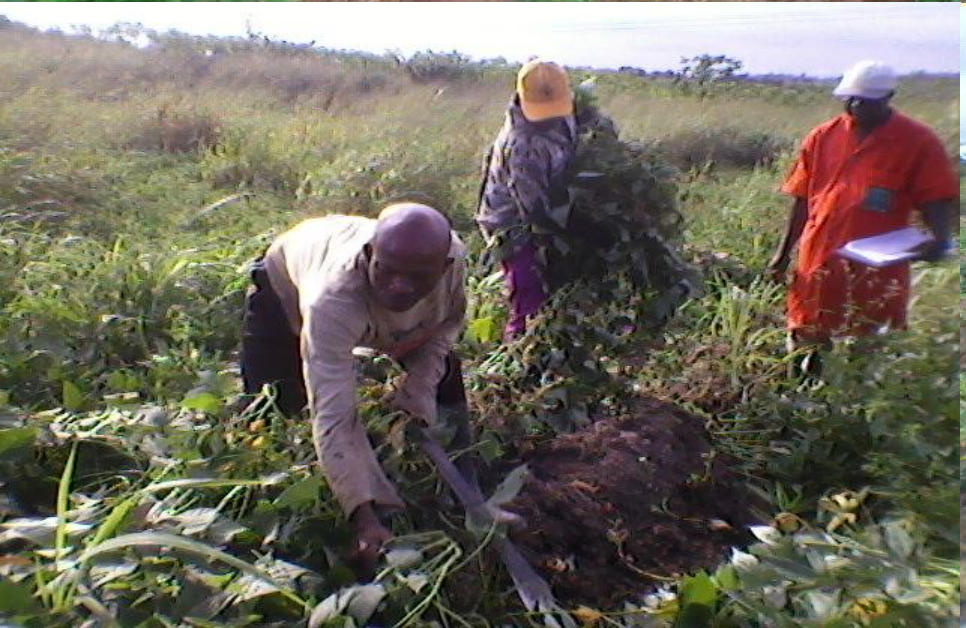

CSIR-CRI / WAAPP
ADVANCE YIELD TRIAL
DESIGN: RCB
ENTRIES: 14
NO. OF REPS. 3
PLANTED: 26-04-2012


CSIR–CRI / CIP
ADAPTIVE EVALUATION OF INTRODUCED SWEETPOTATO CLONES
DESIGN: RCB
ENTRIES: 9
REPS: 3
PLANTED: 26-04-2012

Type of sweetpotato trials 2012/13

Type of trial		Details	2009	2012/13
On-farm trials				
	1	No of farms/farmers/region/district / province		12/12/2/5
	2	Total no. of trials whole country		12
No of varieties released				4
No. of clones in pipeline for realease by e.g. Oct. 2013				






ACHIEVEMENTS

In 1998 CSIR-CRI has released Four varieties which included Sauti, Faara, Santom pona and Okumkom

In 2005, Four new varieties were released

CRI-Apomden:
- **Pot. yield – 35 t/ha.**
- **High B-carotene (vit. A) content**

CRI-Otoo:
- **Pot. yield 23 t/ha.**
- **Medium betacarotene(Vit. A) content**

CRI-High starch:
- **Pot. Yield – 18 t/ha.**
- **21% starch.**
- **Good for fufu, ampesi and industrials uses**

CRI-Ogyefo:
- **Pot. Yield – 20 t/ha.**
- **12.4% starch content.**
- **Excellent for ampesi and fried chips**

Four varieties have been released in December 2012

Character Roots	Genotype			
	Mohc	***Cemsa 74-228***	***Kemb 37***	***199062.1***
Predominant root skin colour	 Dark yellow	 Cream	 Dark purple	 Purple
Root flesh colour	 Dark yellow	 Pale yellow	 White	 Pale orange
Root shape	 Long elliptic	 Round	 Round elliptic	 Obvate
Root surface defects	Shallow longitudinal grooves	Shallow horizontal constrictions	Absent	Absent

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Mohc

- High yields (Potential ~ 20t/ha)
- Maturity: Four (4) months
- **High Dry Matter (34 %)**
- **Beta-carotene level 2800 µg /100g**
- **Highly nutritious: high iron and zinc content**
- **High protein content**
- **High vine yield.**
- **Moderately resistant to C*ylas sp***
- **Moderatelyresistant to Sweetpotato virus disease (SPVD) tolerant**.
- Excellent for ampesi (boiled) and deep-fried (chips).
- **High starch content (69.4 % mg/100g DW)**

Cemsa 74-228

- High yields (Potential ~ 22t/ha)
- Maturity: Four (4) months
- **High Dry Matter (35 %)**
- High starch content (69.5 % mg/100g DW)
- Mild sweetness
- **Excellent taste for forest transition consumers**
- **High vine yield**
- **Moderately tolerant to SPVD**
- **Tolerant to C*ylas sp*.**

Kemba 37

- Medium yields (Potential ~ 18t/ha).
- **Maturity: Four (4) months**
- **High Dry matter (35%).**
- **High Starch content (68 % mg/100g DW)**
- **Excellent starch properties desirable in various foods and industrial applications.**
- **Skin colour and taste highly preferred in Volta region**
- Mild sweetness
- Excellent for ampesi.
- Good quality flour – flour products
- Promote it for fufu and industrial starch production.
- **Tolerant to SPVD**
- **Tolerant to C*ylas sp*.**

199062.1

- **High yields (Potential ~ 22t/ha)**
- **Maturity: Four (4) months**
- **High Dry Matter (31 %)**
- **Excellent for ampesi(boiled) (ampesi) and deep-fried (chips) and French fries.**
- **Good quality flour**
- **High starch content (68.1 %)**
- **Beta-carotene level 5500**
- **µg /100g**
- **Moderately tolerant to SPVD**
- **Tolerant to C*ylas sp.***

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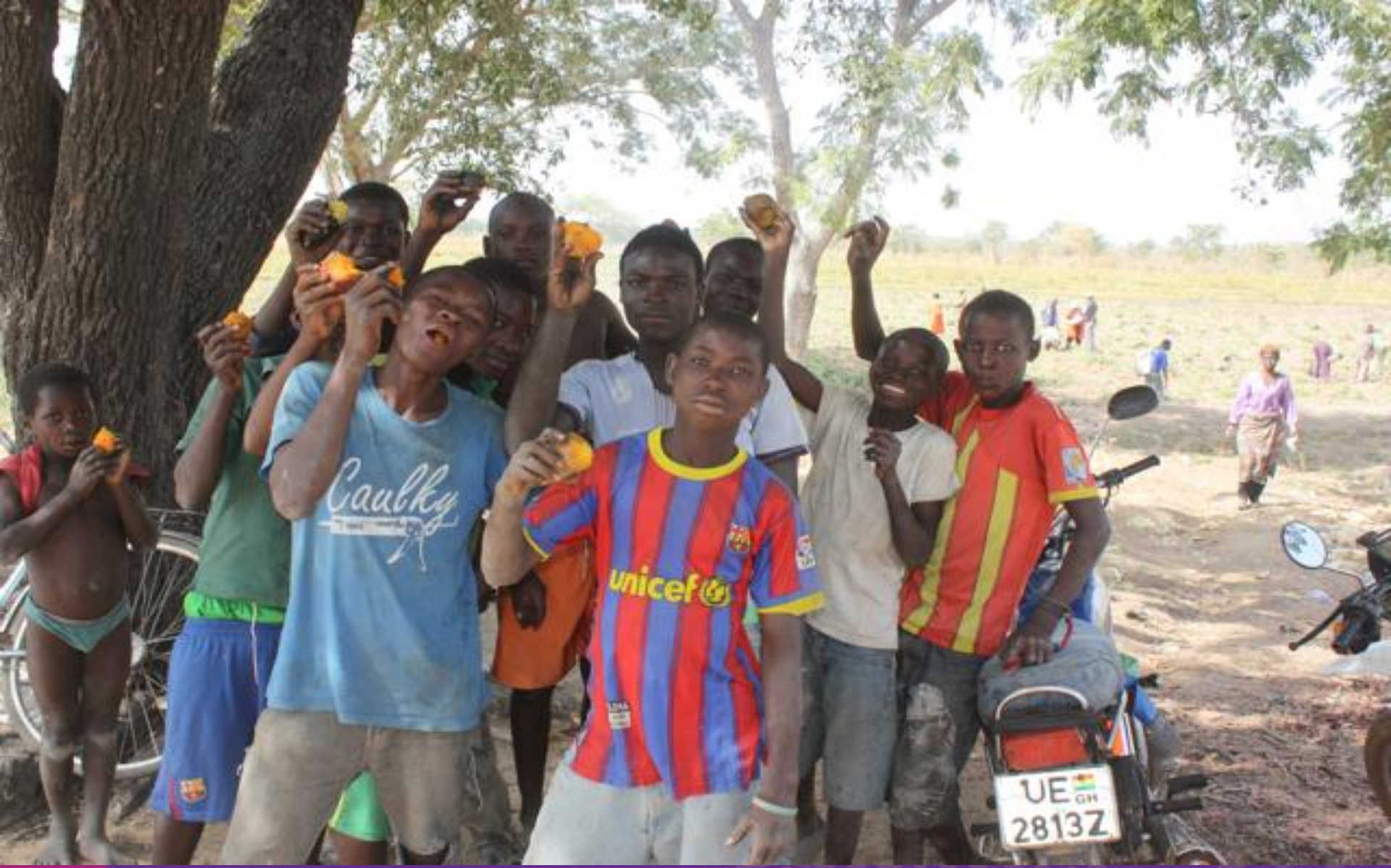
THE NATIONAL VARIETAL RELEASE AND TECHNICAL COMMITTEE INSPECTING THE VARIETAL DEMONSTRATION PLOTS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Other Project Information

- **Funding source/amount /duration**

GOG-WB WAAPP

2 5YR Phase Project (2007-2017)

- **Number of scientists**

(2 core + 7 collaborators) **and technicians in program** (2)

- **Constraints**

Funds, Labour, efficient irrigation system,

Proposed future activities

Germplasm collection of landraces

Hybridisation of landraces & improved

Intensive promotion of newly released varieties