RESEARCH FOR DEVELOPMENT

CSIR-CROPS RESEARCH INSTITUTE, CSIR-CRI, KUMASI

J.N. ASAFU-AGYEI

SWEETPOTATO IMPROVEMENT PROGRAMME

SPONSOR AND COLLABORATOR

SPONSOR: WEST AFRICAN AGRICULTURAL PRODUCTIVITY PROGRAMME (WAAPP)

Under WAAPP for the past four years plus , CSIR-CRI was the National Centre of Specialization (NCOS) , the component that was to strengthen the alignment of national priorities with regional priorities within Ghana (roots and tubers), Mali (rice) and Senegal (cereals). WAAPP did this among others, through upgrading core facilities; building capacity; supporting research and development programmes of the NCOS; supporting farm surveys

COLLABORATIVE EFFORTS: CIP/SWEETPOTATO ACTION FOR SAFETY AND HEALTH IN AFRICA (SASHA)-

---Establishing the Sweetpotato Breeding Support Platform for West Africa at CSIR-CRI, Ghana

UPDATES ON CURRENT ACTIVITIES

CSIR-CRI SWEETPOTATO ACTIVITIES

Presented at the 'Sweetpotato Support Platform' meeting,
CSIR-INSTI, Accra, Ghana June 26,2012

Map of Ghana with Eco-zones

Significance

Region	Agroecological zone	Role of sweetpotato	Preferred type of sweetpotato
Central	Coastal Savanna	Commercial	Yellow skin, yellow flesh
Volta/Greater Accra	Coastal Savanna	Commercial/Food security	Red skin, white flesh
Upper East	Guinea/Sudan Savanna	Food security/less commercial	Skin color less important, OFSP exist
Ashanti	Forest	Insignificant	Minimal preference
Brong Ahafo	Forest &Transition	Insignificant	Red skin,white flesh
Eastern	Forest	Some commercial activity	Yellow skin, yellow flesh produced to market
Northern/Upper West	Guinea Savanna	Some activity	Red skin, white flesh
Western	Forest	Insignificant	Minimal preference

CSIR-CRI SWEETPOTATO IMPROVEMENT PROGRAMME

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

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

C. Promotion of improved varieties for consumer acceptability and utilization.

How we work at CRI. Who and what are involved?

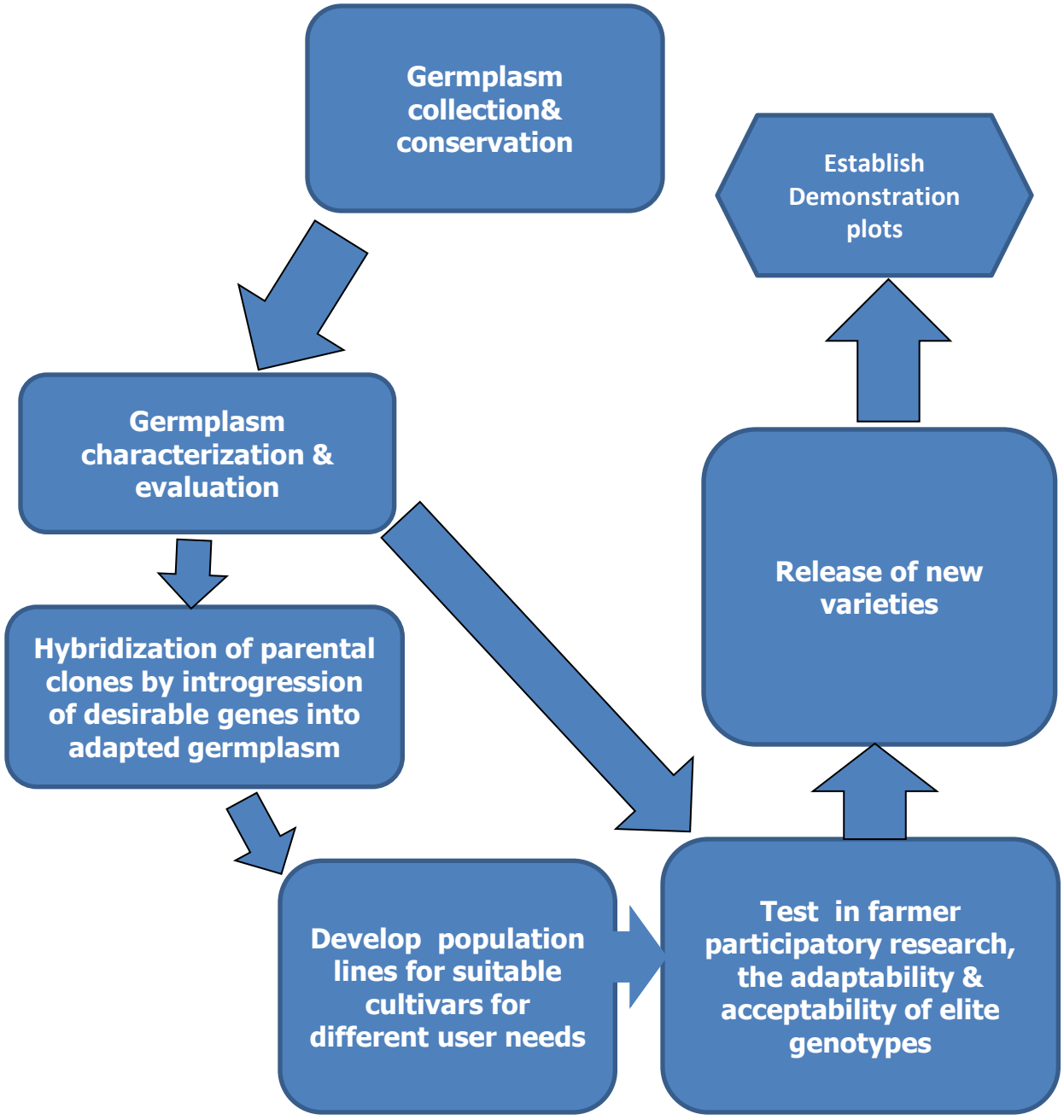
A. DEVELOPMENT OF HIGH AND STABLE YIELDING CONSUMER ACCEPTED SWEETPOTATO VARIETIES.

Overall objective:

- Develop high and stable yielding, high DM, high beta-carotene, disease and pest resistant sweetpotato varieties.

Specific objectives:

1. Collect and conserve local and exotic (introduced) germplasm.
2. Evaluate the morphological, agronomic and molecular characters of germplasm.
3. Develop population lines for suitable cultivars for different user needs
4. Hybridize parental clones by introgression of desirable genes into adapted germplasm or genotypes.
5. Test the adaptability and acceptability of elite sweetpotato genotypes through farmer participatory research.
6. Incorporate growers and consumers preferences in the development and release of new varieties.


Germplasm collection& conservation
Germplasm characterization & evaluation
Hybridization of parental clones by introgression of desirable genes into adapted germplasm
Develop population lines for suitable cultivars for different user needs
Test in farmer participatory research, the adaptability & acceptability of elite genotypes
Release of new varieties
Establish Demonstration plots

Develop population/lines for suitable cultivars for different end user needs. Focus:

1. Low sugar, high starch, high DM cultivars. For staple foods, industrial processing HQSPF and for food security

2. High sugar High starch, high DM cultivars for beverage confectonaries,pastries, desserts,snacks breakfast foods and as substitutes

High & Stable Yielding Varieties tolerant to diseases & Pests (OF or W/CF) released or targeted for release

3. High Beta-carotene Rich, high DM Content, high starch cultivars to combat Vit A deficiency and Hidden hunger

Genotype	Skin color	Flesh color		Total sugars (%)	Dry matter %	Total Yield (t/ha)
Mohc	Cream	Light orange		14.4	35.6	16.7
199062.1	Pale orange	Light orange		15.9	32.9	19.8
Cemsa 74-228	Cream	Pale yellow		14.7	36.5	18.4
Kemb 37	Purple	White		17.6	34.4	11.1
Apomuden	Orange	Deep orange		29.5	20.3	20.5
Otoo	Cream	Light orange		16.1	34.8	14.7
Ogyefo	Light purple	White		12.7	36.7	12.6
Hi-starch	Creamy brown	Cream		12.2	46.2	10.3
Sauti	Cream	Yellow		17.3	35.5	3.2
Faara	Deep purple	White		13.4	36.9	12.1
Okumkom	Light purple	White		19.5	35.2	16.1
Santom pona	Light cream	Light yellow		36.8	39	20.2

Scheme for timely healthy planting material production

Produce & supply healthy planting materials of released varieties for national and international needs

Train farmers in rapid techniques for conserving & multiplying planting materials

Establish community based, sustainable seed production & distribution systems

Improve vine conservation and multiplication methods

Identify valley bottoms with residual moisture to be used in areas without irrigation facilities

SUPPLY TO MoFA in 2011

Were to be multiplied in 2011 to be supplied to farmers to plant in 2012 (Multiplication ratio of 1:10 approx. MoFA needs small quantities for their stages of multiplication)

- Asuansi:

  Faara, Ogyefo, Santom Pona, Apomuden, Hi-Starch, Okumkom, Sauti, Otoo

- Wa West

  Ogyefo, Faara, Apomuden

- Kassena Nankana, GaruTempane, Jirapa Districts

  Faara, Ogyefo, Santom Pona, Sauti, Otoo

- Akatsi

  Faara, Ogyefo, Santom Pona, Apomuden

- Efutu

  Faara, Santom Pona, Ogyefo, Sauti

- UCW Mampong Campus

  Santom Pona, Faara, Sauti, Hi-Starch, Okumkom, Otoo, Ogyefo, Apomuden

SWEETPOTATO POSTHARVEST ACTIVITIES (2011)

2.1 Quality assessment of available sweetpotato germplasm/ Sensory evaluation of elite clones

2.2 Development of new products from sweetpotato

2.3 Promotion of sweetpotato utilization

- Community focus (training/demonstration, Central Region)
- Exhibitions

SUMMARY

- ✓ Evaluating newly introduced clones from East Africa for better qualities and alternative uses . Also the local BLUE BLUE is included
- ✓ Engaged in hybridizations to improve traits of interest such as high beta-carotene content, high dry matter, low sugar content. Interest especially on virus resistant materials and non sweet and low sweet clones.
- ✓ 16 clones at AYT stage in on-station trials
- ✓ Preparing to propose four elite clones for possible releases
- ✓ **Primary materials being multiplied for MoFA for dissemination.**
- ✓ **In-vitro conservation/multiplication of clean planting materials of all the released/elite varieties to support primary material production.**