Sweetpotato Breeding Efforts at the NRCRI, Umudike, Nigeria: The Role of SSP-WA in Supporting NARIs.

BY

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SUMMARY OF OUR BREEDING ACTIVITIES:

All sweetpotato breeding activities at the NRCRI are being funded under the Sweetpotato AGRA Project

1)Development of new populations and the selection of desirable genotypes

Picture from: Rossel G., Espinoza C., Javier M. and Tay D. 2008. Regeneration guidelines: sweet potato. CGIAR System-wide Genetic Resource Programme, Rome, Italy. 9 pp.

- Sexual seeds developed from different locations (high and low latitudes)and from different parents (white and orange-fleshed parents) through the polycross technique.

❖Seedling development and seedling screening for SPVD resistance, root flesh colour, root shape.

❖Preliminary yield trial (PYT) of 33 clones in 2011 in three locations.

❖Advanced yield trial (AYT) evaluating 10 clones in two agro-ecologies.

The traits of interest include (not in the order of importance):

- High fresh root yield
- High beta-carotene content
- bland taste
- SPVD and *Cylas* spp tolerance
- high dry matter content
- high starch content
- high flour content

2) Pre-Release Multi-locational Trials

•8 Multi-locational trials of elite sweetpotato lines for selection of lines best suited for specific ecologies.

- 6 OFSP and 7 WFSP lines involved

- Data needed for nomination of lines for final release as new varieties by the National Varietal Release Committee.

3. NRCRI Breeding Programme: Interactions with Sweetpotato Farmer Groups

- Screening of over 100 new clones on-station and on carefully selected sweetpotato farmers fields.

- Sweetpotato Value Chain Workshop organized by the Federal Ministry of Commerce and Industry.

Utilization

Research to enhance OFSP consumption

Substitution of highly seasonal and ecologically limiting carrot with cheap and readily available OFSP in fried rice.

OFSP juice compares favorably with commercial juice: Shelf life and carotenoid retention trials for 2011.

Staff panelists sampling OFSP and commercial juice

Sweetpotato Starch Production

Evaluation of OFSP and WFSP cultivars for their starch content.

How Can SSP-WA Assist?

1. Development of New Populations For:

- bland taste for Nigeria
- SPVD-resistant OFSPs adaptable to high SPVD pressure environments, and with high DM
- Drought-tolerant lines

2. Training on Virus cleaning and In-vitro conservation of our sweetpotato germplasm

CIP 440293 and
CIP 440037 from
in-vitro culture

The tissue culture-sourced materials are being compared against the field-sourced materials

A typical OFSP in the nursery: Most OFSP lines are highly susceptible to SPVD.

Umudike-bred NRSP/05/022.
Roots have light orange color with high dry matter.
Undergoing MET for release.

Imported CIP 440293
Has deep orange roots.

Constraints to effective breeding and utilization of sweetpotato.

- Conservation of breeding lines and germplasm through the dry season: Implications of lack of irrigation facilities.
- Lack of capacity for virus cleaning and indexing.
- Lack of bland taste gene in the NRCRI, Umudike sweetpotato gene pool.
- Lack of awareness about the health and economic benefits of sweetpotato.
- Lack of market for sweetpotato produce.

Way Forward

- Capacity building in tissue culture approaches to virus cleaning and indexing;
- Aggressive and sustained awareness creation for OFSP as health intervention crop – Funding needed.
- Integration of sweetpotato into the food processing chain
- Sweetpotato production, marketing and utilization survey

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