

# SWEETPOTATO RESEARCH AND DEVELOPMENT IN MALAWI

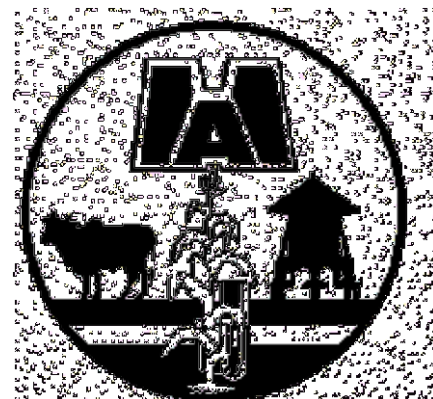
Prepared by

Putri Ernawati Abidin PhD

Felistus Chipungu PhD  
Ibrahim Benesi PhD  
Obed Mwenye



**Alliance**  
for a Green Revolution  
in Africa



Presented at the sweetpotato crop breeders' meeting in Maputo,  
Mozambique (26<sup>th</sup> June to 1<sup>st</sup> July 2011)

# Introduction

- ❑ While maize is the staple food crop in Malawi
- ❑ Sweetpotato is also important in crop diversification as a secondary source of carbohydrate
- ❑ It is a source of employment and cash incomes and several important nutrients

# Varieties

Varieties	Yield (t/ha)	Origin	Remarks
Yoyera and Kamchiputu	3-7	Local	Eroded- recommended early 80's
Kenya (SPN/O, Kemb 10)	20-25	Tanzania	Released in 1988, widely grown.
Lunyangwa	20	Local bred	Released early 1990, low adoption
Kakoma (TIS 3017)	20-25	IITA	Released in 1994, low adoption
Semusa (Cemsa 74-288)	25-30	CIP	Released in 1999, Highest yielding among the released, being adopted
Mugamba (Mogamba)	20-25	CIP	Released in 1999, low adoption
Tainoni (Tainon 57)	20	AVRDC	Released in 1999, low adoption
Salera (CIP1941 121)	20-25	CIP	Released in 2002, low adoption
Zondeni	8-16	Local	Recommended 2008-increased uptake
Sakananthaka	20-25	Local bred	Released 2008- being adopted

# **Sweetpotato projects**

## **To complement Gov efforts**

### **Breeding sweetpotato in Malawi for Malawi:-**

- funded by Alliance for a Green Revolution in Africa (AGRA)
- Aim at variety development (diversification)

### **Rooting out Hunger in Malawi with Nutritious Orange-fleshed Sweetpotato-**

- funded by Irish Aid through International Potato Centre (CIP)
- Aim at improving seed system for farmers to access disease free seed on time (OFSP)
- Value chains

# Overall objectives of R & D

## To improve rural livelihood

- Important in crop diversification for improved food and nutrition (vitamin A) security

- Source of employment and cash incomes





# Implementing Partners

- ✓ International Potato Center (CIP)
- ✓ The Department of Agricultural Research Services (DARS)
- ✓ Concern Universal (CU, Dedza and Phalombe)
- ✓ Chikhwawa-Catholic Development Commission (CADECOM)
- ✓ The Millennium Village Project (Zomba)
- ✓ The Department of Agricultural Extension Services (DAES) and crops (DCD)



# Progress- breeding activities

## On-station activities

**Population  
development and  
screening**

**Over 6000 true seeds  
in a seedling nursery**

**Clonal nursery in 2  
sites (Makoka and  
Bvumbwe- under  
speed breeding)  
Over 1200 clones**

**PYT, AYT and UYT  
multi-site genotype  
evaluation**





# More challenges

White grub





# Promising genotypes

## Orange fleshed

LU06/0146

LU06/0428

LU06/0252

LU06/0527

BV07/008

BV07/019

BV07/028

## White fleshed

LU06/0056, LU06/0137,

LU06/0196, LU06/0258,

LU06/0299, LU06/0432

Yields  $\geq 20\text{t/ha}$



## **LU06/0252**

- Medium dry matter- 28%
- Medium tolerance to weevil and white grub
- very good vegetative retention for seed and vegetable





**LU06/0527**  
-Orange fleshed  
-Tolerant to weevil  
-Moderate tolerance  
to white grub



**LU06/0146**



- Pale orange
- Best under irrigation and residual moisture conditions in the very hot to hot areas of the Shire Valley
- Edible leaf vegetable



**LU06/0428**

**Very early maturing-  
3 moths and  
therefore good for  
piece harvesting**



**-Yields up to  
30t/ha**

**-Edible roots**



**BV07/008**

- Over 25t/ha**
- High dry matter content- 33%**





# On-farm activities



**Participatory genotype evaluation  
and variety development**

# Seed systems activities

- strengthening the partnership with other gvt departments, NGOs, and private sector
- Seed systems establishment- 3 tier
- training, visits, and field days
- voucher systems for vine dissemination
- product development and markets





# Progress- seed systems

- 4 ha Zondeni (1.5ha other varieties) Primary Multiplication at BV
- 4,033 plantlets of disease free Zondeni to serve as foundation seed stock
- Capacity building- human and infrastructure
- demand creation- dances, poetry, songs, banners etc)





# Schematic Presentation of the 1, 2, 3 Vine Multiplication System

## Vine Flow

Primary

A 1, 2, 3 (primary, secondary, tertiary) system was implemented

Bvumbwe Research Station—2 ha (Y1);  
4 ha (Y2, Oct. 2010) and tissue culture lab

Secondary

Group of farmers supervised by extension and NGOs; act as demos

Trained multipliers—4 ha

Tertiary

Decentralized individual or group multipliers, trained (DVMs)

To  
Producer

# Sweetpotato Value addition

## Small scale enterprises

Price fluctuations of fresh roots (season)

Utilise the excess produce for more money- nutritious scones/buns (OFSP)







## Member of Parliament

Saw this as one of the solutions to sweetpotato market problems

Wants to see replication of the unit





# Large scale processors

**Sweetpotato crisp-** Cordiner, LU06/0527,  
**Mugande**, Kenya, LU06/0428, **LU06/0252**, Zonden



# Sweetpotato flour

- Biscuits from Zondeni flour
- Biscuits ranked high
- Needs more study- pro-vitamin A content in the final product (biscuits)
- Need explore other bakeries





## Future plans

- Release of new varieties, cleaning (in-vitro) and multiplication of the new varieties

- 0.1 ha each variety by November 2011

- **Vine beneficiary target (November 2011)**

- 24,000 new households to receive subsidized vouchers

- 6,000 households per district (4 districts- Chikhwawa, Zomba, Phalombe and Dedza)

**More work on value addition and marketing**

**Thank you very much for  
your attention**

