Breaking postharvest bottlenecks: Long-term sweetpotato storage in adverse climates

"PROGRESS IN MALAWI"

Sweetpotato Profit and Health Initiative ERNA ABIDIN & team

SPHI

Malawian team: CIP, CRS, Mzuzu-CADECOM

A USAID-OFDA Disaster Reduction Research: Onfarm Sweetpotato Storage in Ghana and Malawi



## **Implementing organization and Project area:**

- International Potato Center (CIP)
- Catholic Relief Services (CRS)
- Catholic Development Commission based in Mzuzu, North Malawi (Mzuzu-CADECOM)
- Three farmers' communities in Central and Northern Region of Malawi: Zombealaki, Kasungu District: S12° 24.684'; E 033° 24.666'; 1,176 m asl Chizerema, Kasungu District: S 12° 30.361'; E 033° 26.211'; 1,252 m asl Champira, Mzimba District: S 12°19.863'; E 033° 35.531'; 1,445 m asl These communities are under the supervision of CRS-CADECOM

## **Strategic plans**



- Identifying the key individual farmers.
- > Getting an appropriate numbers of farmers.
- Refreshing the knowledge and skills of the NGOs and government extension and the farmers on sweetpotato production management, postharvest handling, and processing and utilization.
- Training on the data collection and management (extension & farmers).
- Setting up the trial at harvest and data collection.





> 3 villages/sites in 2 districts

- > 3 replicates per village
- ➤ 3 storages:

Afghanistan ventilated pit storage Ladder pit storage Granary

 $\geq$  2 types of sweetpotato:

Local varieties (white and yellow flesh) OFSP (Zondeni)

# **Data Collection**



#### Test of consumer acceptance at

0 month: mid May 2014 1.5 months, end of June 3.5 months, end of Aug 2014 7 months, end of Nov 2014

#### Test on market orientation:

End June 2014 during the peak sweetpotato harvest period End Nov 2014 where the sweetpotato is scarce

Test on Beta-carotene for OFSP varieties: End of June and End of November 2014

Temperature and RH are measured using HOBO at each observation

What we have done at pre-trial? Trained farmers on negative selection for SPVD and pest incidence in March 2014



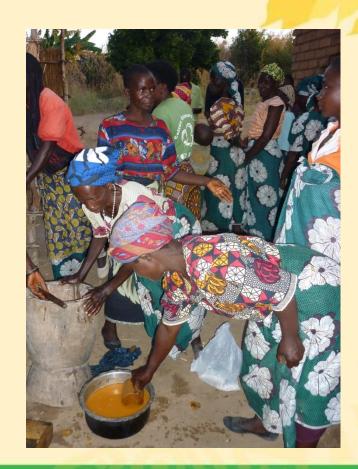




Trained farmers on Processing and Utilization in May 2014: Increase of knowledge on OFSP utilization and processing







### What we have prepared?

SPHI



Mandazi, Juices (leaves and roots), One-pot meal (at least 3 food groups in a dish based on National Nutrition Policy guideline)

## **Number of participants**



District	Site & EPA	Men	Women	Total
Kasungu	Chizelema- Kaluluma EPA	17	15	32
	Zombealaki –Kaluluma EPA	5	18	23
Mzimba	Njomani – Champhira EPA	7	19	26
Total		29	52	81

# **Data collected at harvest**



Site	Yield Estimate Plot (kg/4 m <sup>2</sup> )		Yield (t/ha)	
	Local	Zondeni	Local	Zondeni
Champira	6	24	15	60
Zombealaki	4	12	10	30
Chizerema	6	12	15	30
Average	5.3	16	13.3	40



### Afghanistan Ventilated Pit Storage



**Treatments** 





Size: 2x1x1 m Number of roots: 200 roots Weight: Local: 34 kg; Zondeni: 35.8 kg No dry sand

### Ladder Pit Storage with "dry" sand









Size: 0.6 x 0.6 x 0.5 m Number of roots: 200 roots

Weight: Sand: 40 kg Roots: Local: 29.9 kg Zondeni: 28.3 kg



Size: Height: 1 m and Diameter: 1 m Number of roots: 100 roots Weight:

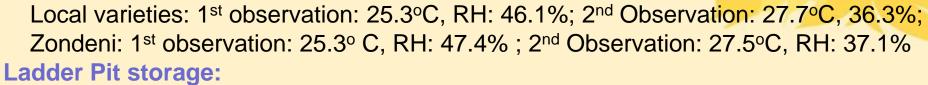
> Sand: 400 kg Roots: Local: 16.7kg; Zondeni: 34.5kg



## **Preliminary Results**

### **Temperature and Relative Humidity (RH):**

#### **Granary:**



Local varieties: 1<sup>st</sup> observation: 25.1°C, RH: 52.1%; 2<sup>nd</sup> Observation: 25.1°C, 45.3% Zondeni: 1<sup>st</sup> observation: 25.3° C, RH: 51.4% ; 2<sup>nd</sup> Observation: 26.1°C, RH: 50.3% Afghanistan pit Storage:

Local varieties: 1<sup>st</sup> observation:24.8°C, RH: 59.9%; 2<sup>nd</sup> Observation: 26.7°C, 45.5% Zondeni: 1<sup>st</sup> observation: 23.7° C, RH: 65.7% ; 2<sup>nd</sup> Observation: 26.8°C, RH: 47%

- We have done the sensory observation twice but we need to do one more observation in Nov for getting an accurate result.
- Shriveled, sprouting, rotten, bad smelling, sweetpotato weevils damage and reducing weight were recorded and we need one more observation, thus data are yet to be analyzed.
- Rats and termites are the serious problem for Afghanistan pit storage while termites are found to be a problem for Ladder pit storage. Some replicates do not have roots any more from the Afghanistan pit storage for the last observation in Nov.



# Thank you very much for you attention





