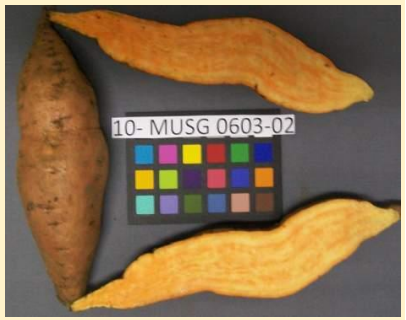
CIP's Sweetpotato Progress Program in Sub-Saharan Africa Breeding & Germplasm Management in Mozambique

Maria Andrade and the team
Breeder /Seed System

Sweetpotato Support Platform Southern Africa
30 October 2013

Major Constraints Identified and Prioritized

1. Lack of timely availability of adequate quantities of high yielding of disease-free planting material
2. Weevils damage in drier zones
3. Poor agronomic practices
4. Limited demand and inadequate markets
5. Limited awareness of potential contribution of the crop
6. Limited information exchange to maximize investment return



The Goal set out in 2009:

To invest in breeding, seed systems and sweetpotato stakeholders' capacities in 17 Sub-Saharan Africa (SSA) countries so that, in 10 years, 10 million families enhance crop income by 15% and diet quality by 20% through increasing output and intake, diversifying use, and building gender-equitable market chains

Seven major components

1. ***Conventional Population Development & Varietal Selection***
2. ***Weevil Resistant Sweetpotato***

3. ***Seed Systems Research & Improved Germplasm Management***
4. **Other Crop Management & Post-Harvest Research**
5. ***Effective Delivery Systems & Dissemination***

6. **Capacity Strengthening (*Support Platforms* & Training Programs) at Sub-Regional Level**
7. **Advocacy, Policy, and *Information Systems***

Highlight: Breeding/Seed System

- **Successfully released 15 varieties in 4 years using Accelerated breeding**
- **Heterosis can be applied in sweetpotato breeding to improve storage root yield**
- **Clone Selector, Excel-based, easy for use in SSA**
- ***The Triple S System (*Sprouted roots planted out to produce vines)**
- **Link OFSP to Health Services for Pregnant Women**
- **Testing Sweetpotato Silage Use for Cows and Pigs**
- **Develop Rwanda Value Chain**

Major Objectives: Breeding & Seed Systems Southern Africa Platform

SPHI Sweetpotato for Profit and Health Initiative

On Breeding:

Generate **drought resistance, orange-fleshed sweetpotato** ***that combine different quality characteristics with significant improvements in yielding ability***

On Seed System:

Establish community based seed systems for good quality seed dissemination and develop & test **strategies for the multiplication and dissemination of sweetpotato varieties**

Major Achievements to Date Breeding

- Two genetically separate populations developed with new drought screening techniques

- First recurrent selection cycle for drought stress adaptation in two independent controlled cross populations in Mozambique by an accelerated breeding scheme (ABS) achieved in **2011**

- Drought adapted population disseminated as true seed (Half-sib) to NARS breeding programs from 12 SSA countries (5,000 seeds each) in June 2011

Major Achievements to Date cont. Breeding

Indicator/Year	2009/10	2010/11	2011/12	2012/13	Total
Nr of trials established	83	116	82	68	**349**
Nr of on-farm trials	205	171	41	40	**457**
Nr of clones evaluated	40,201	13,769	18,834	11,926	**84,529**
Nr of seeds collected	114,786	70,786	132,657	210,681	**528,910**
Nr of variety released	3*	-	15		**18**
Nr of potential clones to test for variety release	-	-	77	25+32	**134**

Major Achievements to Date cont Seed System

Indicator/Year	2009/10	2010/11	2011/12	2012/13	Total
Area per hectares multiplied (on-station)	3.7	18	32.5	8.5	**62.7**
Nr of DVM	13	188	210*	278**	**278**
Area per hectares multiplied DVM/ contact farmers	3.8	37.6	57.5	70***	**168.9**
Kilograms of Vines	87,250	550,440	916,040	804,000	**2,357,730**
Nr of beneficiaries (Households)	20,729	91,740	94,800	134,000	**341,269**

Major Achievements to Date, cont., NIRS &Tissue Culture Laboratory

Indicator/Year	2010/11	2011/12	2012/13	Total
Nr of plantlets multiplied (lab)	6,441	8,993	14,489	**29,923**
Nr of plantlets cleaned (lab)	3,246	3,959	1,824	**9,029**
Nr of plantlets acclimatized (greenhouses)	696	234	614	**1,544**
Nr of samples processed (NIRS)	1,121	5,059	9,552	**15,732**
Nr of samples analysed (NIRS)	820	5,059	8,492	**14,371**

Promotional events, Trainings, Meetings, Field Days July 2012 –June 2013 in Mozambique

- More then 135 days were spent on these activities in 2013. More than 494 people participated

Training:

- Technicians, collaborators, farmers and Staff on all aspects of sweetpotato

Planning Meetings

Media

- Television, Radio Interviews, Newspaper

Bono Vox accompanied by* Jeff Raikes *CEO BMGF singing "Gabagaba Yeah", (which means good sweetpotato variety yeah) in the field of Mr. Armando

President Moz and Cape Verde Visiting CIP Mozambque

Prime Minister of Moz visiting CIP, Governor of Maputo City speaking to the participants during the field tour

Minister of Agriculture Moz during PIAT Meeting

Thank you

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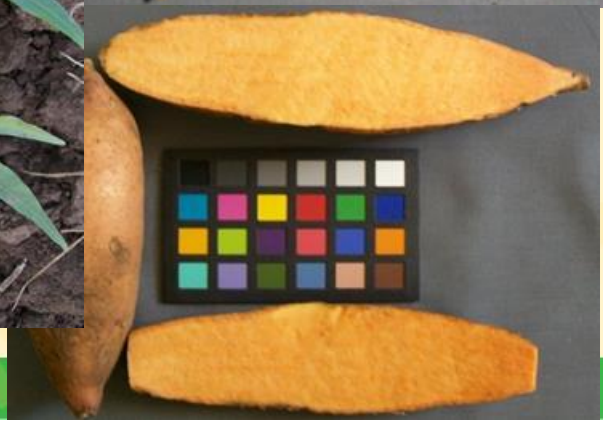

BATATA DOCE para Niassa

O DOCE MOCAMBICANO que Dá Saúde

Irish Aid

Rialtas na hÉireann

Government of Ireland

CENTRO INTERNACIONAL DE LA PAPA

CIP

A member of the CGIAR Consortium

Batata Doce

Renda

Saúde

SASHA

Sweetpotato Action for Security and Health in Africa

Progress Report of Nutritious Sweetpotato Project For Niassa

Benjamin Rakotoarisoa, Maria Andrade, Jan Low

Meeting with Irish Aid in Maputo

30 October 2013

Nutritious Orange-fleshed Sweetpotato for Niassa

Partners

Irish Aid
Rialtas na hÉireann
Government of Ireland

CENTRO INTERNACIONAL DE LA PAPA
CIP
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IIAM
Instituto de Investigação Agrária de Moçambique

PROGRESSO

SETSAN

Diocese Anglican, UCA-Concern Universal

Sectors Focus: Agriculture, Health, and Education

Intervention Zones: 7 districts in Niassa Province

Duration : 1 November 2012 ï 31 March 2016 (3.5 years)

Presentation Outline

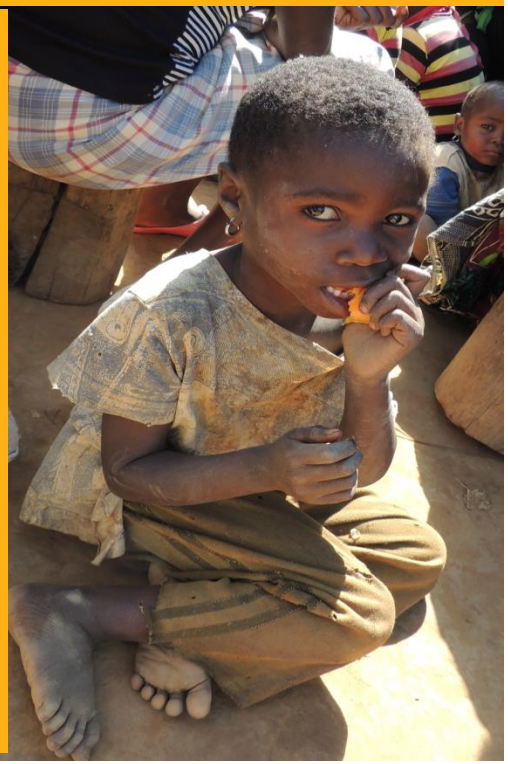
1. Objectives
2. Achievements
3. Challenges & opportunities
4. The way forward

1. Objectives

SASHA
Sweetpotato Action for Security and Health in Africa

Contribute to reducing Food Insecurity & Vitamin A Deficiency Through Effective Delivery of a Biofortified Crop

1. **Increase Vitamin A & energy intake in 20,000 vulnerable HHs by January 2016**
2. **At least 20% of HHs growing OFSP earn 50 USD or more per year from OFSP sales**
3. **Increase average yields by 50%**
4. **Build capacity of partners through project good management in collaboration with SETSAN**

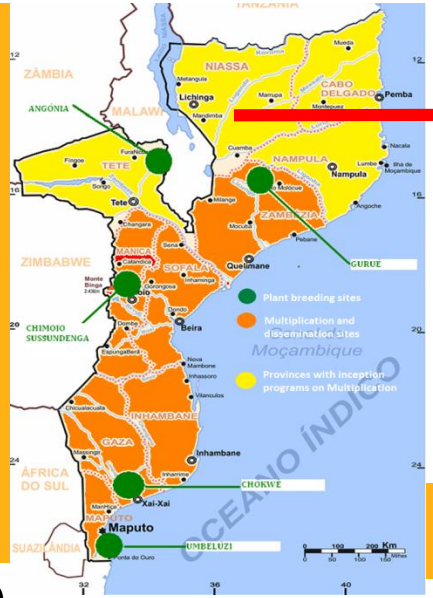


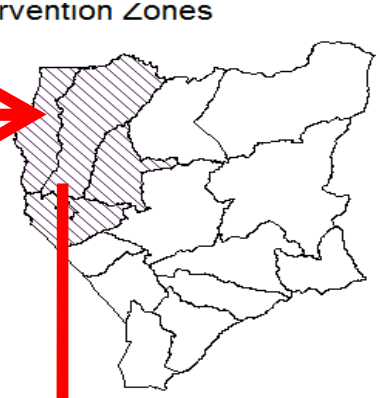
2. Achievements

Nine (9) new varieties

1.Bela
2.Delvia
3.Esther
4.Erica
5.Gloria

6.Ininda
7. Irene
8. Jane
9. Sumaia
10. Local

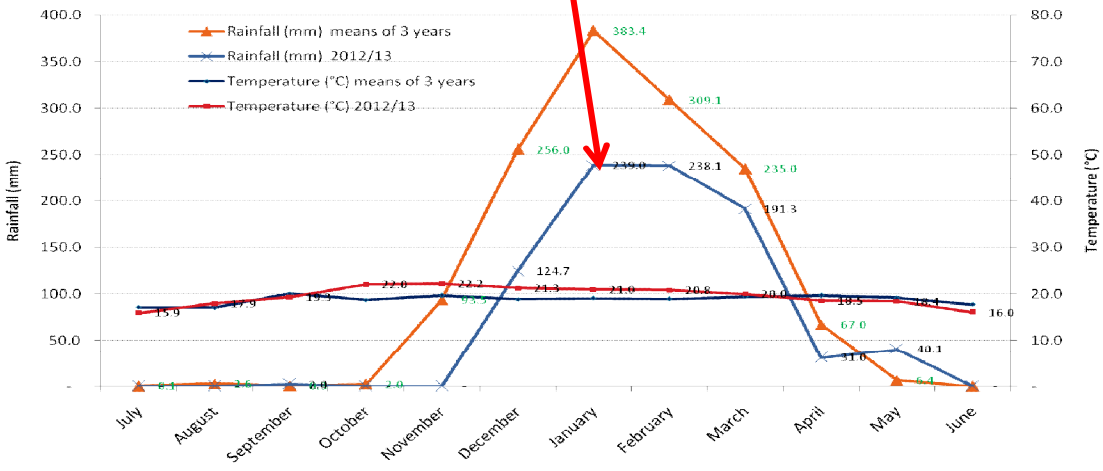




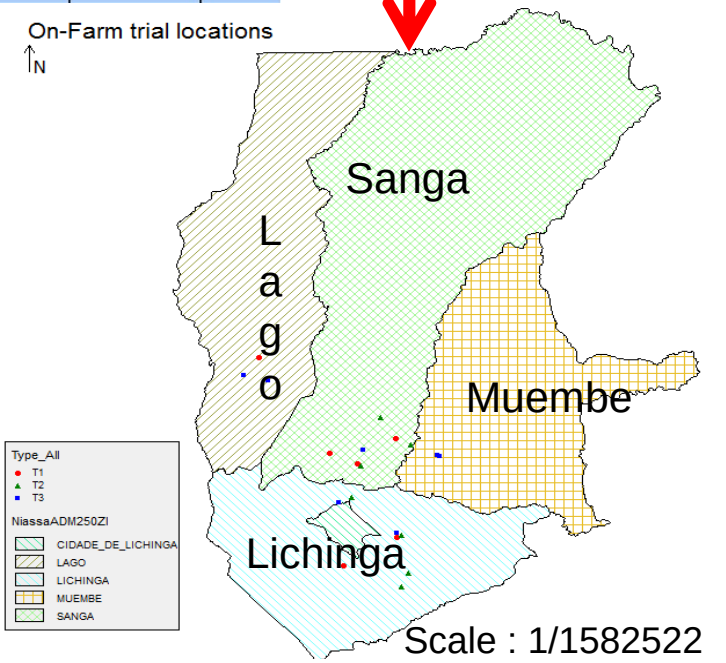
Niassa Province

38 OFT planted from 04/01/2013 to 12/01/2013 (one week)

Rainfall pattern in Lichinga

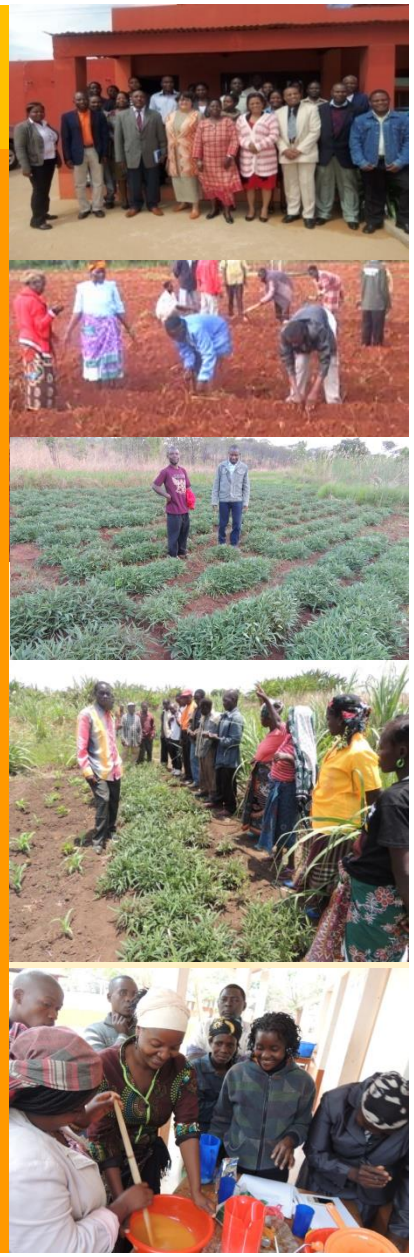


On-Farm trial locations



2. Achievements (cont'd)

1. **Launching workshop, monthly coordination meetings and provincial meeting;**
2. **Training on :**
    1. **OFT installation by 40 farmers in December 2012;**
    2. **Portuguese intensive language training for 5 weeks from January 18, 2013**
    3. **Vine multiplication by 31 farmers (7 women) during the harvest period from June 2013;**
    4. **OFSP Processing by 11 participants (8 women) from UCA, Diocese, Baker, Nutritionist and community representatives from the 4 Districts in early August 2013**



2. Achievements (cont'd)

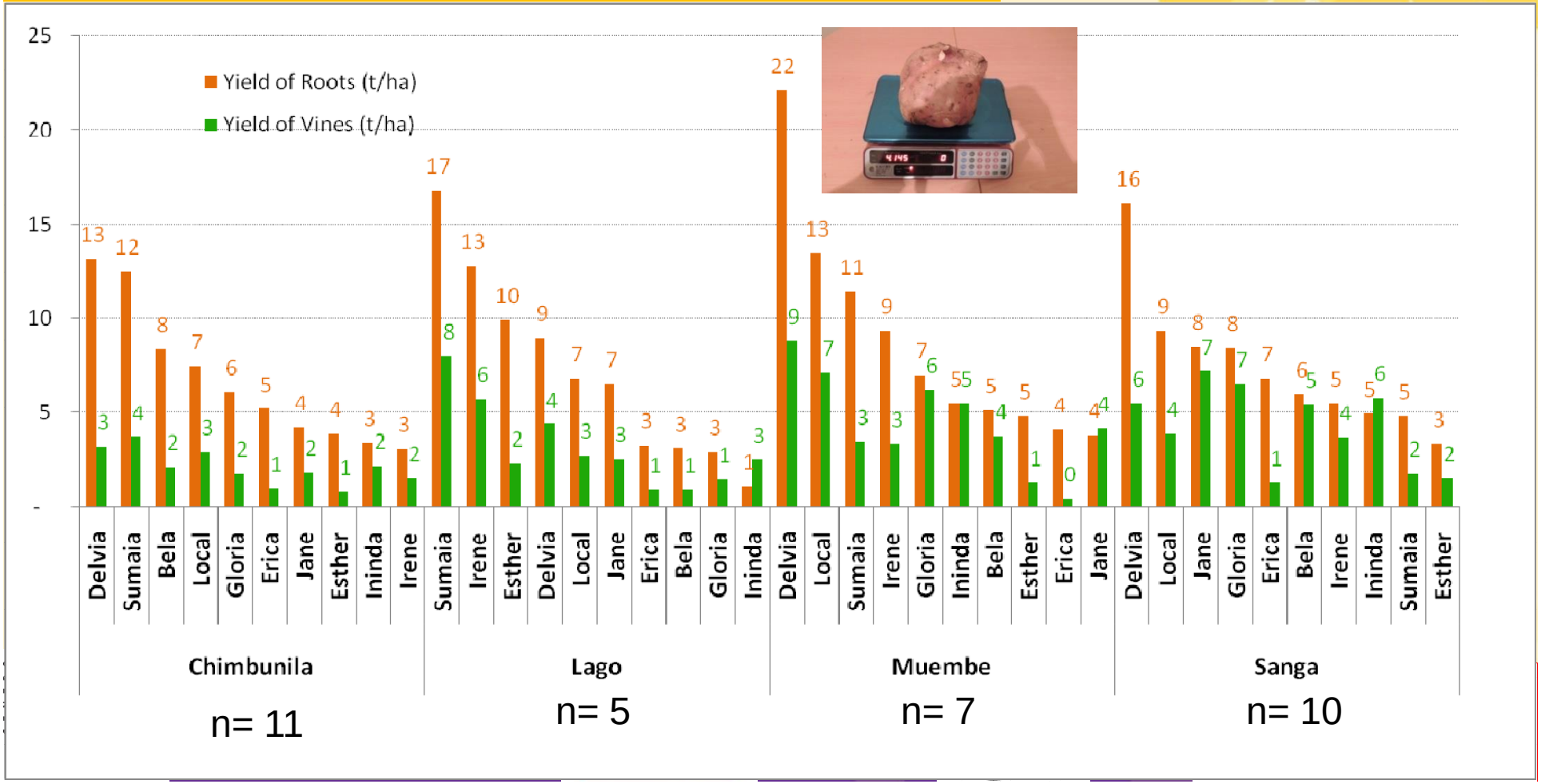
5. EYEWKASP in Maputo by 3 technicians from 3 partners (Progresso, Diocese and UCA-Concern) early August 2013
6. Net tunnels and rapid multiplication by 8 advanced farmers (1 women) and extensionist early September 2013;
7. SP production by 106 Alphabetizators (26 women) by mid-September 2013;
8. Compost production in Sanga in October 2013

3. Visit Exchange to Malawi in June 2013 => Business Collaboration between DVMs;
4. Visit of Ireland Embassy in Muembe in August 2013;
5. Evaluation of 33 on-farm trials (OFTs) in 4 Districts with 1,234 participants (619 women);

2. Achievements (cont'd)

6. Presentation of Results at 4 Districts with 116 participants (28 women) in September 2013;
7. Project setup meeting in 3 Districts South 78 participants (14 women) in September 2013;
8. Vine transfer from Maputo (more than 2,000 Cuttings) for RM in screen house at IIAM and in 7 Net tunnels at producer levels in July and August 2013;
9. 3 Local language leaflets on OFSP productions for adult trainings;
10. Production of Project Flyer, T-shirt and caps
11. Baseline surveys Data collections and data entries on 396 HHs.
12. HHs identification (4,515 HHs) though all partners

Means of Yields on Roots & Vines for ten (10) varieties in Four Districts (t/ha)



3. Challenges

Molds

Goats & others

Robber (isolated)

Erosion

Weed control

Weevils

Soil fertility & Production system

Field reality

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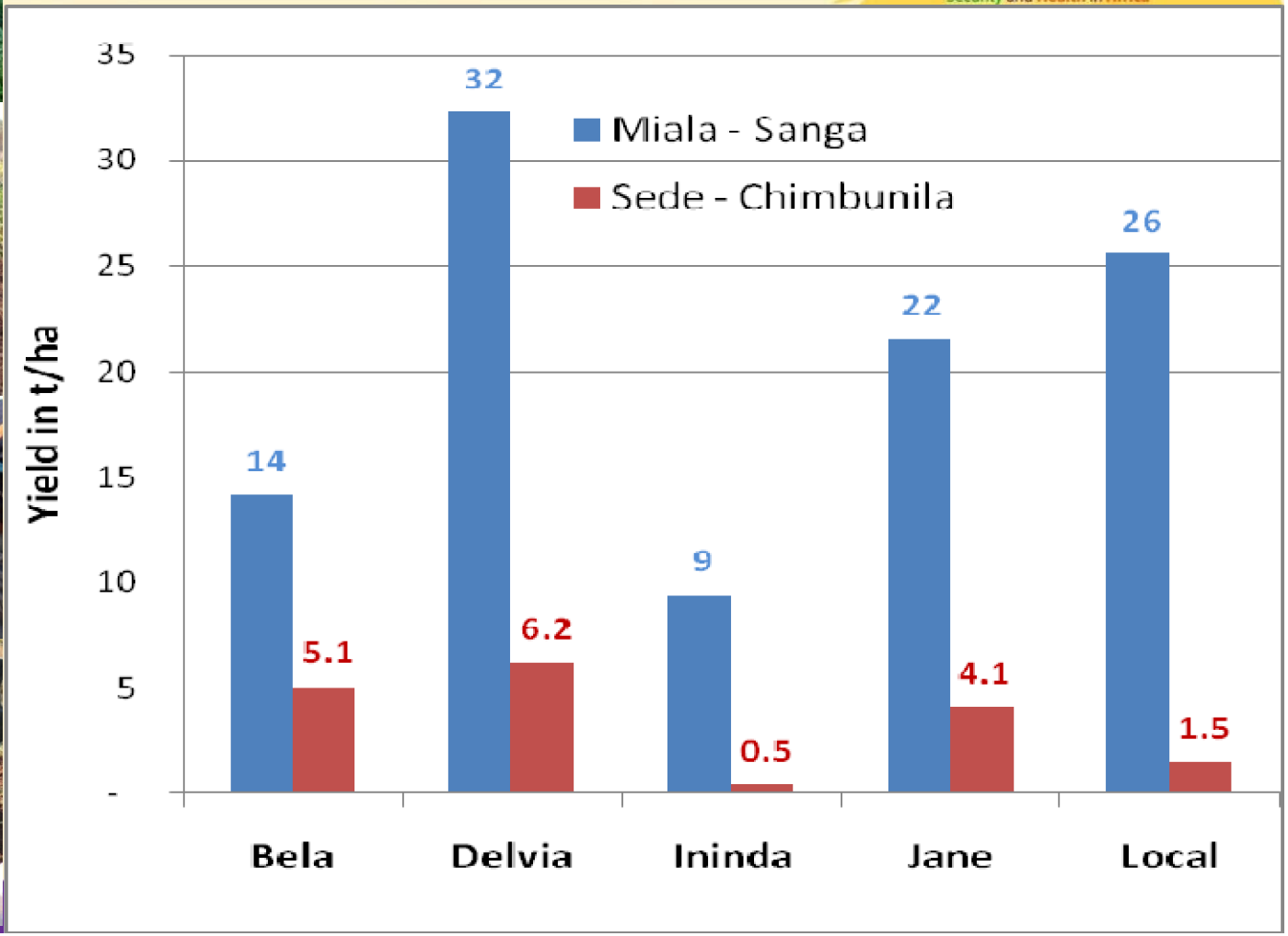





3. Opportunities







4. The way forward

1. **Participation on Agricultural campaign kick off;**
2. **Dissemination campaign for 4,515 HHs from 16th October 2013;**
3. **Multi location Trials for 3 groups at IIAM**
4. **Integration into literacy program;**
5. **OFSP vine distribution and plantation at 4 Districts;**
6. **Training on On-Farm Trials, Vine multiplications, Compost production, triple S and Agro-processing at district levels for nutrition oriented;**

4. The way forward (cont'd)

1. On-Farm trials on 30 sites in South Province from December 2013
2. Vines multiplication in South Province from January 2013
3. Distribution of vines for the beneficiairies on 2014/2015 by March/April 2014
4. Early planting from April 2014 for lowland multiplication
5. Continuous Monitoring & Market surveys
6. Evaluation workshop on June 2014

Obrigado

Thank you for your attention

Merci beaucoup

Medaase

Asante

Misaotra betsaka

Nutritious OFSP for Niassa Province

Monitoring and Evaluation

Main Activities

- Conduct a baseline and the end-line surveys in 7 districts (Lago, Chimbunila, Muembe, Sanga, Mandimba, Mecanhelas, Cuamba)

- Design of the database and all the templates to collect all the data and information on the process of multiplication and distribution

- Development/re-design of the vouchers and templates to use during the dissemination for vine exchange and data collection

Main Activities

- Test and training the ToT on how to fill the vouchers and templates

SENHA DE 400 RAMAS Número: 514829

Data: 8/6/12 Distrito: 17 Cód: Data Limite de validade: 9/7/12

Nome de beneficiário: Marcelina Silambo Sexo: 1-H 2-M

Idade: 54 No. de crianças < 5 anos na família: 2 Planta: 1- nas baixas ou 2- zonas altas?

Alguma vez já plantou a BDPA? 1-Sim 2-Não Outro tipo de batata-doce? 1-Sim 2-Não

Ouviu falar da Vitamina A anteriormente? 1-Sim 2-Não No. de meses com apenas uma refeição diaria: 0

Nome de chefe da família: Marcelina Silambo Sexo: 1-H 2-M

Localidade: Gruma Cód: Aldeia: Tenda Cód:

Nome de DVM: Lucas Irine Nhafumbo Código de DVM: 66

Quem buscou as ramas? 1-recipiente da senha 2-outra pessoa Sexo: 1-H 2-M

No. das ramas: Amelia: 2 Bela: Cecilia: Delvia: 2 Erica: Esther: Gloria:

Iminda: Irene: 2 Jane: Lourdes: Melinda: Namanga: Sumaia: 2 Tio Joe:

Data que recebeu as ramas: 12/6/12 Assinatura:

IIAM

Distribuição de Rama de Batata Doce

CENTRO INTERNACIONAL DE LA PAPA CIP

Província:

Distrito:

Posto Adm:

Localidade:

Aldeia:

Instituição que distribuiu a rama:

Chefe da equipa de distribuição:

Data de Distribuição:

Nome de Variedade Distribuída

1

2

3

4

Nr.	Nome	Apelido	Sexo (H/M)	Onde vai plantar?	Vem desta aldeia?		Quantidade (kgs) de cada variedade				Nr. de crianças com < 5 anos
				1. Zona Baixa 2. Perto de casa 3. Zona Alta	1=Sim 2=Não	Se não nome da aldeia	1	2	3	4	
1											

What Have We Achieved so Far?

SASHA
Sweetpotato Action for Security and Health in Africa

Under baseline survey

- The M&E specialist for the project trained on data collection and data entry
- 12 Enumerators and 8 data clerk trained
- 396 household surveyed (3 villages per district surveyed)
- The questionnaires/data entered and currently on the data cleaning and analysis

Way forward

- Baseline report
- Development of the vouchers and templates for data collection on vine distribution
- Data collection on the variety development
- Data collection on the DVM
- Update and data collection on the marketing/value chain

Collaboration of CIP with HKI in Tete

BY

Eliah Munda and Maria Andrade

CENTRO INTERNACIONAL DE LA PAPA
CIP

SPHI
Sweetpotato for Profit and Health Initiative

RAC
Support Vitamin A Sweetpo

Introduction

CIP has a collaboration with HKI through one of its projects called RAC.

- RAC-REACHING THE AGENTS OF CHANGE is a regional project funded by Bill and Melinda Gates foundation
- Being implemented in 5 countries: Mozambique, Tanzania, Nigeria, Ghana and Burkina Faso
- Project being jointly implemented by HKI and CIP in each of the countries.

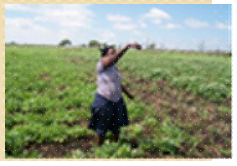
INTRODUCTION

RAC Objectives

(1)) To generate new investments by governments, donors, and NGOs to scale up the adoption of OFSP through advocacy- led by HKI

2) To build the capacity of implementation agencies to design and implement technically strong and cost-effective interventions that drive the uptake of OFSP.-led by CIP

- *Deliverables:*
- Training of 4000 change agents in the target countries
- provision of clean planting material to partners investing in OFSP projects of which HKI is one of the beneficiaries.



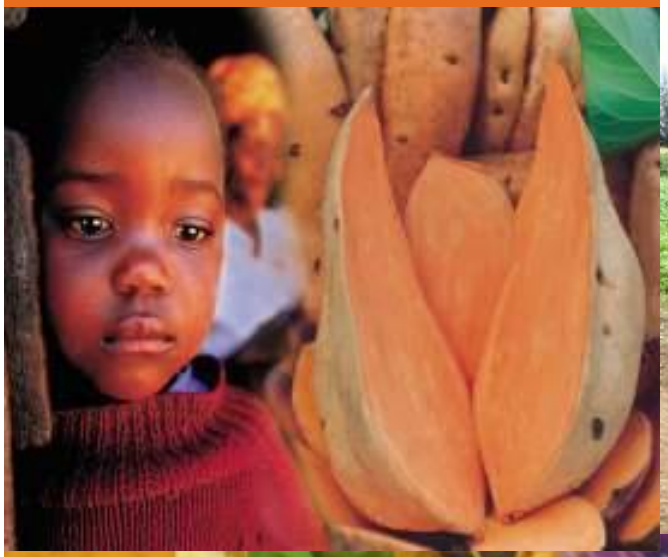
Collaboration of Cip with -HKI tete.

- Gave a five day orienation course for the HKI extension officer -SP production
- Capacitated HKI extension officer - ten day training on " Everything you ever wanted to know about sweet potato"
- Provided 40 000 x30cm vines to establish DVM in Tete in 2012 but lost this material –rains stopped early
- This year RAC provided 20 000 x30cm vines to establish 11DVM
- Each DVM to produce vines in an area of 1500 m^2

to reach 3000 hh in Chiuta district in Tete

- Provided support in their training of lead farmers in Tete

Thank you



DEVELOPMENT OF STABLE SWEETPOTATO VARIETIES OF MOZAMBIQUE FOR DROUGHT PRONE ENVIRONMENTS

Jose Ricardo & Isabel Andrade

Maputo , 30 Outubro de 2013

Current state of Breeding in Mozambique

- Variety released in 2001 : IIAM and CIP released 8 orange-fleshed sweetpotato varieties
  - Not completely accepted by consumers due to low dry matter & susceptibility to drought).

- Variety releases 2006 : CIP-Mozambique, in collaboration with IIAM began in 2004 to use seed provided by CIP-Lima and other regional programs, as result, in 2006, 4 varieties were released
  - the released varieties did not meet well the requirements for adaptation to most drought prone environments

- Variety releases 2011: IIAM and CIP with financial support of AGRA released 15 orange-fleshed sweetpotato varieties .
  - Despite wide adaptation for different environments, they will not completely meet all consumer preferences, particularly the consumers of the white or yellow fleshed
  - As result, there was need to develop new varieties superior to existing varieties (local varieties)

Objectives

- Test / evaluate, select and release improved sweetpotato varieties of white and yellow fleshed color that are drought tolerant for farmers in drought-prone areas in southern Mozambique

- Increase availability of vines OFSP for farmers to mitigate the effects of droughts, floods and minimize the effects of Vitamin A deficiency with the introduction of new OFSP that are drought tolerant

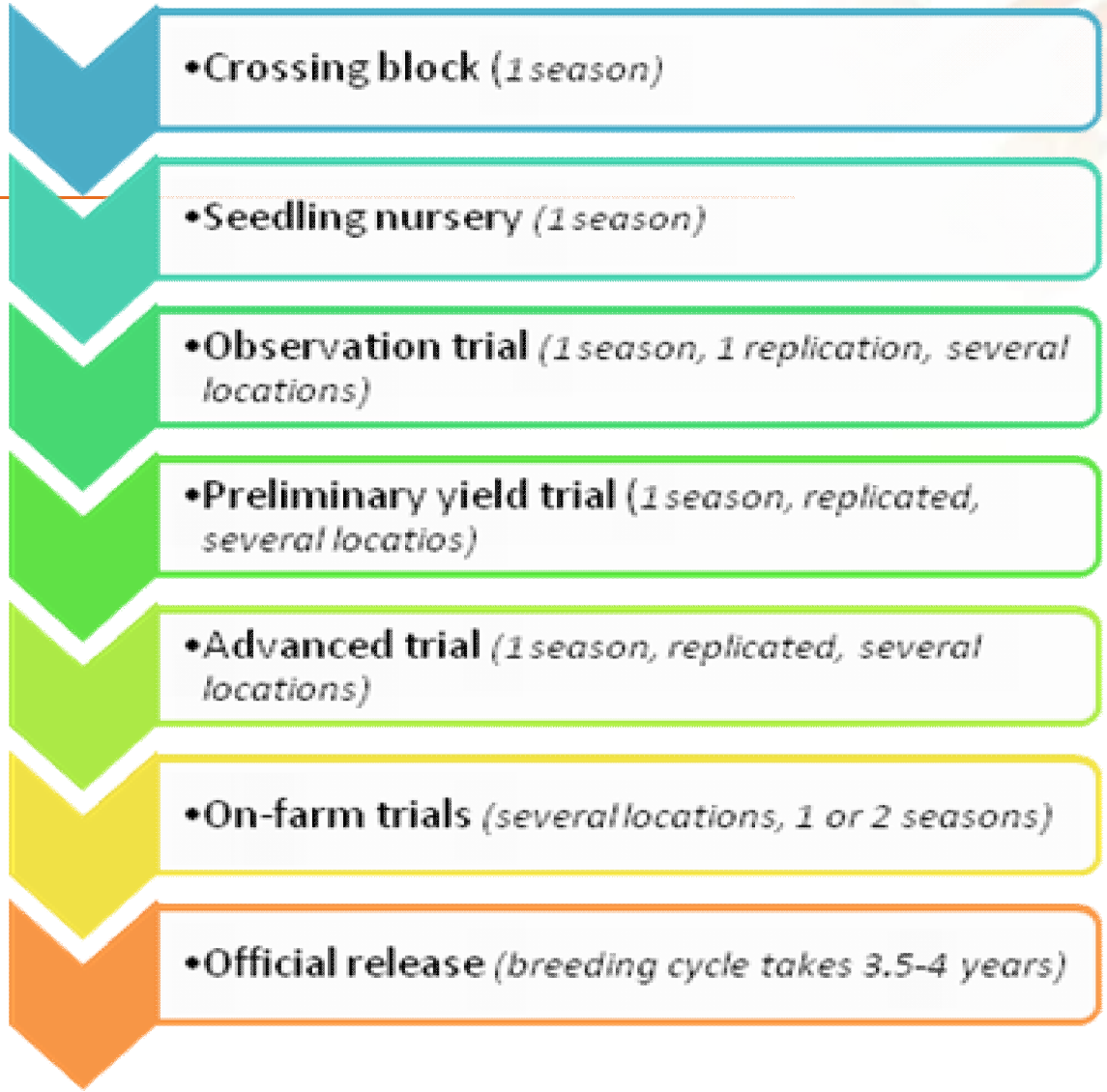
Goal of the project

- Goal 1: release 3-5 improved sweetpotato varieties preferred by producers and consumers within three years

- Goal 2: To support 10,000 households in three provinces of the south Moz to cover lost crops due to floods, drought through distribution of new drought tolerant varieties

Breeding Metods

- Accelerating Breeding (Many environments substitution the space time)
- 3 - 4 years for release a variety



Breeding method used

- Participatory selection (farmers and consumers) in the early stages of breeding

- Use of seed (controlled and opened crosses), improved varieties and advanced clones introduced from other countries

Preliminary Results (Breeding)

Breeding

Trials at different stages of breeding:

- 44 clones at advanced yield trial selected from clonal evatution of 152 clones
- 1667 clones in the evaluation in observation trial
- 3,212 seed established in the seedling nursery

Multiplication

- 5.0 ha of established conventional multiplication on primary sites (Umbeluzi, Chokwe & Maniquenique)
- 20 Decentralized vine multipliers established in 6 districts of Maputo and Gaza provinces

Acknowledgment

Thank you for your attention