Breeding and promotion of sweetpotato genotypes for consumer preferred traits in time and space in Zambia

Martin Chiona

Sweetpotato Breeders Meeting
Malawi Sun Hotel, Blantyre, Malawi
June 17-20, 2014

SWEETPOTATO ACTION FOR SECURITY AND HEALTH IN AFRICA

Objectives

To develop and select high yielding sweetpotato varieties with consumer preferences focusing on high dry matter and beta-carotene content

- To develop and select high yielding vegetable clones for consumers
- To capacity build stakeholders in the production, seed multiplication and plant protection of sweetpotatoes

Most important SP landraces in ..country

Zambia/	Root yield	Flesh	Dry matter	Earl	SPVD	Alt	Remarks
Name of landrace	**t/ha**	**color**	**(%)**				
Matembele	6.6	w	37	L	R	R	Vegetable
L2-20/5	7.8	cr	35	L	R	R	
Carrot	6.2	o	26.4	E	S	R	
L4-138/3	9.6	c	33	L	R	R	
Unknown 2/1	7.9	w	34	L	R	R	

Flesh color: White (w), cream (cr), yellow (y), light orange (lo), orange (o),

Earl (Earliness: Early (E) (about 4 months), late (L) about 5 or more months

SPVD resistance (r: resistant, s:susceptible)

Alt (Alternaria blight resistance, r: resistant, s: susceptible

Most important bred SP varieties in ..country

Country/	Root yield	Flesh	Dry matter	Early	SPVD	Alt	Remarks
Name of variety	**t/ha**	**color**	**(%)**				
Muluhgushi	29	y	33	e	s	r	released, 2003
Chingowwa	17	cr	24	e	r	r	released, 1993
Lukulu	33.8	w	27	L	r	r	released, 2003
Lunga	29	w	29	L	r	r	released, 2003
Zambezi	15	o	22	L	r	r	released, 1993

Flesh color: White (w), cream (cr), yellow (y), light orange (lo), orange

Earl (Earliness: Early (E) (about 4 months), late (L) about 5 or more montl

SPVD resistance (r: resistant, s:susceptible)

Alt (Alternaria blight resistance, r: resistant, s: susceptible

Summary of progress 2009- 2014

Type of trial		Details	2009	2013/14
Crossing block				
	1	No. of parents in crossing block	30	30
	2	No. of seed collected from OP	5000	4019
		a. Total no. of families of OP seed	18	18
	3	No. of seed collected from crosses		387
		a. Total no. of families of controlled crosses		29
Seedling nursery				
	1	No of seeds planted	**1,624**	7303
	2	No of seedlings established	**733**	2500
	3	Total no. of families planted	**3**	89

Summary of progress 2009- 2014

Type of trial		Details	2009	2013/14
Observation trial				
(OT)	1	No of clones planted	696	
	2	No of checks (check clones) planted	4	3
	3	No. of locations	1	1
Preliminary yield (PT)				
	1	No of clones planted	25	22
	2	No of checks (check clones) planted	2	2
	3	No. of locations	1	2
Advanced yield trial (AT)				
	1	No of clones planted	7	22, 18, 27
	2	No of checks (check clones) planted	2	2, 2, 2
	3	No. of locations	2	3, 2, 2

Summary of progress 2009- 2014

Type of trial	Details	2009	2013/14
On-farm trials			
1	No of farms/farmers per region/district / province		
			vary
2	Total no. of trials whole country		
			35
No of varieties released		0	0
No. of clones in pipeline for release by 2014			5
Package used for analysis:			
2009-2012			Genstat
2013/14		Genstat	Genstat and CloneSelector

Number of SP varieties released 2009 - 2014

No. of varieties released		No. of release document(s)*	No. of release papers /Manuscripts**
Non-orange	Orange		
No. of clones in pipe in pipeline for release (final tests/data already compiled)			
Non-orange	Orange		
1	4	1	0

* Document submitted to Variety Release Committee/Authority; Each release has a separate document (several varieties released at the same time have one document)

**Papers published in journal(s) or manuscript for journal/submitted/to be submitted

Detailed information of variety release documents (2009-2014)

*Document submitted to Variety Release Committee/Authority
Author(s), Title, Year of submission, Organization, City, Country

Have standard forms that are provided

**Papers published in journal or manuscript for journal submission
Give details, author(s)., year, title, journal (target journal if not submitted yet), page number(s)/where applicable

None

Papers published/Manuscripts (2009-2014)

**Papers published in journal or manuscript for journal
Give details, author(s)., year, title, journal, page number(s) (for manuscript(s) indicate target journal

Update Other Project Information

Sweetpotato Action for Security and Health in Africa

Funding source/amount /duration

AGRA/US$185,000/3 years

Number of scientists and technicians in program

S-5 (2 PhD, 1 MSc, 2 BSc), T-4

Constraints

- **Lab facilities for quantifying quality traits, virus indexing and cleaning**
- **Collaboration challenges**

Update Other Project Information

Proposed future activities

- Continue selecting for end user attributes
  - Livestock feeding

- Make disease free sweetpotato seed available to partners and farmers on demand by providing a sure source.