

An illustration of a woman in a purple top and green headwrap feeding a baby with a spoon. The background is yellow with colorful geometric patterns. In the foreground, there are several sweetpotatoes with green leaves.

# Rwanda Sweetpotato Breeding progress

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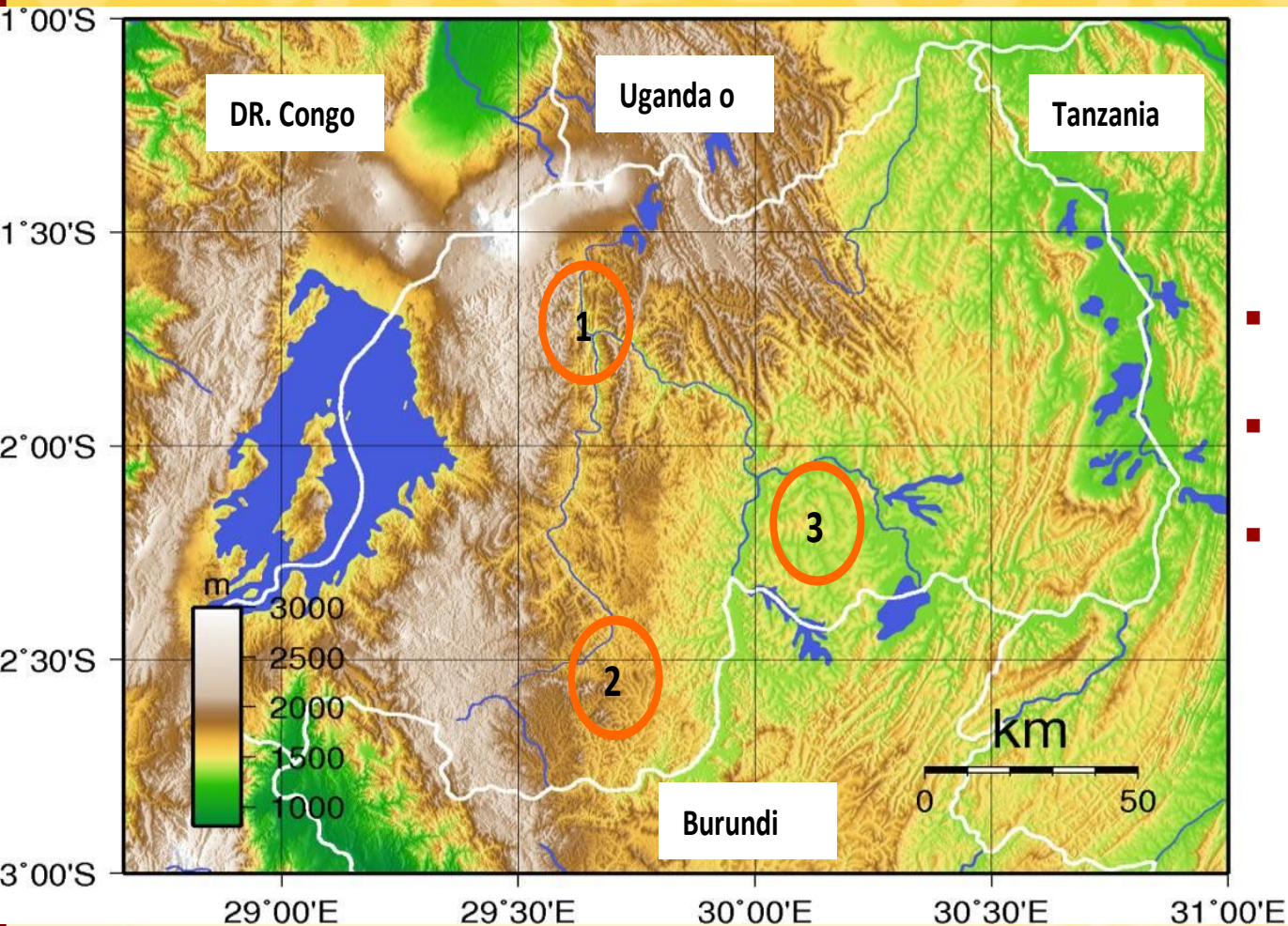
Blantyre, 17<sup>th</sup> – 21<sup>st</sup> June 2014

# Objective of SP breeding :

- To develop sweetpotato varieties with:
- ❑ High yield with dual purpose use (Roots and Animal feed)
  - ❑ Quality traits (mainly High **DM**, **rich  $\beta$ -carotene**, skin and flesh color)
  - ❑ Tolerant to pests and diseases (SPVD and *Alternaria*)
  - ❑ Suitable for specific or wide adaptation, and/ with farmer preferences)



# Sites selection



- HAZ: 1850-2450m
- MAZ: 1650-1850m
- LAZ: 1350-1650m

# Strategy



- ❑ Collecting, evaluating and selecting from local germplasm
- ❑ Introduce promising genotypes from other countries/ NACCRI and evaluating them
- ❑ **Dvlpt SP using ABS more parents, more controlled crosses and a rapid selection scheme with farmer participation in Rwanda**

# Most important SP landraces in Rwanda



Name of landrace	Root (T/ha)	Flesh color	DM (%)	Earl	SPVD	Alt	Remarks
Karibunduki	22	White	37	L	r	r	WS &WR/ 1990
Mubiriwigisab	18	White	36	L	r	r	
Kigande	20	Yellow	37	L	r	r	WS &WR/ 1990
Mpakanjye	16	Yellow	35	E	s	r	
Mamesa II	16	Yellow	34	E	r	r	LS &WR/ 1988
Ndamirabana	20	White	–	L	r	r	WS &WR/ 1990
Rukoma	<b>14</b>	White	–	L		<b>s</b>	LS &WR/ 1986
Imbyo	14	White	36	L	r	r	LS &WR/ 1986
Rukubikondo	18	White	37	L	r	r	LS &WR/ 1986

Flesh color: White (w), cream (cr), yellow (y), light orange (lo), orange (o), deep orange (do). Include beta-

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

SPVD resistance (r: resistant, s:susceptible)

Alt (Altenaria blight resistance, r: resistant, s: susceptible)



# Summary of progress 2009- 2014



Type of trial		Details	2009	2014
<b>Crossing block</b>				
	<b>1</b>	No. of parents in crossing block	<b>40</b>	<b>60</b>
	<b>2</b>	No. of seed collected from OP	<b>16000</b>	<b>2400</b>
		a. Total no. of families of OP seed	<b>71</b>	<b>60</b>
	<b>3</b>	No. of seed collected from crosses	<b>16500</b>	<b>13500</b>
		a. Total no. of families of controlled crosses	<b>60</b>	<b>81</b>
<b>Seedling nursery</b>				
	<b>1</b>	No of seeds planted	<b>16000</b>	<b>7500</b>
	<b>2</b>	No of seedlings established	<b>5380</b>	<b>6000</b>
	<b>3</b>	Total no. of families planted	<b>60</b>	<b>81</b>

# Summary of progress 2009- 2014



Type of trial		Details	2009	2013/14
<b>Observation trial</b>				
<b>(OT)</b>	1	No of clones planted	<b>8000</b>	452
	2	No of checks (check clones) planted	<b>4</b>	4
	3	No. of locations	<b>3</b>	3
<b>Preliminary yield (PT)</b>				
	1	No of clones planted	<b>96</b>	125
	2	No of checks (check clones) planted	<b>4</b>	4
	3	No. of locations	<b>3</b>	3
<b>Advanced yield trial (AT)</b>				
	1	No of clones planted	<b>75</b>	32
	2	No of checks (check clones) planted	<b>3</b>	3
	3	No. of locations	<b>3</b>	3



# Summary of progress 2009- 2014

Type of trial	Details	2009	2013/14
On-farm trials			
1	No of farms/farmers per region/district / province	14	14
2	Total no. of trials whole country	36	32
No of varieties released		2	8
No. of clones in pipeline for release by 2014/2015			2--4
Package used for Analysis			
2009-2012		GenStat? CloneSelector? SAS?	GenStat CloneSelector R-software
2013/14			GenStat CloneSelector R-software



# Sweetpotato Foundation Seed system



<b>Tissue culture lab:</b>	<b>Response (a)</b>	<b>Response (b)</b>
No. of lamina flow benches (a)	4	
No. of CVs maintained in tissue culture (a)	12	
No. of screenhouses/need repair (a)	1	
No. of good screenhouses (a)	1	
<b>No. of in vitro plantlets wined:</b>		
a) Every 3-4 months (b) every year)	12000-16000	45000-50000
<b>No. of vine cuttings:</b>		
a) Distributed every 4-5 months (b) every year)	650000	1150000
a) Sold every 4-5 months [(b) every year]	280000	550000
<b>How long does it take to breed a variety (years)?</b>		
How long does the variety release process take? (Assuming all data is available)/1 season/1 year (a)?	<b>3-4 years (ABS)</b>	

# Linkage to Vine multipliers for further multiplication



Linkage to vine multipliers	Proportion	Comment
Government institutions (list):	%	
<b>Districts</b>	<b>5</b>	
NGOs (list):	%	
<b>RAB</b>	<b>50</b>	
<b>WV/CRS/CARE/HARVEST PLUS</b>	<b>15</b>	
Farmer multipliers	%	
<b>FGs with Tunnels</b>	<b>10</b>	
<b>Pilot farmers</b>	<b>5</b>	
Others (list them)	%	
<b>Seed multipliers</b>	<b>10</b>	

# Status of AGRA grant (delete what is not applicable)



Project title:	Response
Approved but has not started	
Funded since	
Amount	
Expiration date	<b>2013</b>
Renewal proposal (delete what is not applicable):	
Not yet written/ In process of writing	<b>Yes</b>
Written but not submitted	<b>Yes</b>
Submitted, waiting for feedback	<b>Yes</b>
2 <sup>nd</sup> phase funded since (year), amount (USD)	-
<b>Other information on AGRA grant:</b>	

# Number of SP varieties released 2009 - 2014



No. of varieties released		No. of release document(s)*	No. of release papers /Manuscripts**
Non-orange	Orange		
5	3	2	1
No. of clones in pipe in pipeline for release (final tests/data already compiled)			
Non-orange	Orange		
1	2	-	-

\* 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)



**For: Cultivar & Germplasm Releases**

**‘RW11-17’, ‘RW11-1860’, ‘RW11-2419’, ‘RW11-2560’, ‘RW11-2910’,  
and ‘RW11-4923’ Sweetpotato**

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# Current staff on sweetpotato research (replace example with yours)



<b>Sweetpotato (SP) Staff Category</b>	<b>No.</b>	<b>Gender (M/F)</b>	<b>Age &lt;35 / &gt; 35 years</b>
Full/Part time on SP (%) (indicate qualification):			
PhD (Plant breeder, 30%)			<35
Msc (80 %)	3	M	> 35
BSc (Agronomist, 20%)	2	F	>35
Technicians:	4	2F & 2M	1>35 and 3<35
Technicians (tissue culture, 10%)	2	F	<35
Total	10		
Comment:			

## Update Other Project Information



**Funding source: GoR/ 75000 \$/Year**

**Constraints : Proposals pending/AGRA**

**Proposed future activities: Develop new proposals**