



Development of sweetpotato varieties in Central Rift of Kenya through farmer participatory approach

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Project goal

- High yielding varieties, resistant to sweetpotato viruses and weevils, improved food quality, storability, earliness

Expected outputs

- Development and release of at least 5 varieties with farmer attributes
- Development of value addition technologies for increased market opportunities
- Establishment of linkages for seed dissemination

Expected outcomes

- Improved food security and income
- Formation of farmer group for collective marketing and seed dissemination

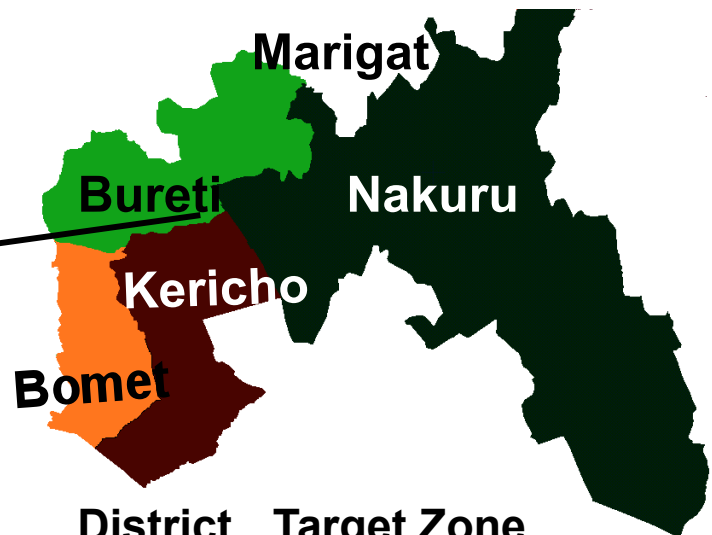
Justification

- Sweetpotato a security crop during dry season; when other foods fail
- Production in Kenya low due to susceptibility of local varieties to sweetpotato virus disease (SPVD) and weevils. Also narrowly adapted and low in nutritive value
- Viruses cause losses of 20-80%
- Sweetpotato weevil cause losses of 60-100%
- Shortage of planting materials of superior varieties with virus and weevil resistance.
- Planting material is sourced from neighbors

Justification cont.

- Need for sweetpotato variety development that meets consumer preference, and addresses the market needs
- Improved food security and income
- At least 5 varieties developed and recommended for National Performance Trials by 2010

Ecological zones of target area



District Target Zone

Nakuru - LH₂-LH₃

Kericho - LH₅₋₆

Bureti - LH₁₋₂, UH₀₋₃

Bomet - UM₁₋₃

Marigat UM₄₋₅

The major constraints

- UM₁₋₄ prone to insect pests (weevils)
- All zones prone to diseases (viruses)
- Suitable varieties susceptible to SPVD and weevils and low in Beta carotene
- Most landraces late maturing and low yielding
- No market structures



Objectives

- Selection and hybridization of improved and local sweetpotato varieties
- Screening for virus resistance in sweetpotato germplasm
- Screening for weevil resistance in sweetpotato germplasm
- Refining post-harvest technologies for sweetpotato
- Developing marketing strategies for sweetpotato produce and products

Participatory variety selection



Farmer participatory evaluation

: Performance of sweetpotato cultivars

Cultivar	Flesh colour	Mean no of marketable tubers	Mean Weight of marketable tubers	Mean Vine yield (kg) per 3 plsnts	Virus score	% virus incidence	Farmer comments on cultivar in field
102013/126	Deep orange	4	2.7	1.5	1	0	high yield
Costenero*	Orange	6	2.5	2.3	3	75	good
Zambezi*	Orange	5	2.2	3.2	4	80	
Nyathi	Orange	2.7	2.2	0.8	3	90	high yield/
Odiewo*							good
103018/37	Orange	4	2	3.5	3	100	good
10300/152	Orange	3.3	2	0.9	3	100	good
*SPK 004	Orange	2	1	0.75	3	75	good for food
K118	Orange	1.7	0.53	1.7	3	80	
Ejumula	Orange	2.3	0.5	1	3	75	
Tainung	Orange	4	0.5	0.6	4	100	
*Jonathan	Orange	1	0.53	0.8	3	90	sweet taste
Zapallo	Orange	1.5	0.35	0.4	4	80	
Carrot C	Orange	0	0	2.3	2	20	
Ejumula 2	Orange	0.7	0.23	1.1	4	90	
103004/86	Orange	0.7	0.13	1.5			
Bungoma*	White	2.5	0.7	1.5	3	75	
Naspot5	creamy yellow	5	2.5	3.5	5	100	

Crossing block



1. Crosses : 15000 of 36
genotype



2. Seeds: 62,000



3. GH seedlings - 7500



4. Seedling nursery: 62 families



5. Clonal nursery- 222

- PYT - 50 lines selected from clonal nursery
- AYT – 20 potential lines identified

1. Sweetpotato varieties being developed

At least 20 best varieties have been developed and are under evaluation at NPT in 3 sites

- Moderate resistance to sweetpotato viruses and weevils
- Improved food quality with high beta carotene and high dry matter (>0.194 ppm) and (30-40%)
- High yielding (20-30t/ha)
- Consumer preference and market needs (3-4)

- Current status and dissemination of sweetpotato**



	Name	Method of Development	Targeted traits	AEZ	Yield
1.	KNSP/09/2	Selection	OFS	LH3	4.1
2.	KNSP/09/16/1/3	OPV	OFS, DM	UM, LM	5.5
3.	KNSP/09/21/1/4	Hybrid	OFS	UM, LM	11.5
4	KNSP/09/4/2/5	OPV	YIELD	UM, LM	11
5	KNSP/09/10/2/6	OPV	OFS	UM, LM	6.5
6	KNSP/09/1/2/7	OPV	DM	UM, LM	4.5
7	KNSP/09/4/1/8	OPV	OFS	UM, LM	5.5
8	KNSP/09/20/1/9	Hybrid	YIELD	UM, LM	38
9	KNSP/09/14/1/11	Hybrid	DM	UM, LM	11.5
10	KNSP/09/6/1/13	OPV	OFS	UM, LM	23
11	KNSP/09/14	Selection	OFS	LH	9.6
12	KNSP/09/15	Selection	YIELD	LH	35.5
13	KNSP/09/16	Selection	OFS	LH	11.5
14	KNSP/09/5/1/17	OPV	DM	UM, LM	4.5
15	KNSP/09/18	Selection	OFS	LH	25
16	KNSP/09/19	Selection	OFS	LH	25
17	KNSP/09/20	Selection	OFS	LH	23
18	KNSP/09/17/1/22	Hybrid	YIELD	UM, LM	8
19	KNSP/09/5/2/23	Hybrid	OFS, DM	UM, LM	26.5
20	KNSP/09/7/2/20	OPV	OFS, DM	UM, LM	10

2. When to be released

Currently under National Performance Trial:

- **Season 1:** Harvest to quality assessment – Dec. 2010
- **Season 2:** Harvest to quality assessment – August 2011
- **Release process:** By end of November 2011 at least 5-10 varieties

3. Steps to commercialization

- **Seed multiplication –**

A selected NGO from each district and 2 farmers per district will be involved with seed and vine-cuttings multiplication. KARI- Kakamega and Perkerra will also be involved with multiplication of new varieties.

- **Variety promotion and dissemination**

Farm Inputs (FIPs), Farmer schools, community based organization, faith based organization, Communal nurseries, KARI seed unit, Private nurseries; Ministry of Agriculture (MOA), and Self Help Development International (SHDI)

- **Farmer Education**

- Demonstrations and field days
- Exhibition e.g fares and shows

Project value to the Farmer

- Food security
- Clean planting material availability
- Nutritional value (Vit A availability)
- Income generation for better lifestyle



(A) A poor farmer living in a very poor house but had a vision of improving his life if empowered



(B) A poor farmer trying to transform his ideas into reality using the little resources he had into reality



(C) A farmer has transformed his ideas into reality (reached his goal) after being helped by a project to access market where he could sell his coffee and cassava and get money to build a house of his dream.

Food security and Improved standard of living