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Low-Cost Technologies for Value Addition of Orange Fleshed Sweetpotato by Smallholder Farmers in Western Kenya

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PRESENTATION OUTLINE

1. Importance of Sweetpotato in Western Kenya
2. Sweetpotato varieties in Western Kenya
3. Need for value addition technologies
4. Objective
5. Methodology
6. Key findings
7. Conclusion
8. Way forward



1. Importance of Sweetpotato in Western Kenya

- Sweetpotato is an important drought-resistant crop in Western Kenya
- Lake Victoria Basin produces over 75% of the national production
- Mostly grown for subsistence, but commercialisation is gaining importance



2. Sweetpotato Varieties in Western Kenya

- Local varieties
- Superior varieties; developed by Kenya Agricultural and Livestock Research Organisation (KALRO) and CIP:
 - White (Mugande, SPK 013)
 - Yellow (Kenspot 1, Cuny)
 - Orange (OFSP) (Kabode, Vitaa, Kenspot 4)
- OFSP is important for food security, income and combating Vitamin A Deficiency



3. Need for Value Addition Technologies

- Increased yield of the improved varieties calls for wider utilisation and expanded market
- High perishability confines utilisation to household consumption (boiling & roasting) and limited localised sales
- Product diversification to increase consumer preference:
 - youths don't prefer boiled, but may accept value added products
 - Blended food to improve nutritive status for special groups e.g. invalids, children < 5yrs



4. Objective

- To introduce simple value addition technologies for enhancing OFSP consumption and commercialisation in Siaya, Kakamega and Busia counties of Western Kenya

5. Methodology

5.1 Project Area

- Kakamega, Bungoma and Siaya Counties of Western Kenya between 2015 and 2016

5.2 Approaches used

- KALRO and GIZ collaborated with local partners
- OFSP roots produced locally on the farms were used for product development
- Training of Trainers (ToTs) on value addition
- Promotion of OFSP through schools for addressing VAD
- Sensory evaluation of developed products





5.2.1 Training of ToTs on Value Addition

County	No. of ToTs trained			Project Partner
	Males	Females	Total	
Kakamega	15	38	53	Anglican Development Services (ADS Western)
Siaya	17	33	50	<ul style="list-style-type: none"> Rural Energy and Food Security Organisation (REFSO) Ugunja Community Resource Centre (UCRC)
Bungoma	2	23	25	Community Research in Environment and Development Initiatives (CREADIS)
Total	34	94	128	



5.2.2 Promotion of value addition in schools



6. Key Findings

6.1 Value addition technologies introduced

- Processing of **shelf-stable intermediate products**

- Grits
- Chips
- Flour



- Value added **products for consumption:**
 - Baked products (*Chapatti, Mandazi, Crackies, Doughnuts*)
 - Juice
 - Salad, vegetable relish



6.2 Sensory Evaluation of Value Added Products (1/3)

- Kakamega County (No. of panellists, n=19)

Value added product	Mean hedonic ratings for OFSP value added products			
	Appearance	Taste	Texture	Overall acceptability
<i>Mandazi</i>	4.74±0.10	4.89±0.07	4.74±0.10	4.84±0.09
Crackies	4.63±0.11	4.58±0.12	4.53±0.14	4.63±0.14
Onion bites	4.47±0.16	4.32±0.17	4.58±0.16	4.63±0.16
Salad	4.26±0.24	4.28±0.24	4.21±0.24	4.42±0.22
Juice	4.05±0.18	4.00±0.17	4.21±0.18	4.21±0.18

5-point hedonic scale (5=Very good, 1=Very bad)



6.2 Sensory Evaluation of Value Added Products (2/3)

- Siaya County (No. of panellists, n=17)

Product	Mean hedonic ratings for OFSP value added products			
	Appearance	Taste	Texture	Overall acceptability
<i>Mandazi</i>	4.65±0.19	4.71±0.14	4.76±0.11	4.87±0.13
Crackies	4.59±0.15	4.35±0.17	4.41±0.21	4.41±0.19
Onion bites	4.12±0.24	3.76±0.24	3.94±0.20	4.06±0.20
Salad	4.12±0.21	4.12±0.19	4.00±0.24	4.18±0.21
Juice	3.76±0.33	3.53±0.24	3.65±0.26	3.82±0.25

5-point hedonic scale (5=Very good, 1=Very bad)

6.2 Sensory Evaluation of Value Added Products (3/3)

- Bungoma County (No. of panellists, n=16)

Product	Mean hedonic ratings for OFSP value added products			
	Appearance	Taste	Texture	Overall acceptability
<i>Mandazi</i>	4.77±0.12	4.54±0.22	4.69±0.13	4.42±0.36
Crackies	4.38±0.21	4.54±0.18	4.38±0.14	4.62±0.18
Onion bites	4.54±0.18	4.46±0.18	4.46±0.22	4.54±0.22
Salad	3.85±0.25	3.85±0.32	3.46±0.29	3.77±0.28
Juice	4.46±0.14	3.54±0.18	3.92±0.29	3.62±0.35

5-point hedonic scale (5=Very good, 1=Very bad)

7. Conclusion

- Farmers used OFSP as a basic material, which is easily produced at farm level
- Low cost technologies including OFSP value added products (*chapatti, mandazi, crackies, juice*) introduced to smallholder farmers & schools in Western Kenya:
 - Used at family level (household food security)
 - Sold in local markets and schools (income)
 - Addressing Vit. A Deficiency in schools
- *Chapatti, mandazi, crackies* were most preferred, compared to salad, juice



8. Way Forward (1/2)

To commercialise OFSP:

- Future value addition efforts should focus on baked products, which have higher likelihood of adoption
- Such efforts should target entrepreneurs who may easily incorporate OFSP into their products, i.e.:
 - informal roadside sellers of *mandazi* and *chapattis*,
 - school canteens
 - hotels, restaurants, hospitals



8. Way Forward (2/2)

- Establishment of processing facility; linking farmers to markets
- Determination of nutritional quality of raw roots and value added products from the **various varieties**. This can help in acquisition of Quality Standardisation Mark from KEBS, which can enable marketing of products in supermarkets and high-end markets



Acknowledgements



- GIZ
- KALRO
- Collaborating partners:
 - Ministry of Agriculture, Livestock & Fisheries (MoALF)
 - ADS Western
 - CREADIS
 - REFSO
 - UCRC
- Farmers / community groups
- Conference organisers and participants



Crackies



Juice



Vegetable relish



THANK YOU

