

**PROMOTING SWEET POTATO
PROCESSING AND UTILIZATION :-
EXPERIENCE IN WESTERN KENYA**

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PROMOTING SWEET POTATO PROCESSING AND UTILIZATION :-

BACKGROUND

Sweet potato (SP) is an important drought resistant crop grown in Western Kenya. It is mainly a woman tended crop from planting to harvesting. Processing and utilization of sweet potato has until very recently been limited to washing, boiling or roasting for human consumption. Some communities after boiling mash with other foods while the leaves are used as animal feed. Due to high perishability of the crop after harvest, farmers have been confined to home consumption and minimal for sale with easy reach. The sweet potatoes grown are mainly white fleshed with a few yellow fleshed.

Kenya Agricultural Research Institute (KARI) and International Potato Centre (CIP) have developed several orange fleshed sweet potatoes rich in Vitamin A. Diversified processing methods to reduce bulkiness, prolong storage after harvest and utilization into several products have also been formulated by KARI and CIP. The diverse processing and utilization methods had not been accessed by farmers and sweet potato consumers in Western Kenya.

The author set out to promote processing and utilization of sweet potato by testing recipes compiled by KARI, CIP and Bukura Agricultural College (BAC). The home economics students of BAC prepared, tested and evaluated several recipes made from sweet potato roots and leaves. Other recipes from cassava, rice, arrowroots were also prepared and compared to the sweet potato. The recipes were evaluated for preference in colour, taste, consistency and acceptability. The acceptable recipes which were also relevant to farmers background were transferred to farmers and consumers in Busia, Kakamega, Vihiga, Teso and Siaya Districts.

Participatory methods of technology transfer used consisted of:

- Farmer training and demonstrations.
- Person to person discussions during Agriculture Show and farmers field day.
- Display of ready to consume products.
- Testing of prepared products.

METHODOLOGY

SAMPLING:

Farmers participating in sweet potato on-farm-trials and Home Economics students of BAC second year class were used.

Home Economics students were given nutrient information pertaining to sweet potato, cassava, arrowroot and rice through lecture. Brief on available processing and utilization methods also given.

Students were shown how to prepare several products from sweet potato by processing into grated, flour or mash. The processed products were then used to make ready to consume products using recipes compiled by KARI, CIP and BAC.

Sweet potato leaves were used in six different ways to prepare vegetable relish.

Combinations comprised:

Sweet potato relish + milk
" relish + roiko and tomatoes
" " + roiko
" " + coconut milk
Sweet potato + soya paste
Sweet potato + groundnut paste
Cowpea relish used as control.

All six combinations were tested for preference in colour, taste, consistency and acceptability using a score range of 5 - very desirable to 1 not desirable.

The students were shown how to use the sweet potato roots by:

- grating to use as whole or dry and mill the dry grated SP into flour.
- boiling and mashing then mixing with other flours to make baked or fried products.

The processed root products were used to make the following consumable products:

- Chapati
- Mandazi
- Doughnuts
- Rolls
- Bread
- Crackies
- Cakes
- Pies
- Upside - down
- Biscuits
- Crisps
- Stripes
- Kaimati
- Mshenye
- Porridge

Products were also prepared using cassava, arrowroot, rice, bulrush millet and compared with the sweet potato products. The comparison was based on colour, taste, consistency and acceptability.

Sweet potato recipes that had been prepared and tasted by students were selected to suit farmers background.

The farmers were briefed on nutrient component of sweet potato with emphasis on Vitamin A in orange fleshed varieties. The importance of Vitamin A in combating deficiency of malnutrition especially night blindness was highlighted.

Farmers were shown and let to practice grating - boiling and mashing and how to dry grated and mill into flour.

Demonstrations/Trainings were also carried out to prepare and test the following recipes by

farmers:

- Mandazi
- Chapati
- Bread
- Doughnuts
- Mshenye
- Porridge
- Vegetable relish
- Cakes

Baking of bread, and cake were carried out on Kenya Ceramic Jiko (KCJ) using open fire method. The dough was prepared and put into a greased pan. The fire in the KCJ was removed since the firebox was well heated. The pan with dough was covered and placed on KCJ. The fire that had been removed was placed on cover of pan (a heavy chapati pan was used to cover in most cases). The contents were let to bake until flavour of baked product was achieved and checking was done by uncovering and piercing dry knife in cake. If the knife remained dry and clear when pulled out after piercing then cake was ready. If knife was wet with dough, cake was given more time under cover. The top of cake had also to get a brown colour if well done.

All products prepared were assembled in a central place and all participants labeled their products and displayed in plastic plates.

Products were tested by all participants and scored as Very Good (4) Good (3) Bad (2) Very Bad (1) The farmers were asked to relate their acceptance of the product to colour, taste and feel/consistency.

Farmers were also asked to comment on what they thought about the processing and utilization methods. Farmers also rated the foods according to what was most relevant to their environment.

Kakamega Agricultural Show

Sweet potato products were prepared and displayed by KARI staff at the Agriculture stand during the Show. KARI staff explained to show goers how to process and prepare products. Products were also given to farmers to test.

Farmers Field Day at Chavakali in Vihiga District

A women Group, which had been trained in processing and utilization prepared and displayed products during the field day. A member of the group explained to other field day attendees methods involved in processing and utilization. KARI staff supervised the display.

RESULTS

Sweet potato processing and utilization technologies were disseminated to 1977 individuals, both men and women.

Participants Disintegrated Information

Type of Participants	No.
Students	34
Farmers / Training / Demonstrations	295
Agriculture Show	1500
Field Day	148
TOTAL	1977

A panel of 20 Home Economics students prepared and tested the recipes.

Sweet potato Vegetable Relish total score range for very desirable(5) and desirable (4) was as follows:-

Food Item	Taste	Colour	Acceptability
SP relish + milk	6	14	6
SP relish + roiko	19	19	15
SP relish + roiko + tomatoes	15	16	15
SP relish + coconut milk	10	16	12
SP + relish + soya paste	18	17	17
SP + groundnut paste	11	16	11
Cowpea relish (control)	12	12	13

FOOD ITEM	FOOD PREFERENCE		
	Taste	Colour	Acceptability
Chapati			
Sweet potato Grated	13	18	14
SP Mash + Soya paste	18	18	16
Mandazi Grated	11	15	10
Mandazi Mash SP	15	15	14
Sweet potato Crackies	18	17	17
Cassava Crackies	14	18	11
Rice Crackies	15	17	13
All used flour			
SP - Biscuits	15	17	16
Cassava Biscuits	16	16	16
Rice Biscuits	17	16	16
SP Crisps	15	17	13
Cassava Crisps	10	17	11
Arrowroots Crisps	17	16	16
SP + Maize + Cowpea Mshenye	13	14	14
SP + Maize + Pigeon Pea	13	10	14
SP + Maize + Beans	17	19	18

CONCLUSION

The sweet potato leaves were very acceptable as vegetable and farmers showed enthusiasm to incorporate in the diets.

Awareness of Vitamin A's role in nutrition using sweet potato orange fleshed varieties generated requests for planting materials. Requests were from non - on farm - trial participants.

Both BAC students and farmers were thrilled they could mix flours from sweet potato and other foods to make consumable products. One very innovative community in Busia was so challenged and is already producing sweet potato flour for sale. Two individual women from Busia also producing sweet potato chips for sale.

Mashed products were more appealing in colour and consistency. Farmers preferred mash process as an easier option.

Participants requested for more demonstrations and trainings to gain skill in cake, chip and crackie preparation for enterprising.

It was recommended promotion of technologies continue through two day training.

Recommendation was also made for research to focus on consumable product that:

- Has long shelf life
- Generate income
- Is sustainable.