



## Nutrition-sensitive agricultural approaches: the example of participatory cooking demonstrations in Yayu Biosphere Reserve, Ethiopia

### Executive Summary

To make the agricultural sector more sensitive to nutrition issues in order to improve food and nutrition security is a major goal, also in Yayu Biosphere Reserve, Illu Ababora Zone, South-West Ethiopia. The NutriHAF project aimed to reach this goal through diversifying agriculture through fruits and vegetables in multi-storey cropping systems, meaning that in fields with coffee, fruit trees or other trees vegetables were grown on the ground.

Several vegetable species that were found to grow in these conditions were, however, not known well to local families, and knowledge about production and consumption was missing. Next to participatory on-farm and on-station trials and vegetable production training, one focus of the project was on vegetable processing training in the form of participatory cooking demonstrations. The approach the project was following and results will be shared in this policy brief and are recommended for replication.

### What is nutrition-sensitive agriculture?

Nutrition-sensitive agriculture is a concept that aims to better link available and accessible food on the one hand and the food needed for a healthy and balanced diet for all people on the other hand. Not the production of food but the utilization of food and nutrition security are the core aspects. These include also health, education, economic, environmental and social aspects (Jaenicke and Virchow 2013).

It is assumed that the current global agro-food systems predominantly based on grain production will not be able to satisfy the increased demand for food quantity and quality (Jaenicke and Virchow 2013) – for example, vitamin rich fruits and vegetables.

Consequently, it is suggested to diversify the food system and include, for example, more different fruits and vegetables where possible. In addition, processing methods and marketing channels need to be adapted accordingly to lead to more balanced and nutritious diets.



Ethiopian kale under trees © S.K. Kriesemer

### The NutriHAF project

This three year project in Yayu Biosphere Reserve, South-West Ethiopia, aimed at providing a balanced diet for all through diversifying the local agricultural system. Different fruits and vegetables were integrated into the local multi-storey cropping systems. Therefore, newly introduced vegetable species had to be tested especially for growing in the shade under fruit or coffee trees and to identify the best growing conditions.



## **From availability to consumption**

Once the food is available, agriculture who wants to be nutrition-sensitive, cannot stop here. It needs to be taken care of that the food reaches those families who needs it (marketing) and also that they know how to utilize it properly (processing).

Consequently, the NutriHAF project aims to increase not only production but also consumption of those leafy vegetables by overcoming cultural bias against these crops, limited knowledge of food preparation, and a lack of awareness of nutritional benefits.

Next to analyzing the vegetable value chain in the project area, recipes were developed for the newly introduced vegetables and participatory cooking demonstrations were held.

## **The objectives of participatory food demonstrations**

NutriHAF project has conducted a number of participatory vegetables cooking demonstrations were conducted in the project intervention areas with two main objectives.

- to promote adoption of some nutritious indigenous vegetables which are customarily considered as weeds by most smallholder farmers.
- to develop and test the acceptability and feasibility of nutritious recipes from various vegetables for eventual wider dissemination.

## **Approach**

As NutriHAF Africa Project utilizes gender sensitive participatory action research, we acknowledge the numerous obstacles to women's participation and sets up mechanisms for lifting those obstacles. Accordingly, during the participatory cooking demonstration too, we gave particular attention to the differential experiences of women and men, and, thus, their different opinions, concerns, needs, and priorities. We have considered convenient dates and even the timing of cooking demonstration both for women and men so that everyone had equal opportunity. For that reason, we have organized multiple cooking demonstration sessions at different places on different dates even for the residents of the same Kebele. We have ensured not only equal opportunity of participation but also ensured practical physical participation of each in vegetable harvesting, sorting, cleaning, cooking, tasting and evaluation.

### ***Recipe development***

The development of recipes incorporating vegetables in tasty and attractive meals is an extremely important to increase consumption. Appropriate combinations of different ingredients can make the consumption of vegetables a pleasant experience and also optimize the supply of essential nutrients (Chagomoka, Kamga, Tenkouano, & Mecozzi, 2014). We first adapted recipes for leafy vegetables from the World Vegetable Center (AVRDC)- and recipes from Cameroon. During adapting the recipes to the local situation, we have taken due care to ensure that all food ingredients and cooking utensils are readily available to ensure that new methods for food preparation can be tried out in people's homes.

### **The procedures**

Two hired home economics extension agents who participated in the development of the recipes have given training to two women and two men identified from each of the four intervention *Kebele*. These trainees, in turn, have been assisting the two home economics extension agents in explaining the procedures to the participants at their respective *Kebele* on the date of the participatory cooking demonstration.

On each date of cooking demonstration, the participants were invited to visit each crop on the demonstration field. On such occasions, the participants were briefed about land preparations, sowing dates, spacing and overall farm management required for each crop. Both the model farmers who participated in the action research and NutriHAF Africa project team members were on the spot clarifying any questions arising from the participants. Furthermore, farmers were practically trained on the how to harvest leaves of indigenous vegetable crops.



Field visit to amaranths crop in Yayu district  
@Dr Admassu Tesso | NutriHAF Africa Project

For some farmers who failed to attend the field visit for any reason, explanation was given about each crop showing them sample leaves just before the commencement of cooking demonstration. Before the participatory cooking demonstration, we have also given orientation on micronutrient contents of each vegetable crop and how to harvest their leaves for cooking.



Vegetable leaves @Dr Admassu Tesso

During the demonstration, the steps and nutritional messages are clearly explained and all participants were able to see the tasks that are being performed. More importantly, some women and men participants have joined in vegetable cooking by cutting vegetables, pounding and mixing ingredients and cooking different dishes which were later combined as one single dish. This helped the participants to learn about:

- the contents of each recipe ,
- adding ingredients in the right proportions by using local measures,
- correct cooking times and handling; and
- how to combine diverse foods to enhance nutritional value and variety.

As the result of this learning by doing, some farmers who had access to those leafy vegetable crops were able to prepare excellent dishes just two days after cooking demonstration and invited their neighbors to taste. The good news is that the Ethiopian culture promotes sharing foods with neighbors and eating from the same plate which is convenient for wide spread popularization of the current new recipes.

### Participatory cooking demonstrations and food testing

NutriHAF Project has carried out a number of participatory cooking demonstrations in different locations at different times. Of these, we have collected and analyzed food preference testing data from the participants in two periods. This first one was conducted in 2016 with amaranth leaves, jute mallow leaves, pumpkin leaves and Ethiopian kale for comparison. Here, each vegetable was cooked in three different ways: with butter, with beans and with potato. As the dishes were ready for testing, a government high ranked official from the district is was invited to test and invite others. Then, panelists were randomly selected both from women (47) and men (55) making total panelist of 102. As each panelist taste each dish, enumerators were recording whether the panelist ‘like very much (5), like (4), neutral (3), dislike (2), dislike very much (1)’ the food. Furthermore, each steps of food cooking demonstration and testing was filmed with videos for better documentation as sources of learning and evaluation of success and challenges of the project.



Food taste preference being conducted  
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The second demonstration and testing took place in 2017 with cowpea leaves in three different combinations: cowpea leaves only; cowpea leaves with Ethiopian kale and fish; cowpea leaves with amaranth leaves and fish. Panelists were randomly selected from the participants : 39 female and 35 male participants thereby making 74 samples for food preference testing. As each panelist taste each dish, enumerators were recording their food test preference using the same data collection sheet previously used.

### The Results: Acceptance of new vegetables and the recipes

In 2016, from 102 participants in total, about 47% liked the dishes with the newly introduced vegetables very much, while 38% stated to like them and only 15% were undecided while nobody stated to dislike the dishes. The following table shows the details.

Dishes	Taste Preferences (Likert Scale)				
	Dislike V. Much	Dislike	Undecided	like	Like V. Much
Amaranth with Butter	-	-	24	43	34
Amaranth with Beans	-	-	18	46	38
Amaranth with potato	-	-	9	36	57
Average	-	-	16.6%	41.2%	42.2%
Jute mallow with Butter	-	-	25	27	50
Jute mallow with Beans	-	-	11	39	52
Jute mallow with potato	-	-	10	57	35
Average	-	-	14.7%	40.2%	45.1%
Pumpkin with Butter	-	-	17	36	49
Pumpkin with Beans	-	-	10	44	48
Pumpkin with potato	-	-	17	44	41
Average	-	-	14.7%	40.2%	45.1%
E. Kale with Butter	-	-	18	34	50
E. Kale with Beans	-	-	12	41	49
E. Kale with potato	-	-	15	43	44
Average	-	-	14.7%	38.2%	47.1%

Gender disaggregated data analysis (table not reported for brevity) shows that there is no gender difference in vegetable dishes taste preference among the panelist. The average mean score for both men and women ranges between 4.04 and 4.60 for different vegetable dishes, the maximum possible score being 5.0.



In 2017, the picture for cowpea leaves was similar with 52% of participants liking the dishes very much, 41% liking them, 6% were undecided and only 2 people disliked the dishes.

## Conclusions

Both men and women participants have equally participated in the vegetable cooking demonstration thereby breaking the old stereotype of considering cooking as if the only women's duty. On the top of this, the participatory cooking demonstration and food testing has changed the farmers' attitude toward most vegetable crops. Before the participatory food cooking demonstrations, most farmers were considering amaranth and jute mallow as 'weeds' while some are regarding them as animal feed. Right after the our orientations on the micronutrient contents of these crops followed by the participatory cooking demonstration, the participants began overwhelmingly asking for seeds of these crops for future use. Following the widespread acceptance of each crops by the community, NutriHAF project has prepared and disseminated a number of information materials both in local and English languages. For each vegetable a leaflet with recipes was created giving clear directions on the preparation steps. In addition, for each vegetable a poster is available with production and processing information.

## References/ Further reading

NutriHAF booklet: Vegetable species for multi-storey cropping systems and human nutrition

Link to the document in English:

[https://www.zef.de/fileadmin/webfiles/downloads/projects/NutriHAF/NutriHAF\\_Vegetable\\_booklet\\_FINAL.pdf](https://www.zef.de/fileadmin/webfiles/downloads/projects/NutriHAF/NutriHAF_Vegetable_booklet_FINAL.pdf)

Link to the document in Oromifa:

[https://www.zef.de/fileadmin/webfiles/downloads/projects/NutriHAF/NutriHAF\\_Vegetable\\_booklet\\_Afaan\\_Oromo\\_FINAL.pdf](https://www.zef.de/fileadmin/webfiles/downloads/projects/NutriHAF/NutriHAF_Vegetable_booklet_Afaan_Oromo_FINAL.pdf)

Jaenicke H. and Virchow D. (2013) Entry points into a nutrition-sensitive agriculture. Food Sec. 5:679–692. DOI 10.1007/s12571-013-0293-5

Also, the NutriHAF project compiled information from vegetable production and consumption, such as about nutritional values of vegetables, in a booklet on the newly introduced vegetables. This is available in the Internet (see links in the reference list below).

## Policy Recommendations

1. To improve food and nutrition security does not only involve the production of foods, yet knowledge about the foods and their nutritional value as well as how to prepare them is essential in order to integrate them into people's daily diet.
2. To make agriculture more nutrition-sensitive, one possibility is, therefore, to combine the introduction of new highly nutritious foods with not only production recommendations but at the same time processing recommendations
3. Participatory food cooking demonstrations are proven powerful motivational tool for positive behavior change resulting in better adoption of new food crops. Thus, home economists and health extension agents are supposed to continue with such demonstrations for scaling up of the project impacts to the wider community.

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