

**REPORT ON THE HEALTHYFOODAFRICA PROJECT'S HANDS-ON TRAINING
FOR POTENTIAL UPTAKERS**



HELD AT

CSIR-FOOD RESEARCH INSTITUTE

3rd-6th April 2023

Amy Atter, Stephen Nketia, Acheampong Addo, Joyce Kusorgbor, Evelyn Ayeh, Frank Peget, Constance Boateng, Alice Padi, Ebenezer Asiamah, Richel Boateng, Patricia Asiedu, Jolene Nyako, Emmanuel Kuwornu, Hayford Ofori, Queronica Quartey, Seth Agyakwah

CSIR-FRI/RE/AA/2023/003

OPENING CEREMONY

3RD APRIL, 2023

Opening

The moderator and member of the project team, Mr Stephen Nketia, welcomed everyone in the room before a round of participant introductions. Dr. Hayford Ofori offered the opening prayer to kick off the program. There were 42 participants in total, 22 of whom were men and 22 of whom were women.

Purpose of gathering

The HFA project's Work Package (WP) 6 lead and co-lead for CSIR, Dr. Mrs Amy Atter, provided a succinct project description. She stated that the European Union H2020 is funding the project and coordinated by the Natural Resources Institute, Finland (Luke). The project is also collaborating with other institutions located in countries including Finland (the University of Helsinki), The Netherlands, Italy, Ghana, Benin, Kenya, Uganda, Ethiopia, and Zambia. The project's goals are to increase the diversity, sustainability, resilience, and productivity of food systems to enhance nutrition in Africa. According to her, the productivity of food systems required the collaborative efforts of multi-stakeholders involved in various aspects of the food value chain to enhance the cogeneration and co-creation of ideas on food systems among stakeholder institutions.

In Ghana, two institutions are involved in the HFA project. They are Food System Lab (FSL) Tamale and FSL Accra also known as CSIR. The latter is implemented by Water Research Institute (WRI) and Food Research Institute (FRI), with some support from Labour Productivity Centre. This training for potential uptakers is focused on value addition to indigenous foods for a healthy life to solve malnutrition problems especially in the urban areas, to build uptakers' capacity in producing the products for commercial upscaling, reduce food waste and encourage the sale of these products globally. This the project beliefs will create more jobs, especially for women.

She explained that these uptakers are key stakeholders who have been involved in the development of initial 46 different products at the early stages of the project work package 6 activities. However, based on the preferences of the uptakers, 7 products were selected for upscaling even though only

3 were proposed in the grant agreement. These selected products may be classified as convenient and more nutritious products that are either semi-processed or ready-to-eat.

Uptakers are expected to be trained on their various selected food products during the training workshop. Dr. Atter also mentioned that the CSIR- FRI Test Kitchen will be made available for uptakers to use as a product preparation kitchen to help facilitate the quick approval of their products by the Food and Drugs Authority (FDA).

Welcome address

Prof. Charles Tortoe, the Director of CSIR-FRI, warmly welcomed and acknowledged everyone at the Institute and was delighted to see the training program commence. He mentioned that it was generally speculated that the findings of research always ended on the shelves. He stated that this is false. He reiterated that the HFA project being one of FRI's projects would train uptakers on the novel food products that have been developed through research. He urged all uptakers to take the 4-day training seriously to be able to develop innovative food products that can be certified by FDA for both domestic and international markets. He was optimistic that the training on HFA novel foods for the 4 days will help create more jobs for women and youth hence reducing unemployment in Ghana.

HFA gender orientation

Uptakers were oriented on gender sensitivity issues in the co-generation and co-management of project ideas against a background that these are requirements of the HFA project. The presenter, Dr. Queronica Quartey mentioned that gender is important for food security, business development, quality and expansion, inclusion and sustainable development. The HFA project was keen on promoting gender equality through a transformative approach to address old issues such as the respect and values of men and women in society and their shared responsibilities in the food system to help promote agri-food systems in Africa.

She added that all partners are responsible for gender responsiveness in their work. The presentation noted that gender specific needs may vary between different activities, actors, data-collection needs, etc. however, everyone shall follow some basic principles regarding gender.

The following issues should therefore be integrated into all activities and data-collection plans and adhered to in the implementation of the uptake of novel foods- covering all actors in the value chain:

Gender-proof all actions and work towards bridging gender gaps. Together all partners/stakeholders work towards raising awareness of gender as a factor in increasing the impact on sustainable food systems. Participate in identifying gender gaps, build gender capacity and communicate its role in impacting nutrition.

- All data shall be disaggregated by gender. These include issues such as ownership and decision-making regarding resources. Household data will help analyze gender constraints- including relevant intra-household power dynamics. This significantly influences reality.
- Data should be collected among men and women including data on household heads. Issues are in multiple dimensions so collect information from a variety of informants. Note that the realities of a female-household head may be different from those of male heads.
- Enumerators should include both males and females. They should be tactful where issues are sensitive and may require a same-sex person for the data collection. All gender-specific roles should be considered. Consider different angles of issues of interest, decision making and participation.

There may be a need to consider the following:

- I. Choosing whom to buy raw materials from; markets to target; what could be contributions towards addressing household food production; time and labour saving devices; flexible work times.
- II. Price and package sizes.
- III. Meeting children (boys and girls) or adult needs (younger or older, female or male)
- IV. Quality of job required and which gender group to consider
- V. Importance of incomes to gender groups etc. It was also mentioned that gender awareness and integration are important, especially for business owners/managers and workers. Indicators to consider are production, resources, income, time and leadership.

Open discussion

Question 1 Uptaker: Are all gender groups entitled to equal remuneration?

Dr. Queronica Quartey: In Ghana, there is a policy of equal pay for both men and women and fairness to all. Equal remuneration should therefore be given to all.

Question 2 Uptaker: How can data on the various gender groups purchasing a product be recorded in the absence of the business owner?

Dr. Queronica Quartey: For the purpose of gender inclusion and data analysis for the HFA project, other workers employed by the business owner could take the data on his/her behalf. Simple data collection templates would be developed to enhance the quality of the data collected.

Prof. Charles Tortoe: Uptakers must bring their workers on board. They should let them know the kind of data needed for gender inclusion in the outputs of the HFA project. Furthermore, according to the World Bank, every project should have 40% women inclusion and CSIR-FRI has 41% women employees. He therefore encouraged all uptakers to do the same in their enterprises.

Mr. Nketiah added that he would handle the cost-benefit analysis of all the various novel products for profitability and sustainability.

Question 3 Uptaker: If an uptaker has a kitchen already certified by FDA can he/she produce his/her products from there?

Dr. Mrs Amy Atter: An uptaker who already has a kitchen certified by FDA could develop his/her products from there. Otherwise, CSIR-FRI would produce for uptakers at its certified kitchens which will make the process easier. She urged that all uptakers should register their companies since it is a prerequisite for FDA certification. She acknowledged the Chefs Association for being part of the HFA journey. The Association identified challenges the HFA project had to address with some products such as Bambara beans to replace the imported baked beans used at hotels and restaurants. Apart from the products the uptakers had chosen, she encouraged them to consider the other products on the CSIR-FRI list as well.

Briefing on the choice of product (fish), the nutritional value and the choice of processing method

Dr. Jolene Nyako, the Project Team Member in charge of nutrition activities under WP2, was of the view that the type of fish selected determines the type of processing method to be used; and the type of product desired at the end result and its health claims. She remarked that oily fish contains a lot of polyunsaturated fats, oil-dependent micronutrients such as vitamins A, D, E and K and must be served/packaged in an oil base for the bio-availability of all the essential nutrients. This is why sardine in oil is richer in Omega-3 and Omega-6 and tastes better than in brine. Hence, in product development, the nutrients to be amplified must be in focus with the appropriate processing method. In fish processing, with much focus on the oil nutrients, methods that would displace water would increase the oil nutrients per unit volume. Furthermore, methods such as frying oily fish are not ideal because the fish becomes too soggy therefore the methods for processing should be defined by how a producer would want to market the product. If the formulation aspect of production is well planned, product testing would mostly be successful and every batch must be tested to know the exact nutrient profile.

Closing remarks

Prof. Charles Tortoe expressed his gratitude to all present. He emphasized the achievement of the key objectives of the HFA project such as improvement in nutrition, health and businesses. As a research institution, the mandate is to develop technologies and transfer them to others to create business opportunities in Ghana. He encouraged uptakers to take gender issues seriously and take accurate data on them. Also, uptakers should be serious with 4-day training ahead for successful businesses in the near future.

Closing prayer

The final prayer was said by Mrs Emelia Nortey, an uptaker.







Hands-on training of participants

Hand washing

Trainees and trainers thoroughly washed their hands with soap under running water before the start of sessions. Hands were also washed before handling food, often during food preparation, after going to the toilet and intermittently as necessary. All surfaces and equipment used for food preparation were also washed thoroughly before use to prevent contamination by microorganisms that cause foodborne diseases. Reference was made to the WHO (2006) five keys to safer food manual. <https://www.who.int/publications/i/item/9789241594639>



Fish chips

The Product Development Scientist, Ms. Evelyn Ayeh, mentioned the different stages involved and the ingredients needed in the preparation of fish chips. About 5 Nile tilapia fish, each with an average weight of 800 grams were used for the fish chips. She mentioned that because the fillets are of interest, the bigger the fish the more the fillet material.

1. Cleaning of fish: Fish was washed, degutted and scales removed before filleting.
2. Filleting: The tissue of the fish was detached from the bones using a sharp knife.
3. Slicing: Fillets (Fish tissues) were cut into smaller particles of uniform shapes and sizes. This was important to facilitate the drying of the fillets in an oven. Low moisture content in the fillet materials enhances the shelf-life of the end products (fish chips)
4. Spicing: Spices such as salt, powdered pepper, powdered ginger, powdered garlic and fish seasoning (ONGA) were added in specific quantities to the sliced fillets and uniformly mixed.
5. Marinating: Spiced fillets were marinated for about 2 hours to season the fillets
6. Drying: Marinated fish fillets were oven dried at a temperature of 70°C for 4hrs to reduce the moisture content in the samples. Ideally, moisture content should be within 10-14% after the oven-drying process.
7. Baking: Fish chips were obtained after 2 hours of further drying in an oven.

8. The fish chips were packaged into equal portions and sealed. Some were vacuum sealed. Samples were given to some participants to taste and all of them scored the product as excellent.





Fish sausage

The fish sausage was prepared using about 5 Nile tilapia fish, each with an average weight of 800 grams

1. Cleaning of fish: Fish was washed, degutted and scales removed before filleting.
2. Filleting: Fish skin was removed and the tissues were cut off. In the preparation of fish sausage, the skin was excluded to obtain fine particles after shredding the tissues.
3. Shredding and mincing: Fish tissues were shredded into small quantities using an automatic mincer.
4. Spicing: Powdered pepper, powdered garlic, powdered ginger, salt and Onga spice were added to the minced fish and mixed uniformly. The product was further minced into very fine particles. An amount of vegetable oil was added for easy passage through the mincing machine.
5. Filling: Minced fish, uniformly spiced, was filled into sausage transparent bags made of plant extracts. The packs were filled using a machine.
6. Steaming and conditioning: Samples were steamed at boiling point for about 10mins and conditioned in iced water to cool and firm up the samples.
7. Packaging: Fish sausages were packed and kept in a freezer.



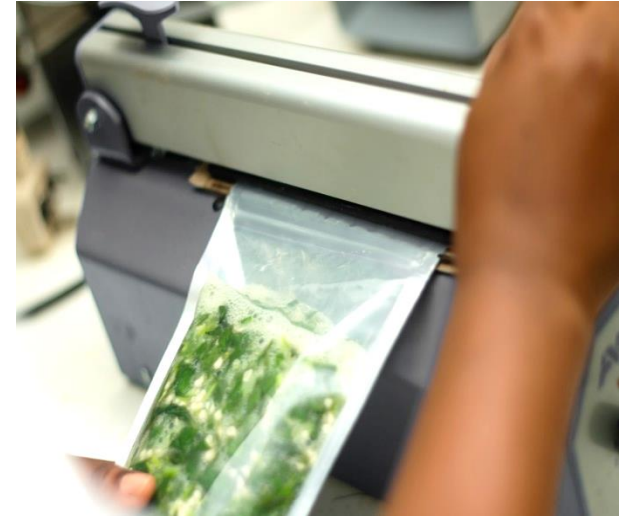


Ademe and Okro

1. Cleaning and sorting: The ademe and okro were sorted by removing the ones that appeared brownish, withered, hard, and overgrown. They were washed thoroughly to remove sand particles.
2. Chopping: The okro and ademe were chopped separately into equal sizes as much as possible to ensure that all are cooked evenly.
3. Softening: The okro was put in water for about one hour to soften it and make it slimy or stringy without the use of artificial tenderisers such as bicarbonate soda and saltpetre.
4. Cooking: salt was added to the okro and was cooked in an open saucepan for about 30 minutes without a lid to prevent loss of stringiness. The chopped ademe was added to the okro while it was still on fire and allowed to cook for some time.
5. Cooling: The ademe okro mix was poured into a plastic bowl that rested on very cold water containing ice. The mix was continuously stirred to remove heat as a way of preserving the colour during storage.
6. Packaging: the ademe okro mix was allowed to cool and packaged into portions and kept frozen.







Koobi in oil

The koobi was washed thoroughly and cut into pieces.

2. Soaked in water for 20 minutes to reduce saltiness.

3. Refreshed with water and placed in a colander.

4. Steamed with bay leaf and cloves for 10 minutes.

5. The glass bottles to be used as containers for storage were sterilized.

6. The koobi was arranged in the sterilized glass bottle.

7. Sauté garlic and pepper in oil under low heat.

8. The oil was scooped onto the koobi in glass bottles and pasteurized for 15 minutes.









Koose mix

1. Cowpea flour: Dehulled cowpea was milled and oven dried to reduce moisture content and protect it from weevil infestation. The flour was allowed to cool.
2. The following, in powdered form, were added to the flour: onion, ginger and cayenne pepper and Ani Seed
3. The mix was packaged and sealed appropriately.
4. Water and salt were added to some of the mixes to form a paste. It was deep-fried in heated oil for participants to taste.







Fruity soy pancake mix

1. Wheat flour was sieved to remove any unwanted particles.
2. Soy flour was added to the wheat flour and oven dried at a temperature of 80°C
3. The mix was allowed to cool.
4. Dried fruits, sugar, nutmeg, salt, baking powder and flavour were added.
5. The mix was packaged and sealed.
6. Water was added to a portion of the mix and shallow fried into pancakes for the participants to taste.

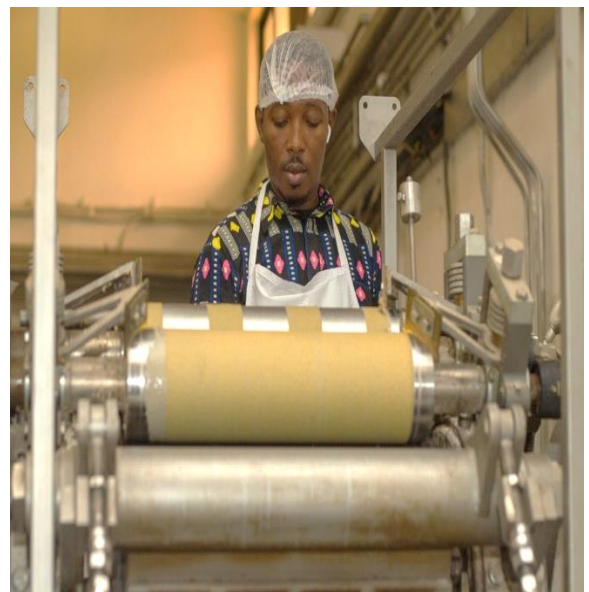




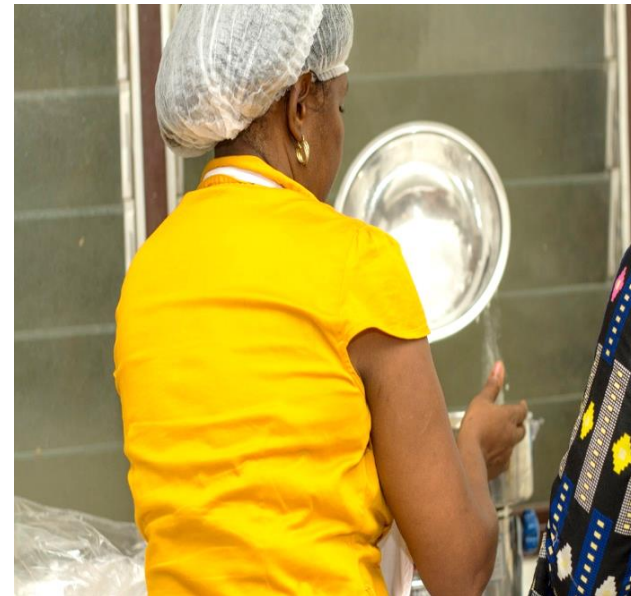
Instant cereal mix (millet and maize)

1. Sorted millet and maize were washed under running water.
2. The millet and maize were dried in an oven.
3. They were mixed and milled into flour.
4. Water was added to the flour.
5. Sugar and salt were added to the flour and then drum-dried.
6. The drum-dried mixture was milled
7. Milk powder and melted butter/margarine were added and mixed.
8. Participants were given portions to taste.











CLOSING CEREMONY

6th APRIL, 2023

Opening

The concluding ceremony, which got underway at 1:30 pm, was moderated by Dr. Hayford Ofori. The program was launched with an opening prayer from Rev. Mrs Claudette Brown. There were 18 female and 19 male participants in total,

Opening remarks

The uptakers were commended by Prof. Charles Tortoe for taking part in the 4-day program at CSIR-FRI. He emphasized that the goal of CSIR-FRI is to develop innovations via research and transfer them to SMEs and other organizations for the nation's socioeconomic development – hence his commendation. All uptakers without accredited test kitchens were urged to visit CSIR-FRI so that they could produce their goods and launch their marketing campaigns as soon as possible.

Statement from HFA Coordinator

Dr. Seth Agyakwah, the Project Coordinator for the HFA at CSIR, conveyed his heartfelt greetings to everyone in attendance. The rigorous 4-day workshop on innovative food products at CSIR-FRI, led by Dr. Mrs Amy Atter, received high praise. The objectives of the HFA project according to him seek to develop novel and healthy foods through value addition of food products which will reduce food losses, enhance production of healthy foods and create more businesses along the food value chain. He urged participants to put in a lot of effort to make sure that the novel food products developed under the HFA project are available in both domestic and foreign markets.

Opening of exhibition

Ms. Evelyn Ayeh mentioned the products that uptakers were trained on. They included ademe-okro, koobi-in-oil, fish sausage, fish chips, koose mix and soy fruity pancake. All of these novel food products were packaged and exhibited.

Feedback on training

- Uptaker 1 “The training was insightful and would be highly beneficial in future”.
- Uptaker 2 “I would like to appreciate the HFA project and CSIR-FRI for organizing this four-day hands-on training for us as potential uptakers. HFA is also ready to assist us all register the products developed and FRI is offering its test kitchen to be used by those who want to at a very affordable rate”.
- Uptaker 3 “The training was very interactive and everybody was free to participate and ask questions”.
- Uptaker 4 “My interest in the production of instant cereal was met in this training and I am highly grateful to CSIR-FRI and the HFA project team. I believe the instant cereal mix product can highly compete with Cerelac instant cereal from Nestlé and other similar imported products. I believe when uptakers interested in this product collaborate, they can take over the market because Cerelac has no competitor yet.
- Uptaker 5 “The packaging of fish chips had been improved to a vacuum pack, which is more attractive and also improves the shelf-life of the project”.
- Uptaker 6 “CSIR-FRI should talk to the government to financially assist Small and Medium Enterprises (SMEs). The government always refers to SMEs as the engine of national growth however little financial support is given to SMEs.

Prof. Wisdom Amoa-Awua, Project Team Member, in response to the issue of inadequate financial support for small-scale enterprises, encouraged uptakers to make enquiries at Ghana Enterprise Agency for funding opportunities.

Safe fish certification

Dr. Mrs Amy Atter used the opportunity to inform the gathering about the granting of safe fish compliance certification for the CSIR-FRI fish processing facility by the Food and Drugs Authority (FDA) and GSA (Ghana Standards Authority). She further explained that this means that fish smoked from the facility, retrofitted by HFA, will be regarded as safe for consumption and also gain access to other African markets under the African Continental Free Trade Area (AfCFTA) agreement. The next certificate to be applied for will be the European Union

certification to permit product exportation, she promised. She presented the certificate to Prof. Charles Tortoe.

Next steps

Dr. Mrs Amy Atter advised all uptakers to double-check their registration paperwork/documents from the Registrar-General Office before registration processes begin with the FDA. Those who may have challenges should contact her. She asked the uptakers to finalise their two preference products that can be registered in their company names. She continued by saying that to support a speedy registration procedure, CSIR-FRI/ HFA project would write through the Director to the FDA on behalf of all uptakers. Those who needed labels to be designed for them might get in touch with Mr Okyeadie, another uptaker who is also into designing and printing. The CSIR-FRI's Client Division headed by Mr Stephen Nketia, a project member and his team will help promote the uptakers' goods on the market.

Closing remarks

Dr. Mrs Amy Atter and the entire HFA/Test Kitchen team received praise from Prof. Charles Tortoe for their hard work. He challenged all uptakers to take up the products, market and distribute them widely. He also invited uptakers to the upcoming CSIR-FRI Food Fair in October 2023 so they could attend and introduce their products. Additionally, he urged them to participate in the CSIR-FRI trainings that are scheduled yearly and advised those who needed financial assistance to go to the Ghana Enterprise Agency and Ghana Skills Development Fund.

Closing prayer

The closing prayer was said by Dr. Queronica Quartey.







Media Reportage

- <https://ghstandard.com/eu-funded-healthyfoodafrica-project-develops-seven-new-healthy-convenience-food-products/77505/>
- <https://www.ghanabusinessnews.com/2023/04/12/seven-new-convenience-food-products-developed/>