



March 2021

Volume 2, No. 1

Newsletter

CSIR-Food Research Institute Bi-Annual Newsletter

Contents

- Mandate of the CSIR-Food Research Institute..... 1
- Purpose of the Newsletter 1
- Brief about the CSIR-Food Research Institute.....2
- Investors from LUTECH Ghana Visit CSIR-FRI to scout for Investments Opportunities 2
- CSIR-Food Research Institute Organizes Training in Mushroom Production 3
- Sale of Research Developed Products.....4
- Analytical Services.....5
- AgriFoods Stakeholders Workshop Held at the CSIR-FRI..... 6
- Research Programmes.....7
- Recommendations for Workers Returning to Work Post COVID-19...8



Mandate of the CSIR-Food Research Institute (CSIR-FRI)

The CSIR-FRI is mandated to conduct applied market-oriented research into problems of food processing and preservation, food safety, quality and storage, food marketing, distribution and utilization, and national food and nutritional security in support of the food industry and to advise government on its food policy.

Purpose of the Newsletter

This is the second issue of the Institute Newsletter, and it is intended to communicate to clients and stakeholders about the CSIR-FRI's range of products, services and expertise. This newsletter highlights the vision of the Institute to be recognized nationally and internationally as an S & T institution that plays a key role in the transformation of the food processing industry with reference to product safety, quality and preservation. The newsletter addresses current and potential clients and stakeholders and the general public of the mandate, capacity, capability, research and commercial activities of the CSIR-FRI. The CSIR - FRI has laboratories which have been accredited to the ISO 17025 Standard by the South African National Accreditation System

(SANAS) since 2007. Currently, 12 of our international microbiological and chemical test methods are accredited. Recently, our scope of testing has been expanded to include the use of molecular methods (Polymerase Chain Reaction (PCR) for analysis of food, providing results in relatively short time frames. Through the provision of scientific and technological information support, CSIR – FRI assists with improving the performance of the food industry for socioeconomic development of Ghana.



Ag. Director, Prof. Charles Tortoe

A brief about the CSIR-Food Research Institute

Food Research Institute (FRI) is one of the thirteen Institutes of the Council for Scientific and Industrial Research (CSIR). It was established by the Government Legislative Instrument No. 438 of 19th March 1965. This was later incorporated into the CSIR as one of the Institutes by revocation of LI 438 when NLC Decree 293 established the CSIR in October 1968. Operations of FRI started in 1966 with assistance from the United Nations Development Programme (UNDP) while the Food and Agriculture Organization (FAO) acted as the executing agency. The phase of UNDP/FAO project assistance lasted for five years, from October 1965 to September 1970. CSIR-FRI has since blossomed into a full-fledged Research Institute and much more. As one of the thirteen (13) Research Institutes, the program of work of the Food Research Institute (FRI) continues to place its main emphasis on the applied research into storage, processing, preservation, marketing and consumption of the main food commodities of the country. This is with the view of encouraging and supporting the developmental needs of domestic food industries. In the context of initiating and sponsoring development generally with the Government of Ghana occupying a strategic position. This is particularly so in the development of indigenous food industries which are in their pioneer stages. However, any achievement will ultimately rest on the uptake of the technologies by the private enterprises sector.

Investors from LUTECH Ghana Visits CSIR-Food Research Institute to Scout for Investments Opportunities

A meeting was held at CSIR-FRI with a Team of Investors from Lutech Engineering, Ghana, who wanted to discuss issues bordering on value addition and how collaboration could be achieved between the team and CSIR-FRI. Prof. Mrs. Mary Obodai, the then Director of CSIR-FRI made a presentation to the team on activities of CSIR-FRI and how it goes about adding value to agricultural products and equipment. The Director's presentation dwelt on the history, mission, vision, mandate, organisational structure. She also touched on research areas, services, technology transfer, laboratory accreditations, achievements, and client base of the Institute. The team was interested in CSIR-FRI's Agribusiness Incubation Center earmarked to produce ethanol at Pokuase that had been sitting ideal for a while and enquired if there was a possibility of collaborating to make the plant operational. It was reiterated that the Institute had a business plan for the Pokuase plant and that

work on the plant was 95% complete. The investors wanted to know more about the possibility of jam, honey, rice cake and cereal production, they were made aware that the Institute was in a better position to assist in the development and subsequent production of such products. However, on honey production it was made clear it was produced by the Forestry Research Institute of Ghana, one of the 13 Institutes of CSIR Ghana which is responsible for research into honey production. The Team later visited some of the facilities at the Institute to have a practical feel of activities.

Group photograph





Participants mixing and filling compost bags



Drying of mushrooms



Participants group photograph

CSIR-FRI Organizes Training in Mushroom Production



Training Session



Practical training session

On the 23rd of November 2020, CSIR-Food Research Institute, trained 17 farmers to venture into or improve on mushroom farming. The former Director, Prof. Mary Obodai formally opened the training programme. She encouraged participants to diligently follow the training programme and reiterated the importance of mushrooms to the individual, households, and the nation. Ms. Matilda Dzomeku, the lead consultant for the mushroom cultivation training programme took the trainees through "Introduction to mushrooms" where trainees were taught about types of mushrooms; edible and medicinal. Trainees were taught the "Theory on plastic bag method, oil palm mushroom cultivation

methods", "Compost formulation". There was also a practical demonstration of all the presentations made. The participants had the privilege of preparing their own compost bags. Preparation covered the "inoculation of the compost bags", "compost formulation", "turning of compost heap", "bagging and sterilization (plastic bag method)", "field to inoculate", and "watering and harvesting". Each participant was given ten (10) bags to inoculate. Another important aspect of mushroom farming that was not left out was the maintenance practices at the cropping house. Costing, marketing, and packaging of mushrooms was of importance as well. The participants were advised to appreciate the con-

cept of the marketing mix (7Ps). Thus product, price, people, place, processes, physical evidence and promotion. An entrepreneur should always play around these to compete in the market. In terms of costing, they were encouraged to always use activity-based method. Trips were made to two mushroom farms; Queen of Mushrooms, and MORDEW, both at Adenta. Participants were happy to have visited at a time that harvesting was been done and so participated in the harvest. Participants were served with new recipes from mushrooms such as mushroom tea, mushroom shito (pepper sauce) etc.



Sale of Research Developed Products

We have a range of Research Developed Products for sale to the general public. They are so called because they were developed as a result of research carried out by the Institute. Products offered for sale are:

- Plantain Fufu Flour
- Kokonte
- Cocoyam Fufu Flour
- Yam Fufu Flour
- Maize Cereal Mix
- Rice Cereal Mix
- Maize Grits

- Groundnut Paste
- Banku Mix
- Fermented Maize Meal
- Gari
- Oyster Mushroom Spawns
- Oyster Mushroom Compost Bags
- Fresh Mushrooms

Sale of FRI research products and results of analytical services now online. Visit <https://foodresearchgh.org> to order your products and track your analysis now.

Analytical Services



The food microbiology laboratory has accreditation to ISO/IEC17025 : 2017 for 7 microbiological methods. This was granted by the South African National Accreditation System (SANAS). Aside these, the Laboratory offers a wide range of microbiological analysis into all food and animal feed matrices.

Accredited Microbiological tests are:

Enumeration of yeasts and moulds.- ISO 21527-1/2:2008

CSIR-FRI offers comprehensive chemical analytical services to the local beverage, food, feed and brewing industries.

Commodities tested include: Fish and fish products, chocolate and cocoa products, water, fruit juices and soft drinks, biscuits, toffees, dairy products, poultry products, spices, flavorings, condiments and vegetables, etc. We have been grant-

Microbiological Analysis

Detection of *Salmonella, sp*: NMKL No. 71, 1999, 5th Ed.

Determination of aerobic microorganisms in foods at 30°C, NMKL 86 2013

Enterobacteriaceae. Determination in foods and feeds. NMKL 144, 2005 3rd. Ed.

Coliform bacteria detection in food NMKL No.44, 2004 6th Ed.

Thermotolerant Coliforms (*E. coli*) NMLK 125 2005 Ed. 4th Ed.

Enumeration of coagulate positive *Staphylococcus aureus* in food. NMKL No. 66, 2009 5th Ed.

Chemical Analysis

ed accreditation to ISO/IEC17025:2017 by South African National Accreditation System (SANAS) for the following chemical analysis:

Moisture determination in food and feed-Air Over Method AOAC 32.1.03 (2016) 20th Ed.

Fat (crude) or ether extract in food and animal feed-Soxhlet method AOAC 4.5.01 (2016) 20th Ed.

Protein in food and feed-Kjeldahl method AOAC 4.2.09 (2016) 20th Ed.

Determination of Ash in dried food and feed AOAC 32.1.05 (2016) 20th Ed.

Aflatoxins-JAOAC 1991,74,81-84

Physical Analysis

We offer analytical services on food processing and preservation.

Analytical tests offered are:
Water Activity,
Moisture,

Functional Properties (pasting characteristics, water binding activity, swelling capacity, water absorption, etc),
Color,
Texture Analysis,
Centrifugation,

Viscosity,
Shelf-life studies,
Physical and Chemical Quality,
Cereals Particle Size Analysis.



TRIPLE BOTTOM SUSTAINABILITY ANALYSIS IN THE CIRCULAR ECONOMY OF THE AGRICULTURAL FOOD VALUE CHAIN

The CSIR-Food Research Institute (FRI), in collaboration with Sheffield University and Gold Coast Sustainability and Governance Institute organized a stakeholder's workshop at the CSIR-Food Research Institute on Tuesday, 20th October 2020. The theme for the workshop was, "The Triple Bottom sustainability analysis on the circular economy of the Agricultural food value chain in Ghana". The objective of the workshop was to reduce post-harvest losses and create zero waste in the system. Thirty-one (31) persons representing various Institution/actors participated in the workshop. Twenty-One (21) of the participants were physically present whilst ten (10) participated online. Participants were drawn from Research and Academia, Government and Policy

Agencies, Non-Governmental and CSOs, actors in the food value chain, climate change and agricultural waste businesses. In her opening remarks, Prof. (Mrs.) Mary Obodai, then Director of the CSIR-Food Research Institute indicated that, the fundamental principle of the circular economy was to ensure that the value chain of production systems is self-sustaining and supports the re-use of resources to avoid wastage. She explained that a circular economy in agri-food chain linked production, consumption, and supply chain activities to reduce food wastes, promote global food security whilst ensuring zero waste. In line with CSIR-FRI's mandate, Prof. Obodai indicated that the objective of the workshop would inevitably reduce post-harvest losses and create zero waste in the system which will consequently

accrue financial benefits to producers and processors and increase nutritional benefits to consumers. There were presentations by various speakers on Introduction to the Triple Bottom Sustainability Analysis; Trends in Global Agricultural Economy and its relevance in the Era of COVID-19 Pandemic; The Agriculture Economy Landscape: The Ghanaian Perspective and CSIR's Role in the Agribusiness Sector of the Ghanaian Economy.

Research Programmes

Root and Tuber Products Programme

Scientific Research into Root and Tuber

Cereal, Grains and Legume Products Programme

Research into Cereal, Grains and Legume Products

Meat, Fish, Poultry and Dairy Products Programme

Scientific Research into Meat, Fish, Poultry and Dairy Products

Fruit, Vegetable and Spice Products Programme

Research into Fruit, Vegetable and Spice Products

Managing Editor

Dr. Esther Wahaga

Production Editors

Mr. Kwabena Asiedu Bugyei
Mr. Thomas Najah
Mr. Ebo Eyeson
Mr. Jeremiah Lartey-Brown
Ms. Juliet Vickar

Editorial Board

Prof. Charles Tortoe
Prof. Mary Obodai
Dr Charlotte Oduro-Yeboah
Dr Margaret Owusu
Dr. Gregory Afra Komlaga
Mrs. Anthonia Andoh-Odoom
Ms. Mariam Yakubu

Contact



GA-107-2878



director@foodresearchgh.org



0302-962068



www.foodresearchgh.org

Sale of FRI research products and results of analytical services now online



Recommendations For Workers Returning To Work Post- Covid-19

Maintaining A Healthy Body

General Information

It is essential to follow all the recommendation of the WHO and GHS on social distancing and mask wearing. The following are additional guidelines to ensure the safety of your body, mind and soul.

Food for Health

- Plan your meals to limit your trips to the food vendors whilst at work, preferably bring food from home
- Make breakfast you heaviest meal to ensure you stay full for long during work hours.
- As much as possible eat all meals whilst hot/warm.
- If lunches are from home, the use of culinary herbs like ginger dawadawa, garlic, star anise, prekese, etc to improve antioxidant levels in the body.
- For snacks, consume snacks rich in whole grains, nuts, and healthy fats such as roasted groundnut and Popcorn, Nkatie Cake, Ayigbe Biscuit Boiled/Roasted Corn
- Practice good food hygiene.
 - Keep raw food stuffs clean
 - Separate raw and cooked
 - Cook food thoroughly;
 - Keep food at safe temperatures
 - Use safe water
- Each meal must contain foods from each food group to ensure adequate intake of important nutrients.
- Add Fresh fruits and vegetables to each meal e.g oats porridge with groundnuts or mango or Kenkey with cabbage, fresh pepper and fried fish



Foods to Limit

- Refined carbohydrates such as sugar, sweets, cake, soft / energy drinks and sugar sweetened beverages.
- Foods saturated fat and skin from meat i.e. wele, cow foot, domedo.
- Fast food that may contain hydrogenated vegetable oils or shortening such as chips, burgers, fried foods, cookies, and pastries.
- Consumption of process foods as they may contain ingredients such as sugar, salt, or preservatives.

 Be sure to read the labels so you can choose the options that are best for you in order to limit intake of these ingredients.

Hydration and Exercise

- Drink water regularly. Staying well hydrated. Recommended average weight-based intake is 30-35ml/kg
 - 40kg-60kg drink 1.5L-2.0L,
 - 60-80kg drink 2.0L-2.5L,
 - Above 80kg drink 2.5L-3.0L
- Find a simple exercise such as walking in your office or stretching at your table, exercise boosts mood by pumping oxygen into the brain and releasing feel-good endorphin



MIND: Coping with Stress.

- Maintain and spread positive messages and attitudes among the colleagues
- Maintain a sense of unity of humanity, culture and spirituality especially around those who have lost loved ones to the COVID-19.
- Limit discussions about the pandemic or death with colleagues to ensure a calm and peaceful conducive environment
- Set some time aside each day during your lunchbreak to rest your mind.

Additional Help

Contact the Nutrition Section, Food Research Institute via telephone 0302 519091 or email: director@foodresearchgh.org