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# Newsletter

CSIR-Food Research Institute Bi-Annual Newsletter

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## Mandate of the CSIR-Food Research Institute

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 maiden Newsletter of the Institute and it is intended to communicate to clients and stakeholders about the CSIR-FRI's range of products, services and expertise in this and subsequent Newsletters. This newsletter, will showcase our products, services and research activities. With a vision 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, it is important to create a Newsletter for information sharing. The newsletter will enlighten 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.



Director, Prof. Mary Obodai

## 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.

## Aflatoxin in fish feed: its impact on growth and nutritive value of farmed fish

Fish feed and food supply have been plagued by various hazards including mycotoxigenic fungi which affects production, safety and trade of agricultural products as well as causing both acute and chronic diseases in humans. These hazards associated with the food chain pose a risk to human health and have negative economic impact pertaining to farmed fish product destruction and market losses. Mycotoxins, specifically Aflatoxin B1 have been reported to be a key contaminant in fish feed mainly emanating from its

raw material base inter alia. Though a lot of research has been carried out on aflatoxins in Ghana, most have focused on food crops with a few on processed marine captured fishes. This study therefore aimed at investigating and generating information on the levels of potential aflatoxins in farmed fish (Nile Tilapia) and its feed; its impact on Nile Tilapia growth.



Farmed Fish (Tilapia)



Drying of the cassava chips



Peeling of cassava



Practical demonstration



Practical demonstration



Participants in training session.

## CSIR-FRI Trains Women and Youth in High Quality Cassava Flour (HQCF) Processing, Packaging and Marketing

A UK international charity, the United Purpose (UP), in response to empower cassava processors in Brong Ahafo Region of Ghana implemented the Partnership for Accelerated Local Economic Development in the region. To empower cassava processors, UP contracted the CSIR-Food Research Institute to train women and youth in HQCF processing, packaging and marketing in three districts of the Brong Ahafo region. A total of 122 participants at three processing centers (locations); Ayebge

(Wenchi Municipality), Paninamisa (Kintampo South District) and Kranka (Nkoranza North District), were trained between April 8 and 18, 2019. Participants were taken through a two-day participatory training programme on HQCF processing, packaging and basic marketing (basic bookkeeping and business management). End markets for the HQCF in the training catchment areas were identified and introduced to the participants as reference material to the training. Certificates were awarded to partic-

ipants at the end of the training for successfully participating in the training programme.



## Sale of Research Developed Products

Processing of High Quality Natural Food 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

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



## Microbiological Analysis

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).

Accredited Microbiological tests are:

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

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

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.

We have been granted

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.



FRI Engineer with delegates touring the Ethanol and Glucose Syrup Plant at Pokuase

## Staff of the World Bank Visits CSIR-FRI's Ethanol and Glucose Syrup Plant at Pokuase

On the 26th of March 2019, a delegation from the World Bank visited the CSIR-FRI's Agribusiness Incubation Centre at Pokuase to make inquiries on the state of the Ethanol and Glucose Syrup plant housed at Pokuase. In attendance were the Ministry of Food and Agriculture, represented by Madam Azara Ali-Mamshie, Engineers from WATECH Ghana Limited, the WAAPP secretariat, the Director and Deputy Director of CSIR-FRI, the project administrator and accountant. The teams present were taken through the processes and stages of production and shown the stage at which the plant operated and its level of completion. At a meeting held at the conference room, the delegation from the World Bank remarked on the excellent strides made so far and promised to help in the completion of the ethanol and glucose syrup plant.



## 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

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# 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](mailto:director@foodresearchgh.org)