

**Science and Technology
Promotion and Research in Ghana
With Regards to Food
Preservation and Safety**

*Dr. RoseEmma Mamaa Entsua-
Mensah*

*Deputy Director General, CSIR,
Ghana*



Introduction

- The basic objectives of the Science and Technology Policy in Ghana are to:
- seek to master scientific and technological capabilities;
- develop infrastructure which will enable industry and other sectors of the economy to provide the basic needs of society and for the citizenry; and
- adopt a science and technology culture.

Main Research and Development Promotion Institutions in Ghana

- Council for Scientific and Industrial Research with its 13 Institutes
- Universities (including five public universities)
- Ghana Atomic Energy Commission
- Ghana Standards Board
- Food and Drugs Board
- Polytechnics (in each of 10 provincial regions)
- Ghana Regional Appropriate Technology Industrial Services (GRATIS) with Intermediate Technology



Government Policies Relating to Food

The Ghana national vision for the food and agriculture sector is :

- a modernized agriculture which will bring about a transformed economy,
- food security, employment opportunities
- and reduced poverty.



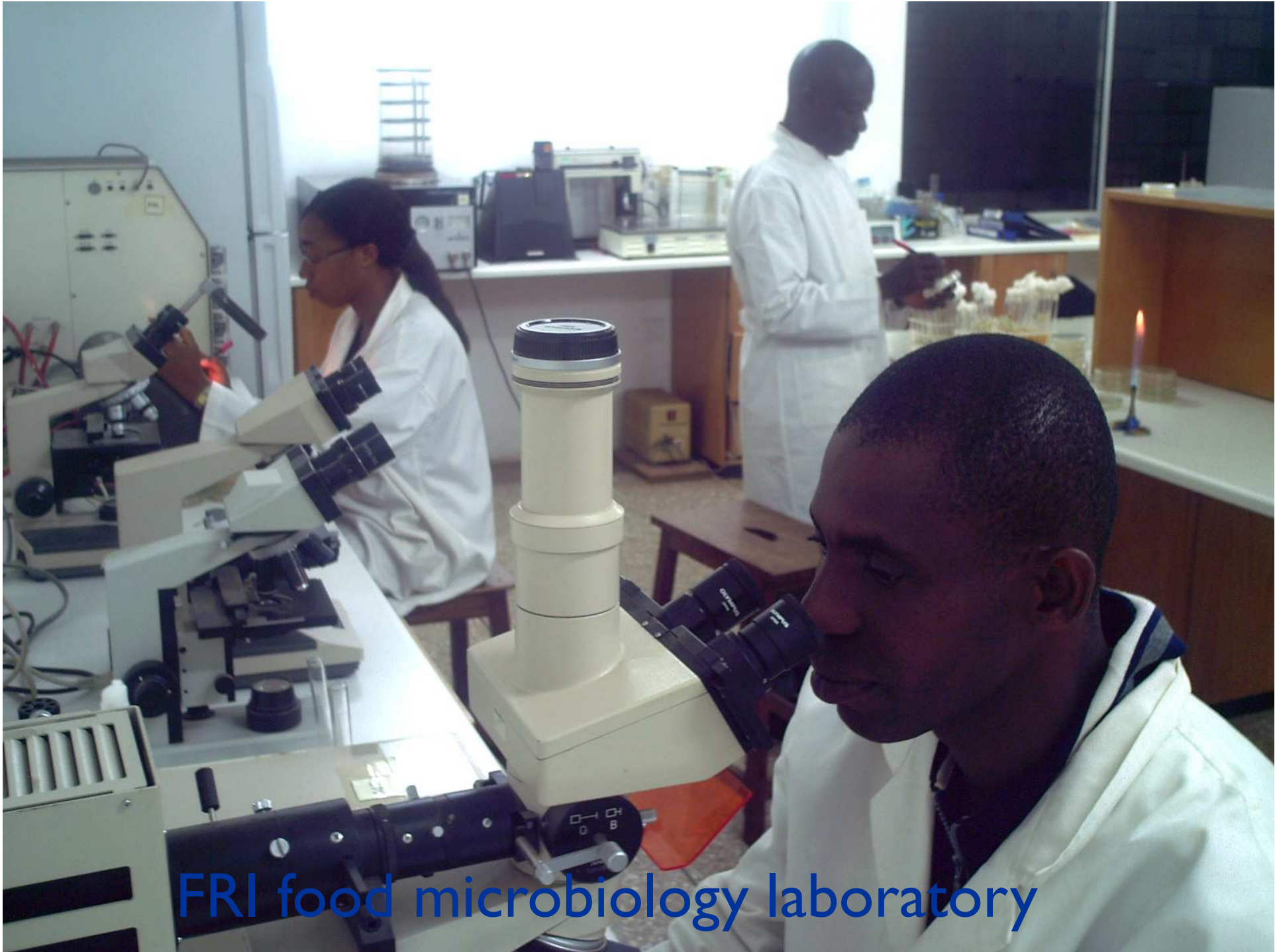
Government Policies Relating to Food

- The broad strategy for achieving food security is to enhance productivity along the entire food chain and develop effective post harvest handling techniques for five staple crops, namely maize, rice, cassava, yam and cowpea.
- For the local agricultural system the food chain will involve activities in production,
- post harvest production handling, packaging, transportation,
- storage, processing, marketing, distribution and utilization.
- Research is needed along the food chain to optimize food safety, quality and economic value and to ensure that consumers get good value for money



CSIR-Food Research Institute

- CSIR-FRI has a mandate to conduct applied research into problems of food processing and preservation, storage, marketing, distribution and utilisation in support of the food industry, and also to advise government on food policy.
- Since 1992 CSIR-FRI has conducted research into indigenous African fermented foods in collaboration with local and foreign institutions (traditional food fermentation)



FRI food microbiology laboratory

Food Standards: Ghana Standards Board (1967)

- Produces standards for all industrial products including food products.
- This is to promote standardization in industry and commerce, ensure efficiency and development of food industry and promote standards in public and industrial welfare, health and safety.
- Food products meeting GSB standards are given a Product Certification Mark (no longer mandatory to sell a food product).
- GSB's examination and approval process includes factory inspection, compositional and safety check of products.

Food Safety: Food and Drugs Law

- Ghana's food and drugs law enacted in 1992. Legislative Instrument LI 305B 1992.
- Part 1 - Foods:
 - *Sections*
 1. Prohibition against unwholesome, poisonous or adulteration of food.
 2. Food offered as prizes.
 3. Deception of customers.
 4. Standards of foods
 5. Prohibition against sale of food not of nature, substance or quality demanded.
 6. Manufacture of food under supervision.
 7. Sale, etc of food under insanitary conditions.
 8. Food unfit for human consumption.
 9. Penalty and defence.
 10. Closure of premises where there is risk of contaminated food.

Research on Traditional Fermented Foods by Food Research Institute

- Traditional fermentation of food is an important low cost food processing method and a common means of preserving food in the tropics to reduce post harvest loss of food. Production of indigenous fermented foods is a source of livelihood for many small families and traditional fermented foods contributes to food preservation.
- Due to the importance of traditional food fermentation, the food Microbiology Division and Food Chemistry Division of Food Research Institute has devoted considerable amount of research effort into investigation of the indigenous African fermented foods.



Research on Traditional Fermented Foods by Food Research Institute

This has been made possible through collaboration with:

- the Department of Food Science, Faculty of Life Sciences of the University of Copenhagen formerly called the Royal Veterinary University
- and research institutions in Burkina Faso, Benin, Nigeria, Ghana, Germany, Uganda, Kenya, Tanzania, Sudan, Zimbabwe and South Africa.



Research on Traditional Fermented Foods by Food Research Institute

- The rationale of initiating the Food Research Institute - DANIDA project was to develop a national capacity to research in great depth into fermented foods such a **kenkey, banku, agbelima, fula** and **pito**.
- These foods form a significant proportion of foods consumed daily in Ghana and yet lacked detailed scientific information about their microbiology, which is necessary for the eventual industrialization of these products.



Key Achievements

- The Key achievements of CSIR-FRI for research into traditional food fermentation under these DANIDA and EU projects are:
 - - Two major laboratory renovations.
 - _ Acquisition of more advanced analytical equipment
 - _ Indigenous fermented products investigated; gari, fermented maize dough, fermented cassava dough, dawadawa, pito , akyeke, palmwine, nyarmie
 - (sour milk), hausa koko and cocoa,
 - _ In-depth scientific information on indigenous African fermented foods available in international literature (from 8 commodities, over 18 products).
 - _ 7 Ph.D (FRI staff) trained and 1 MSc, 10 M.Phil thesis (university students), 8 BSc & HND dissertations



Key Achievements

- -In terms of publications, Food Research Staff have co-authored 8 Handbooks/Manuals, 33 publications in International journals and 1 Local journal.
- _ ISO 17025 fully implemented and accredited in the Food Microbiology and Food Chemistry Divisions of FRI, May, 2007.
- _ 8 international seminars on African organized fermented foods in collaboration with LIFE & DTI.
- _ Starter cultures developed for fermented maize dough, fermented cassava dough and soybean, and dawadawa.
- _ Pilot plant for kenkey production.
- _ Training conducted in HACCP, GMP, GLP and ISO 22000 for beneficiaries.



Key Achievements

- Other key achievements of CSIR_FRI in this area in other projects not funded by DANIDA and the EU are:
 - _ Pilot plant for processing cassava.
 - _ Pilot plant for malting and brewing of sorghum and a
 - _dehuller for African locust bean seeds developed.



DANIDA Project

- The DANIDA Project now comprises capability building in three West African partners:
Univeristé d'Ábomey –Calavi, Faculté de Sciences Agronomiques Département de Nutrition et Sciences Alimentaires, Benin,
- University for Development Studies, Tamale, Ghana and
- Département de Technologie Alimentaire (DTA), Ouagadougou, Burkina Faso focusing on four main activities:

DANIDA Project

- Collaborative research within the field of food fermentation, value added food processing and Quality management
- Establishment and management of laboratories according to ISO17025
- Training and exchange of staff between project partners and
- Extension of services to local industries





Thank you

CSIR-FRI pito/dolo
brewing plant