

Application of PCR - DGGE Method in Determining Origin of Fish: Case Studies of Pangasius Fish from Viet Nam, Tilapia from Thailand and Sea bass from France. Didier Montet, Le Nguyen Doan Duy, Ratanaporn Leasing, Thierry Goli, Gérard Loiseau (2010). Aquaculture Microbiology and Biotechnology, Volume 1. Editors: Didier MONTET and Ramesh C. RAY Science Publishers Inc, New Hampshire, USA. ISBN 1578085748, 9781578085743, 290 pages.

Determination of fish origin by using 16S rDNA or 26 rDNA fingerprinting of microbial communities by PCR-DGGE: An application on fish from different tropical origins. Didier Montet, Doan Duy Le Nguyen, Clémentine Kouakou, Gérard Loiseau. In Aquaculture, ISBN: 978-953-307-1061-9, 2011

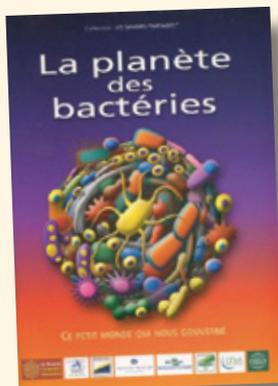
Modelling the growth of aflatoxigenic moulds and aflatoxin formation in Brazil nuts. P. Johnsson, M. Lindblad, A. M. Thim, N. Jonsson, E. A. Vargas, N. L. Medeiros, C. Brabet, M. Quaresma de Araújo, M. Olsen, 2008. World Mycotoxin Journal, 1(2): 127-137, 2008.

Appendix "Additional measures for the prevention and reduction of aflatoxin contamination in Brazil nuts" in the Code of Practice for the Prevention and Reduction of Aflatoxin Contamination in Tree Nuts [CAC/RCP 59-2005] of the Codex Alimentarius has been revised, taking into account the results and recommendations of the STDF project 114 Safenut (2006-2008, www.stdf-safenutproject.com), coordinated by CIRAD. Document available via the link below: http://www.codexalimentarius.net/web/more_info.jsp?id_sta=10221

Bacteria planet

From the "Les Savoirs Partagés" collection (shared knowledge), 77 pages, €35: this "compilivre" (part-book, part CD-ROM) produced with prestigious partners (University of Montpellier III, Pasteur Institute, etc.) is a multiple-entry work of scientific mediation offering a two-fold journey into the bacterial world. One is a journey through time, over 3.5 billion years, and the other through space from flagellum movement at a microscopic scale to the contemporary living equilibria of ecosystems on the planet Earth.

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Trainings

Training in good production practices for prevention and control of mycotoxins in the agri-business industries (e.g.: aflatoxins in the Brazil nut industry - training of industry operators under the Safenut project)

Training in rapid reference and detection chromatographic techniques for mycotoxin analysis (examples: rapid aflatoxin analysis methods in Brazil nuts, training of industry operators under the Safenut project; rapid mycotoxin analysis methods in various matrices, training of laboratory managers in Ivory Coast, training in ochratoxin analysis in coffee and cacao)

Cirad, in conjunction with the University of Chocolate, organises either in Paris, regionally or on company premises, **training seminars aimed at all players in the cacao and chocolate industry**, as well as company personnel: sensorial analysis of chocolates and coffees, recognising coffee varieties, knowledge of the industries.

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VIP

TECHNOLOGY TRANSFER
AND DEVELOPMENT NEWSLETTER

Food Safety in the South

For human societies, there are two kinds of food risk: the quantity of food available (food security) and the food quality (food safety). Less than two centuries ago, Europe was suffering as much from food toxicity as food shortages. In the aftermath of the War, an intensive production system was first developed to meet the quantitative needs. Subsequently, this system was organised in order to improve the food quality. In the Southern countries, similar developments can now be observed occurring simultaneously, alongside profound changes in the production processes.

Food safety is a public health problem which goes beyond the North-South divides. It is related to biological phenomena (pathogenic bacteria and moulds), food contamination by chemicals (heavy metals, pesticides, nitrates, dioxins) or technical deficiencies (mycotoxins resulting from improper drying of harvested products, for instance). It now represents considerable economic challenges, since globalisation of trade has led to globalisation of standards: to be able to export, you must now adhere to the specific sanitary rules of the target market zones.

Cirad works with players from tropical zones for the purpose of improving the quality of the food production industries, and to promote the uptake of research results. It holds recognised expertise in sanitary quality analysis of tropical products and their traceability.

FOCUS

20% of food poisoning cases detected in Europe are due to consumption of altered raw materials (chemical or microbiological contamination, contaminated spices, toxic fungi, etc.)

VIP

VALORISATION ET INNOVATION
EN PARTENARIAT

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LA RECHERCHE AGRONOMIQUE
POUR LE DÉVELOPPEMENT

Expertise, project and partnership

"3C Ivory" project (2011-2014): set up a National Coordination Committee for food safety action in Ivory Coast

Its objective: contribute to improving food safety in Ivory Coast by implementing a concerted policy between the public authorities and players from civil society.

"This project is funded by the European agency EuropeAid. It is co-directed by CIRAD, SupAgro (International Centre for Higher Study of Crop Sciences) and the Houphouët Boigny National Polytechnic Institute, Yamoussoukro (Ivory Coast). It is specifically aimed at setting up a national food safety actions coordination system. This consists of setting up a national committee, a committee of experts, a food safety label and supervising the training of local supervisors.

Along the same lines as "3C Ivory", we are participating in the EDES project - an ACP-EU programme funded by the 9th European Development Fund - which brings together French, British, Belgian and Danish partners. Cirad is contributing in terms of training actions, assessment of laboratories and national food safety systems, etc. Launched in April 2011 with training for ACP trainers, the project is to provide training in the concept of food safety for 6000 people from the public and private sectors, across more than 35 countries."

Didier Montet, Cirad



RESEARCH issues

Preventing and reducing food contamination by mycotoxins

Mycotoxins, toxic secondary metabolites produced by moulds on a wide range of agricultural foodstuffs, in the field and after harvesting, contaminate nearly 25 % of crops worldwide. Their presence in foods can cause acute or chronic poisoning in humans and animals, sometimes with fatal consequences. Hence many countries, especially in Europe, have stipulated maximum permissible values for mycotoxins in order to safeguard consumer health.

For more than ten years, Cirad, in collaboration with its partners from the South, has coordinated and executed R&D projects for preventing and reducing mycotoxins in the agri-business industries, particularly in coffee, cacao, cereals, peanuts and Brazil nuts. These projects are aimed at developing and validating preventive pre-harvest measures (especially biological management) and post-harvest measures, as well as promoting their adoption by the industry operators. More particularly, they cover the following research issues:

- What are the critical points and factors for fungal growth and production of toxins throughout the agri-business chain?
- What is the dynamic of the microbe populations, and their interactions within the ecosystems on different matrices and in relation to mycotoxin production?
- What are the toxigenic flora, and their growth and toxin production conditions?

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See also "Perspective" no.13: "Avian influenza in Africa: targeting vigilance", among the document resources accessible on www.cirad.fr

Analysis laboratories

Cirad has physico-chemical and bio-chemical analysis laboratories, with several experiment rooms for characterising food quality (raw materials or end products). It also lends its know-how for the design of products based on innovative technologies.

Chemical analysis of toxins – Noel Durand and Cathy Brabet

The Qualisud Joint Research Unit has a mycotoxins analysis laboratory (ochratoxins, aflatoxins, fumonisins, etc.) which relies on internationally recognised reference methods validated through inter-laboratory tests. This laboratory supports partnership projects developed by Cirad on mycotoxins, and provides services, especially to manufacturers. It also organises training in reference and rapid detection methods for mycotoxins for its Southern partners.

Food traceability through microbe ecology analysis

Being able to determine the geographic production zone of foods is a must for the food traceability system. Cirad has developed a molecular technique based on DNA profiles of microbe communities (bacteria, yeast, mould) present on fish, fruits or meats. These DNA profiles, specific to the production locations, coupled with use of data collected by Cirad, enable a biological signature certifying the source of the foods to be obtained. This method produces a unique biological barcode linking the food to its production location.

Assessment of food safety laboratories

Cirad is the benchmark body for CARICOM (Caribbean community and common market). As such, it is authorised to assess food safety laboratories in the Caribbean zone for the purposes of capacity building, providing recommendations for efficient use of resources and developing sanitary and phytosanitary strategies.

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Other expertise...

Supporting public authorities

Recommendations for improving production processes (vanilla, clove, Brazil nut, coffee, cacao, etc.)

