



Aflatoxin control project launched in Mozambique

The aflatoxin problem is a cross-cutting issue that is undermining public health and development efforts. Aflatoxins themselves are highly toxic, cancer causing fungal metabolites known to cause immune-system suppression, growth retardation, liver disease, and death in both humans and domestic animals. According to the FAO, 25% of world food crops are affected, and countries that are situated between 40°N and 40°S are most at risk

Over 5 billion people in developing countries are at risk of chronic aflatoxin exposure. Unless aflatoxin levels in crops and livestock are effectively managed, international development efforts to achieve greater agricultural development, food security and improve health will be undermined, particularly in sub-Saharan Africa where contamination is widespread and often acute. Inexpensive, traditional post-harvest practices can reduce the level of contamination, and a new aflatoxin management

technology in the form of a local beneficial technology, derived from native African micro-flora, has been developed to fight aflatoxin in the soil, where it begins.

With funding from the United States Department of Agriculture (USDA) and the United States Agency for International Development (USAID), the Ministry of Agriculture of Mozambique, International Institute of Tropical Agriculture (IITA), the University of Eduardo Mondlane and the University of Lurio launched September 21, 2011 a multi-year aflatoxin control project (AFLASAFE MZ) in Mozambique. The project will specifically target the devastating aflatoxin contamination problem and will support the Comprehensive African Agriculture Program (CAADP) of the African Union and the Ministry of Agriculture of the Government of Mozambique Strategic Plan for Agricultural Development (PEDSA 2010-2019). The launch marks the

culmination of a process involving the regional and national offices of the USDA and USAID working in close cooperation with the Ministry of Agriculture in Mozambique.

Specifically, the project will develop a biological control product, Aflasafe MZ, utilizing native beneficial strains of *Aspergillus* to competitively exclude harmful aflatoxin producing fungi in the environment. The technology, developed by USDA plant pathologist Dr Peter Cotty at the University of Arizona, is a deliberate method of influencing average aflatoxin-producing potential of fungi associated with crops. In the resulting biological struggle between the good and bad strains of *A. flavus*, the good strains competitively exclude their highly toxic relatives. By competitively excluding aflatoxin producers, the biocontrol significantly reduces (80 to 90%) the aflatoxin content of crops. Thus, while fungal communities continue to exist naturally in the environment, the biocontrol strategy causes naturally occurring atoxicigenic strains to replace aflatoxin producers without increasing the overall level of fungi present and without harm to the environment. Awareness of the risks posed by aflatoxin caused by improper crop and post-harvest management are a critical element of the project with training of farmers and extension service to improve pre-harvest and post-harvest practices by Mozambican farmers.

Dr Ranajit Bandyopadhyay, a plant pathologist with IITA, says that, when Aflasafe MZ is available in 3 to 4 years, a single application two to three weeks before maize flowering will not only prevent aflatoxin contamination in the field but also will inhibit contamination once grains are stored.

"The ability of this technology to continue working even when the grains are stored ensures the safety of maize from aflatoxin contamination," said Dr Bandyopadhyay



Farmers broadcasting aflasafe granules in their maize field.

Building capacity in applying molecular diagnostics for plant pathogens

A training course meant to augment plant pathogen diagnostics capacity in Nigeria was held by IITA and the Nigerian Institute of Science Laboratory Technology (NISLT) of the Federal Ministry of Science and Technology, in IITA-Ibadan on 18-24 September.

Themed "Application of Molecular Methods for the Detection of Plant Pathogens", the training acquainted participants in advanced molecular

methods to identify, detect, and differentiate plant pathogens such as fungi, bacteria, viruses, viroids, and phytoplasma. The 29 participants came from 9 states and were sponsored by NISLT.

The weeklong training had a mix of lectures and practical exercises on sampling techniques, isolation of pathogens, microscopy, PCR and ELISA-based diagnostic techniques,

and bioinformatics tools in pathogen identification. Special emphasis was given on the application of molecular diagnostics to monitor the occurrence of pathogens in crop production systems and assessment of shifts in occurrence and incidence of pathogens due to agriculture intensification, crop diversification, and climate change. The course also covered requirements for establishing and operating a diagnostic laboratory.

At the close of the training, Dr IF Ijagbone, Director General of NISLT, lauded IITA's cooperation and support to NISLT's efforts in building related technical capacity in Nigeria. On IITA's part, Dr R Asiedu, R4D Director, cited the trainees for their enthusiastic participation. Certificates of completion were given to the participants.

Lead organizers of the course were Lava Kumar of IITA and J Oshu of NISLT, while resource persons included K Sharma, O Oguntade, R Oludare, and P Ogunsanya, also of IITA.



The participants, organizers, and resource persons of the IITA-NISLT training workshop on using molecular diagnostics for plant pathogens pose for a group photo.

IITA-CIALCA ToT on safe banana propagation in Burundi and DR Congo

IITA, under the framework of the Consortium for Improving Agriculture-based Livelihoods in Central Africa (CIALCA), has completed a series of training of trainers (ToT) workshops on safe banana planting materials multiplication and propagation in Burundi and the DR Congo. The training

series were held on 20-24 June in Burundi, and on 4-8 July and 12-16 July in South Kivu and North Kivu in the DR Congo, respectively.

The workshops focused on rapid propagation methods for healthy banana seedlings, improved field management practices, sucker sanitation, and integrated pest management. The ToT series is part of IITA-CIALCA's objective of increasing banana productivity in the Great Lakes region by strengthening the capacity of its partners.

The capacity-building series aimed to equip IITA-CIALCA partners in the Great Lakes region with practical skills for cost-effective rapid multiplication of improved banana and plantain, improved management practices, and pest and disease identification and control to enhance banana production. The participants were expected to support the installation of macropropagation units in their respective countries and train more farmers and empower agribusiness-oriented seed producers and entrepreneurs.



(Top) Burundi participants showing off their training certificates; (bottom) some trainees of the North Kivu workshop observing how to sanitize a banana sucker.

Farewell, Kamal Sharma

Staff held a farewell party on 22 September in honor of Kamal Sharma, a Dutch-APO on Plant Pathogen Diagnostics, who has completed his services with IITA. Sharma worked in the Virology and Molecular Diagnostics Unit since October 2008, contributed to the molecular characterization of fungal and bacterial pathogens and development of diagnostic tools and has characterized about 400 isolates.

Paula Bramel, DDG-Research, described Sharma as a 'quiet achiever', pointing out the importance of Sharma's work to IITA's mission and vision.

Lava Kumar, who supervised Sharma, said he had contributed significantly to pathogen diagnostics program and also facilitated capacity building activities.

Responding, Sharma thanked IITA Management for the opportunity given him to serve. "I am very happy being with IITA," he said.

Sharma will be returning to India to join the national research system there.



Sharma receiving his plaque of appreciation from DDG Bramel.