

Expansion of biological control to manage aflatoxin in maize and groundnut using regionally-adapted beneficial fungi in Eastern and West Africa

Donor: Meridian Institute on behalf of Partnership for Aflatoxin Control in Africa (PACA)

Timeframe: 2012 - 2014

Background: Aflatoxins in human food cause acute and chronic health effects ranging from increased disease susceptibility, growth retardation, and cancer to death from acute poisoning. These poisons are produced by *Aspergillus flavus* and related species when these fungi infect both staple and export crops. Aflatoxins also severely impact livestock productivity through contaminated feed. Tackling mycotoxin contamination is now seen as a priority in sub-Saharan Africa. In 2011, the 7th Comprehensive Africa Agriculture Development Program's Partnership Platform underscored the urgent need to mitigate mycotoxin contamination by recommending the establishment of a Partnership for Aflatoxin Control in Africa (PACA), which is endorsed by the Bill & Melinda Gates Foundation, the United States Agency for International Development (USAID), the Department for International Development (DfID) and other donors. An innovative scientific solution for aflatoxins in the form of biocontrol has been developed by the United States Department of Agriculture - Agriculture Research Service (USDA-ARS). This breakthrough technology, already in wide use in the USA, reduces aflatoxins during both crop development and post-harvest storage, and throughout the value chain. The International Institute of Tropical Agriculture (IITA) and USDA-ARS, together with several institutions, have successfully adapted this competitive displacement technology for use in Nigeria. The result is a biocontrol product based on native atoxigenic strains called Aflasafe. Country-specific biocontrol



Site of aflasafe manufacturing facility in Nigeria (photo by T. Dubois)

products are being developed for Burkina Faso, Kenya, Senegal and Zambia.

Project summary: Due to the high potential of biocontrol technology to reduce aflatoxins, the Bill & Melinda Gates Foundation, DfID, USAID and other donors of PACA are extending this technology in three other African nations in partnership with national institutions. In addition to country-specific biocontrol products, this new initiative will also develop regional products that can be applied in more than one country in a region. These regional products will contain atoxigenic strains of *A. flavus* found in all the countries where the regional product is targeted. In addition, the project will test large-scale manufacturing and viable commercialization models by researching and implementing local manufacturing options of aflasafe that are compatible with the region's infrastructure and labor force capacity, and with models for commercialization in the developing country context.

Objectives

- to develop country-specific bio-control products for Ghana, Mali and Tanzania and regional biocontrol products for West, East and Southern Africa using native atoxigenic strains of *A. flavus*
- to design and construct a low-cost manufacturing facility in Nigeria to optimize/adapt the manufacturing process for reduced product cost tailored for a developing country context
- to develop and test viable commercialization models of aflasafe in Nigeria

Outputs

- country-specific and regional biocontrol products available for reducing aflatoxin in groundnuts and maize
- a demonstration-scale manufacturing plant of aflasafe that serves as a training facility and a model for replication in other countries
- a commercialization model of aflasafe developed and tested for wider adoption

Major partners: African Agricultural Technology Foundation (AATF), Doreo Partners, International Institute of Tropical Agriculture (IITA), United States Department of Agriculture - Agriculture Research Service (USDA-ARS), and several national institutions in Ghana, Mali, Nigeria and Tanzania

Target countries: Ghana, Mali, Nigeria and Tanzania, and other countries in West, East and Southern Africa where regional biocontrol products will be developed

Crops: groundnut, maize