

# Biological control of aflatoxins in maize for enhanced food safety and income in Burkina Faso

**Donor:** Austrian Development Agency (ADA)

**Timeframe:** 2010 - 2013

**Background:** Aflatoxin exposure in humans is chronic in Burkina Faso since contamination is widespread in major food sources. Children exposed to aflatoxin are malnourished and have lower growth rates. Aflatoxin exposure also leads to increased liver cancer, immune suppression, and possibly vaccine failure. As such, food safety measures that ensure a good product quality should be viewed as an essential component of primary health care, increasing productivity and the general well being of a population. Sustainable management of aflatoxin contamination in maize and groundnut can prevent chronic toxicities and improve public health. In a previous ADA-funded project, awareness of the mycotoxin problem was created in Burkina Faso, Mozambique and Tanzania. Farmers and non-governmental organizations (NGOs) were trained to use various aflatoxin mitigation strategies such as proper harvesting, crop drying and improved storage.



Farmers inspecting a contaminated maize cob (photo by J. Atehnkeng)

**Project summary:** This project aims to develop innovative biocontrol strategies for the control of aflatoxins in Burkina Faso, using native atoxigenic strains of *Aspergillus flavus* collected from the farmers' fields. An initial activity of the project is to characterize the diversity of *Aspergillus* communities in farmers' fields. From a library of atoxigenic *A. flavus* strains, candidate bio-control strains are selected that are well-adapted and able to out-compete the toxin producing strains in farmers' fields. Adequate data on the field efficacy of the strains is collected to support registration of a biocontrol product for use in Burkina Faso. However, toxicological and eco-toxicological studies for product registration are not included in the current project. In addition, the project enhances technical and human human capacity of the Institut de l'Environnement et de Recherches Agricoles (INERA), a national organization, to conduct aflatoxin research in Burkina Faso. The project provides learning opportunities to all partners on potential strategies to promote the use of aflatoxin biocontrol within the institutional framework of Burkina Faso.

## Objectives

- to select elite effective atoxigenic strains native to target regions for large-scale use in aflatoxin mitigation in Burkina Faso
- to evaluate the efficacy of atoxigenic strains for the reduction of aflatoxin contamination in maize and groundnut in fields and stores in aflatoxin-prone provinces in Burkina Faso
- to develop strategies for institutionalizing use of native atoxigenic strains in bio-control products for aflatoxin management in Burkina Faso in collaboration with national partners
- to technically enable and backstop strategic partners (i.e., research institutions and growers' organization) for mass production, marketing, and monitoring efficacy of biocontrol agents

## Outputs

- aflatoxin biocontrol strains developed for reduction of aflatoxins in maize and other associated susceptible crops
- efficacy and product data available for pre-registration of atoxigenic strains as biopesticides
- students and staff trained for conducting aflatoxin research
- infrastructure and technical capacity developed for aflatoxin research

**Major partners:** International Institute of Tropical Agriculture (IITA); Institut de l'Environnement et de Recherches Agricoles (INERA), Vienna University of Technology (Austria), United States Department of Agriculture - Agriculture Research Service (USDA-ARS)

**Target country:** Burkina Faso

**Crop:** maize