

# Mycotoxin contamination in Rwanda: quantifying the problem in maize and cassava in households and markets, and sensitization of targeted stakeholders based on a cost-benefit analysis

**Donor:** United States Agency for International Development (USAID) – Rwanda

**Timeframe:** 2013

**Background:** Mycotoxins, toxic substances produced by several fungi that affect foods and feeds, are capable of causing illnesses of varying severity and death in animals and humans. Two major staple crops in Rwanda—maize, with production area doubling during the last six years, and cassava, with more than 2.3 million ton produced annually—are among the most vulnerable crops to mycotoxin contamination. The strategic plan for the transformation of agriculture in Rwanda, commonly known as PSTA-II, considers promotion of commodity chains and agribusiness development as a priority to create a conducive environment for businesses and entrepreneurship with easy access to regional and international markets. Developing a capacity for risk analysis and establishing a monitoring system are integral parts of the SPS agenda highlighted in PSTA-II. In order to carry out a risk analysis, a prevalence database needs to be established that can guide mycotoxin risk assessment and risk mapping activities. Reducing mycotoxin contamination of maize and cassava in Rwanda will contribute towards PSTA-II plans to make these crop value chains safer and more profitable than before.



Dried and moldy cassava chips sold in market

Several indicators in Rwanda allude to high exposure levels among maize and cassava-growing rural households: (1) erratic rainfall, and high temperature and humidity levels in crop production areas such as Bugesera, Mayaga and Mutara; (2) presence of predominantly small farm holdings (more than 60% of maize is grown on less than 1 ha) that produce for informal, local markets and that escape regulatory mechanisms; and (3) a general lack of awareness about mycotoxins and their effects.

**Project summary:** Quantification of mycotoxin contamination is a first and essential step in addressing the problem. Proper quantification of mycotoxin contamination will provide an objective basis for (1) risk assessment of key mycotoxins, which in turn will help in identifying target areas for intervention; (2) harmonization of mycotoxin standards for enhancing trade in the region, (3) stimulation of local monitoring/surveillance and enforcement mechanisms, thereby ensuring that the staples consumed locally are safe, and (4) for commissioning interventions to dramatically improve the health and livelihoods, and increase income of rural households.

## Objectives

- to quantify key mycotoxins in maize and cassava in rural households and markets
- to sensitize stakeholders in Rwanda about occurrence of key mycotoxins, their implications on health and trade and available cost-effective solutions
- to establish a prevalence database that can guide mycotoxin risk assessment and risk mapping activities in the country and hence strengthen standards and regulation mechanisms

## Outputs

- quantification of mycotoxin contamination in maize and cassava sampled across 450 geo-referenced locations spanning all agro-climatic zones in Rwanda with significant proportion of production and storage of maize and cassava
- identification of mycotoxin risk-prone areas (hotspots) requiring urgent intervention
- communication and sensitization of stakeholders on the scale of mycotoxin contamination along relevant value chains in Rwanda particularly maize and cassava as well as propagation of aflatoxin-mitigation strategies
- identification of well-suited intervention strategies/methods through a cost/benefit analysis

**Major partners:** International Institute of Tropical Agriculture (IITA), Rwanda Agriculture Board (RAB), Rwanda Bureau of Standards (RBS), Geographic Information Systems and Remote Sensing Regional Outreach Center at the National University of Rwanda (CGIS-NUR), Center for Analytical Chemistry (IFA-Tulln), University of Natural Resources and Applied Life Sciences, Vienna

**Target country:** Rwanda

**Crops:** cassava, maize