

**Consultative Group on International Agricultural Research (CGIAR) research-for-development agenda on mycotoxins for enhanced food safety and trade**

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**Introduction**

Mycotoxins are highly toxic metabolites produced by a number of fungi especially in drought-prone environments, unseasonably rainy environments, or high moisture at pre-crop harvest, harvest, and storage. The toxins, e.g. aflatoxins, deteriorate food quality, are barriers to international trade, pose serious risk to health, and have caused several deaths in Africa and Asia.

Human poisoning by aflatoxins occurs through consumption of contaminated maize and legumes. Nearly 4.5 billion people suffer food-borne toxins, especially in the developing world (Williams *et al.*, 2004). The chronic incidence of aflatoxin in diets is evident from presence of the toxin in human breast milk in West Africa, Sudan, Thailand, and the United Arab Emirates, and in umbilical cord blood samples in sub-Saharan Africa. Children exposed to aflatoxin may be stunted, underweight (Gong *et al.*, 2004), and more susceptible to infectious diseases. Immunologic and nutritional effects of aflatoxin highlight the probability that the six top WHO risk factors as well as the risks of liver cancer are modulated by aflatoxin (Williams *et al.*, 2004). Furthermore, farmers need greater capacity to comply with international sanitary and phytosanitary regulations in order to participate in global markets in which food safety concerns are high.

**Response by Consultative Group on International Agricultural Research (CGIAR)**

In order to provide mycotoxin management options that ensure food safety for health and wealth among producers and consumers, IITA, ICRISAT, CIMMYT, and ICARDA, in partnership with advanced research institutes and national programs, conduct strategic, applied and adaptive research on aflatoxins in maize, groundnut, sorghum, cashew, cassava, yams chips, pistachio, almonds, and chili peppers; *Fusarium* toxins in maize, wheat and sorghum; and ochratoxin in cocoa and cashew (Ortiz *et al.*, in press). Genetic enhancement (both through plant breeding and biotechnology) (Menkir *et al.*, 2006), biological control (Bandyopadhyay *et al.*, 2005), habitat management, integrated mycotoxin management

(<http://www.aflatoxin.info>), risk assessment (Bandyopadhyay *et al.*, in press), institutional capacity development, public awareness (James *et al.*, in press) and networking (<http://www.globalfusarium.org>) are among the tools used by the CGIAR centers to combat the mycotoxin problem worldwide. A well-coordinated inter-institutional research partnership is required to further enhance these initiatives in developing countries.

## References

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