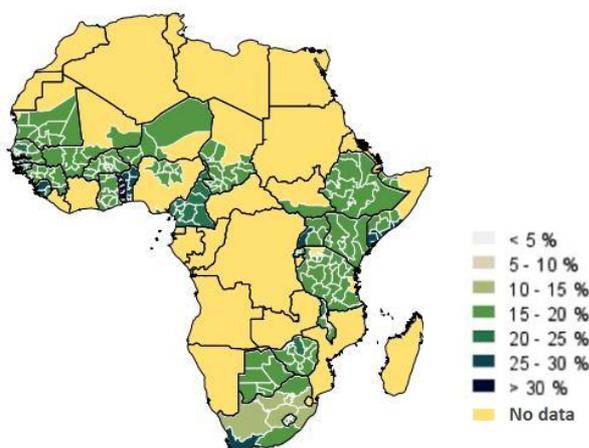


## Aflatoxins and Climate Change: Shining a Spotlight on Food Safety and Security Challenges in Africa

The world's food systems face two great challenges today: (i) to produce enough food to nourish a global population of seven billion people without harming the environment; and (ii) to make sure food systems deliver nutrition to everyone, particularly the world's poorest, many of whom suffer from chronic under-nutrition. It is estimated that close to a third of all foodstuffs produced for the world's population are lost from field to consumer, amounting to roughly 1.3 billion metric tons per annum. Substantial post-harvest losses in cereals and other staple food crops contribute significantly to food, income and nutrition insecurity in Sub-Saharan Africa. Currently, total food losses in Sub-Saharan Africa are estimated to be worth US\$4 billion per year, an amount which can feed 48 million people<sup>1</sup>.

Maize % weight losses 2012



Sub-Saharan Africa PHL by cereal [% of total annual production]					
Cereal	2009	2010	2011	2012	2013
Maize	17.8	18.8	17.8	18.0	17.8
Rice	12.0	12.6	12.0	13.9	12.1
Sorghum	12.5	12.6	12.4	12.4	12.4
Millet	9.7	9.4	9.8	9.6	9.6

Source <http://archive.aphlis.net/>

Food losses do not merely reduce food available for human consumption but also cause negative externalities to society through costs of waste management, greenhouse gas production, and loss of scarce resources used in their production. Food loss is estimated to be equivalent to 6-10 percent of human-generated greenhouse gas emissions<sup>2</sup>. A significant contributor of this problem is through methane gas generation in landfills where food waste decomposes anaerobically<sup>3</sup>.

As the world celebrates the first ever World Food Safety Day (WFSO) it is important to shine the spotlight on the challenge of mycotoxin contamination of food crops which is one of the most significant contributors to food and feed losses in developing countries, especially in Sub-Saharan Africa (SSA).

Due to their high stability, mycotoxins are a cause of concern not only during crop production, but also in storage, transport, processing, and post-processing steps. Mycotoxin contamination of food crops result in a huge public health burden, food wastage and large economic losses from reduced export income. Of most concern are aflatoxin and fumonisins. Chronic exposure to these mycotoxins could have a detrimental exacerbating effect on child malnutrition. Limited knowledge or awareness of most actors along the food and feed chain is considered to be one of the major problems which delay effective counter measures.

<sup>1</sup> FAO, 2013

<sup>2</sup> Gustavasson, et al. 2011; Vermeulen, et al. 2012

<sup>3</sup> Buzby and Hyman, 2012

The Agricultural and Food-system Resilience: Increasing Capacity and Advising Policy (AFRICAP) Programme funded by the Global Challenges Research Fund (GCRF) brings together experts whose research in Tanzania and other African countries has evidenced the mycotoxin problem and the need to reduce exposure in vulnerable populations, such as children. Studies have been conducted for interventions to reduce exposure to these mycotoxins at the community level, through changes to storage practices, and hand sorting of moldy crops. However high child stunting prevalence at 30-40% is still a common problem in many Africa countries. Evidence shows that social economic, food security, agriculture and diet practice, together with public awareness are critical determinants of high levels of mycotoxin which exacerbate the health of malnourished children. Understanding how these factors work together requires a multidisciplinary approach and to date little progress has been made towards this end.

The AFRICAP research findings will guide the development of effective climate-smart, cultural-appropriate intervention to control fungal and toxins contamination. It will inform food policy and enhance awareness to help farmers and local populations to mitigate health, social and economic risks of aflatoxin contamination.

The AFRICAP programme's focus on aflatoxins uses a multidisciplinary research approach at the interface of plant, soil, climate and ecology and provides a timely opportunity to understand the issues affecting mycotoxin exposure and child health in three countries, Malawi, Tanzania and Zambia where the team is working to:

- understand the impact of cultural and cooking practice on aflatoxin contamination of African diet;
- evaluate novel smart agricultural practices on aflatoxin levels of crops at harvest and post-harvest;
- assess aflatoxins contamination of animal feed and consequently the influence on animal production and dairy food safety;
- assess extent of health, social and economic impact of aflatoxin contamination in rural populations; and
- model and predict the impact of climate change on aflatoxin prevalence.

#### For More Information

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#### #AFRICAPNutrition #WorldFoodSafetyDay

##### About the Agricultural and Food-system Resilience: Increasing Capacity and Advising Policy (AFRICAP) Programme

The Agricultural and Food-system Resilience: Increasing Capacity and Advising Policy (AFRICAP) programme is a four-year research programme focused on improving evidence-based policy making to develop sustainable, productive, agricultural systems, resilient to climate change. The programme is being implemented in Malawi, South Africa, Tanzania, Zambia, and the UK led by the University of Leeds, a leading Russell Group university in the north of England, in partnership with the Food, Agriculture and Natural Resources Policy Analysis Network, a pan-African multi-stakeholder policy network. The programme is funded by the UK Government from the Global Challenges Research Fund (GCRF), which aims to support research that addresses critical problems in developing countries across the world. It is administered by the UK's Biotechnology and Biological Sciences Research Council (BBSRC) - UK Research and Innovation (UKRI).

**Implementing Partners:** FANRPAN; University of Leeds; University of Aberdeen; the UK Met Office; Chatham House - Royal Institute of International Affairs; the Civil Society Agriculture Network (CISANET), Malawi; Department of Agriculture Research Services (DARS), Malawi; National Agriculture Marketing Council (NAMC), South Africa; Economic and Social Research Foundation (ESRF), Tanzania; and the Agriculture Consultative Forum (Zambia).

