

# Awareness and perception about the occurrence, causes and consequences of aflatoxin contamination in Burundi and Eastern Democratic Republic of Congo

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## Abstract

The results show about 53% aware rate within the sampled, mostly through farmer-to-farmer information flow on aflatoxins. Farmers' perception and awareness of aflatoxin contamination were significantly influenced by household size and education. Annual income was found to have negative and significant association with farmers' perception. Kendall's concordance rank correlation analyses show agreement in the perception of the farmers across the two locations. The farmers ranked high humidity, improper storage practices, and poor soils as a potential causes of aflatoxin contamination, and consequently ranked is crop management practices as most effective ways of controlling aflatoxin contamination. In fact, majority of the farmers apply pre-harvest crop management practices as a means of controlling aflatoxin contamination. They identified changes in taste, smell, and colour of agricultural produce as signs of contamination, and reported stunning and liver infections as health risks associated to aflatoxin. Their inability to sell crop at true market values results in significant financial losses. About 31% of farmers in Burundi and Eastern DRC claimed to be willing to allocate resources to seed intervention, while a lesser proportion agreed to pay for training and information services. In order to intervene successfully the aflatoxin control package needed to be a low-cost differentiation in the market that was also credible with farmers. Development of markets that reward growers of aflatoxin free maize with premium prices for their product will further increase adoption of aflatoxin combating technologies.

## Introduction

- Aflatoxins, a well-known mycotoxins, compromise food security in the most vulnerable groups of people in Sub-Saharan Africa (SSA).
- The use of technologies or innovations may be limited by inadequate awareness of the health and economic risks associated with aflatoxin-contaminated foods.
- This study presents the effect of socio-economic factors on perception and awareness of aflatoxin contamination and also the willingness by farmers to pay for the control measures in Burundi and Eastern DRC.

## Materials and methods

- The A total of 310 farmers in Burundi and Eastern DRC was randomly selected in October 2016.
- A systematic sampling procedure was used to select respondents for the interviews.
- The willingness to pay for the package of interventions was examined.
- Data analysis was done using STATA (version 14.0, StataCorp, Texas, USA).
- To identify the factors determining perception and awareness of aflatoxin contamination among the respondents, data was also analyzed following a generalized binomial linear model with *logit* link (logistic regression analysis).



Fig. 1: Data collection from farmers

## Results and discussion

- About 30% of farmers in Burundi and 55% of farmers in Eastern DRC know about the terminology aflatoxins
- Farmer-to-farmer information flow comes up as the main important source of information about aflatoxins.
- Farmers' perception and awareness of aflatoxins were influenced by household size, education, and annual income (Table 1).
- The mean ranks of farmers' perception on cause of aflatoxin contaminations showed that farmers perceived abiotic factors to cause high prevalence and severity of aflatoxin contamination.
- Farmers who know about aflatoxins had high awareness on the potential ill effects of consumption of aflatoxin contaminated foods.
- The farmers also identified delayed child growth as the most severe consequence of aflatoxin contamination.
- It appears that farmers are likely to rate pre-harvest management as easier preventive methods.
- For post-harvest management, use anti-microbial agents and cleaning crops before storage were ranked as efficient methods.
- The priority for farmers in these countries was increasing crops productivity as opposed to quality.
- The result showed that farmers claimed to be willing to allocate more of their investment to improved seeds (31%) as opposed to training (27%) and information (17%) interventions.

Table 1: Logistic regression for factors determining farmer perception and awareness of aflatoxin contaminations

Variables	Burundi (n=160)		Eastern DRC (n=150)	
	Perception	Awareness	Perception	Awareness
Constant	0.563 (0.012)*	2.402 (<0.001)***	-0.137 (0.491)	0.936 (0.041)*
Household size	0.028 (0.007)**	0.122 (0.005)**	0.045 (<0.001)***	0.034 (0.023)*
Sex	0.099 (0.141)	0.632 (0.125)	0.041 (0.711)	0.092 (0.569)
Age	-0.006 (0.065)	-0.014 (0.078)	-0.007 (0.106)	-0.005 (0.394)
Married	0.045 (0.424)	0.047 (0.736)	0.112 (0.167)	0.175 (0.310)
Education	0.199 (<0.001)***	0.250 (0.001)**	0.104 (<0.001)***	0.117 (0.044)*
Annual income	-1.98×10 <sup>-8</sup> (0.006)**	-2.36×10 <sup>-8</sup> (0.135)	-9.68×10 <sup>-9</sup> (0.015)*	-7.02×10 <sup>-9</sup> (0.327)

## Conclusion

- In order to reduce the exposure and negative impact of aflatoxin contamination, it is very critical that farmers in the countries put knowledge into action.
- Application of biological control like Aflasafe™, in conjunction with other pre-harvest managements as well as efficient post-harvest managements should be introduced to farmers through training as part of efforts to reduce the risk of aflatoxin contamination.
- Extension officers need to play prominent role in raising awareness of the public health impacts of consuming aflatoxin contaminated food and feed.
- Institutional innovations support to encourage private sector investments for aflatoxin mitigation is more likely to be successful.
- The role of other socio-demographic and socio-economic factors need to be explored further in order to obtain a better understanding of the perception, knowledge, and awareness in these countries.

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