

The Evaluation of Aflatoxin Level in Food & Seed in Timor-Leste

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Introduction

Aflatoxins are a group of toxins, produced by *Aspergillus sp.* fungi. These fungi often found in various food crops such as maize and nuts (Liu & Wu 2010). Aflatoxin contamination on food products has resulted in a great economic losses as 25 percent of food commodities worldwide were reportedly to be affected and lead to a major market rejection (Reddy et al 2010; Majeed et al. 2013). Hence, as an attempt to minimize the risk of Aflatoxin exposure specific regulations have been adopted and implemented by some countries (Marin et al. 2013).

Aflatoxin contamination on crops may be a major concern in Timor-Leste but there is limited evidence. Therefore, this paper is an attempt to provide some evidence on the extent of crop contamination due to Aflatoxin mainly for maize and peanuts across the country.



Photo 1. Aspergillus mold on Peanut; hidden-dagers-peanuts-peanut-butter
Photo Credit: Thescienceofeating.com/2015/03/03/



Photo 2. Maize cobs colonized with Aspergillus (a mold that can produce aflatoxins) Photo Credit: International Institute of Tropical Agriculture via Flickr

Objective

To evaluate the incidence of aflatoxin levels in foods and seeds stored at households level and sold at local markets in Timor-Leste.

Material and Methods

This is an on-going research design for four years from 2013 to 2016. In 2013 and 2014 80 samples of maize and peanuts (only 2014) were collected during harvest time each year (Table 1). Maize and peanuts were collected from households, markets and seed producers. Aflatoxin level was measured by HPLC method by a commercial laboratory. In addition, Aflatoxin quick test was also performed.

Results

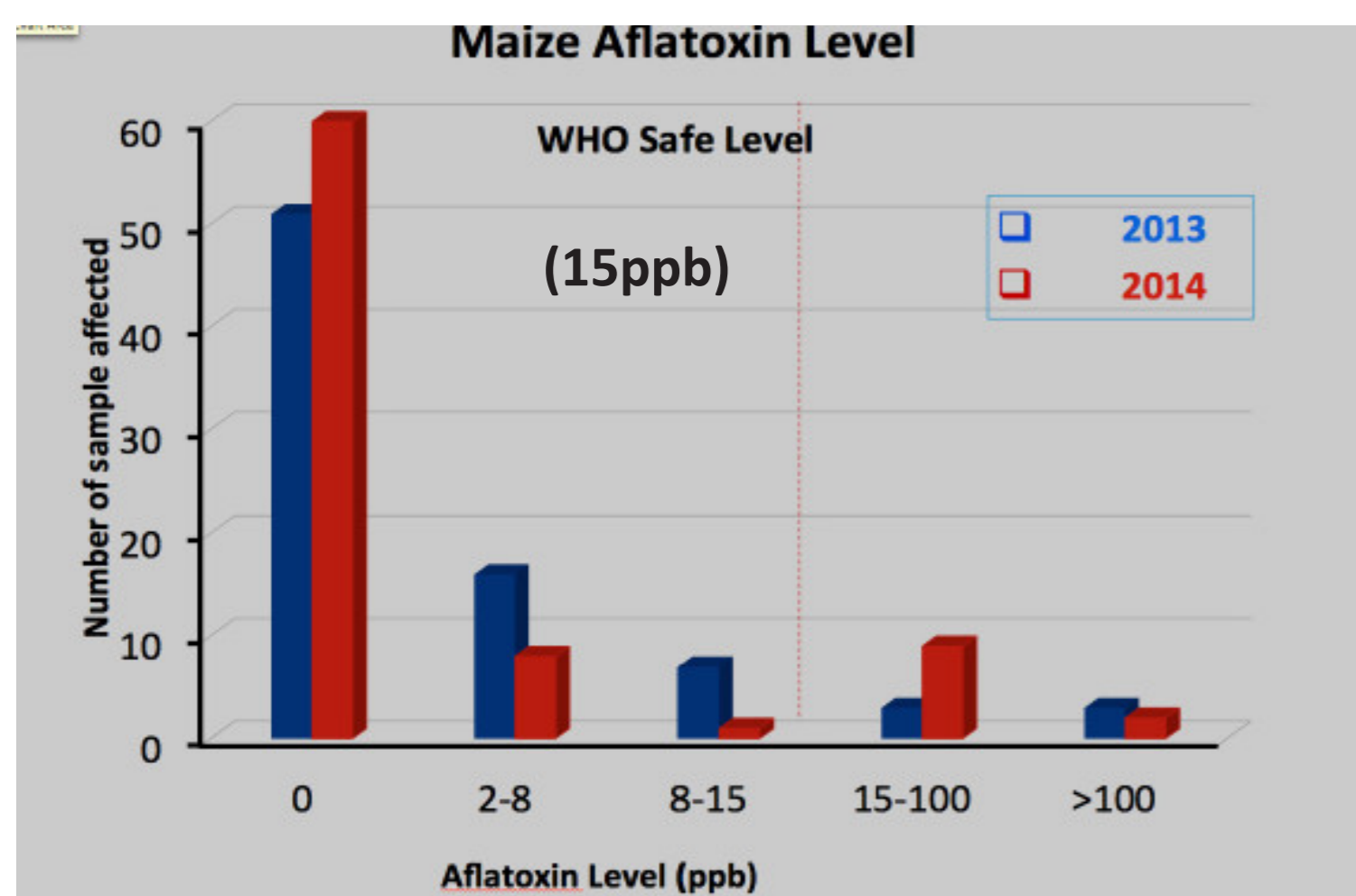


Figure 1. Aflatoxin levels in maize samples in Timor-Leste.

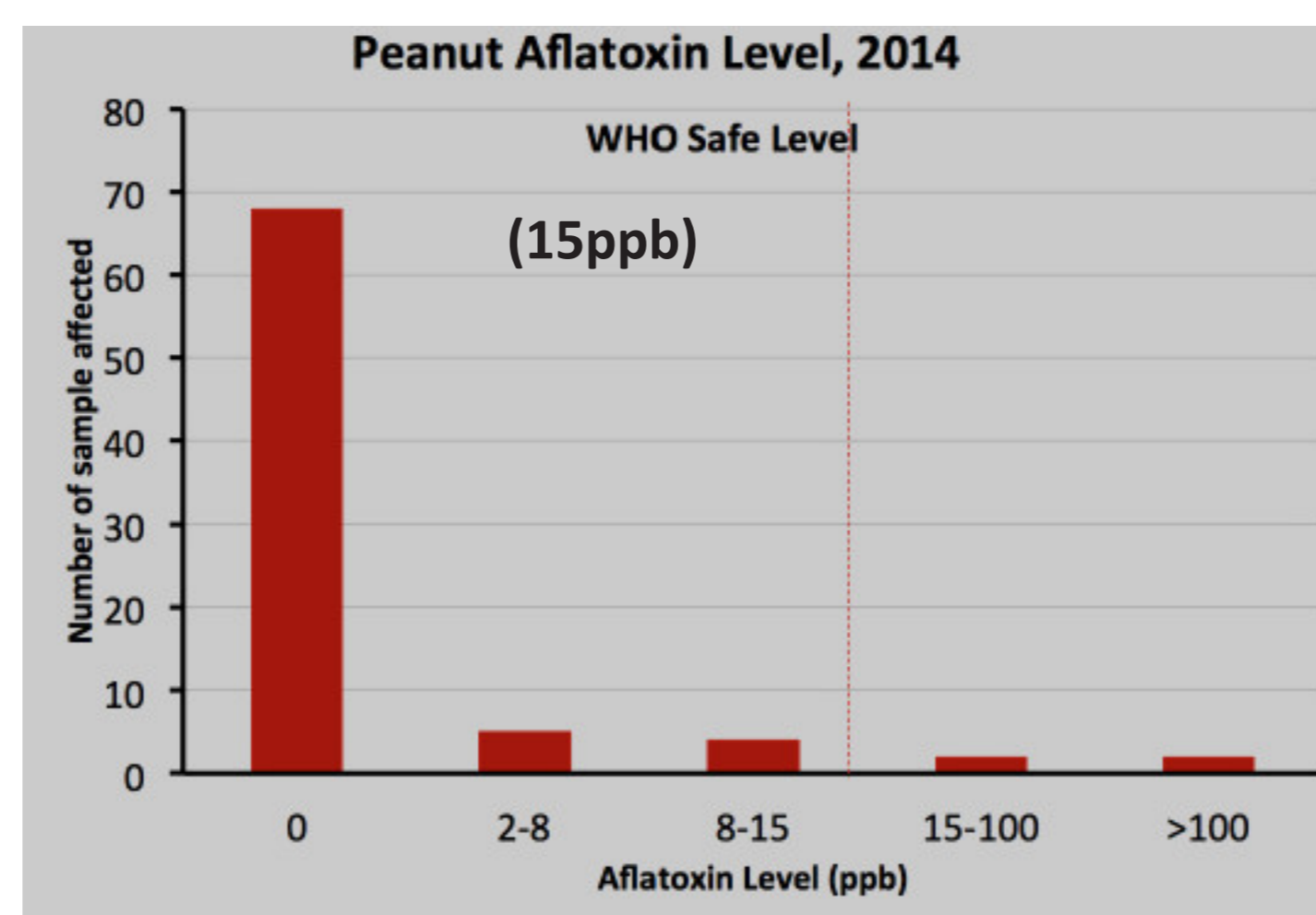


Figure 2. Aflatoxin levels in peanut samples in Timor-Leste.

Table 1. Summary of Aflatoxin in maize and peanut samples collected in the household, in seed lots and the local markets.

Most peanut and maize samples had zero to very low levels of Aflatoxin. Only 10.5% of the maize samples (7.5% in 2013 and 13.5% in 2014) were higher than WHO food safety standard of 15ppb (Figure 1).

For peanuts, 6.25% of 80 samples were higher than WHO standard (Figure 2). The initial testing

showed low levels of Aflatoxin contamination in maize and peanuts and this contamination rates are much lower than found in many other countries. However, there are a small number of samples with high (>100ppb) level of Aflatoxin. The incidence of aflatoxin was similar for seed and for grain used for food (Table 1).

Crop	Year	% Aflatoxin Positive Samples (>15ppb)		
		Household	Seed	Market
Maize	2013	n/a	2.5	5.0
Maize	2014	1.25	2.25	10.0
Peanut	2014	n/a	2.5	3.75



Photo 3. Sample Collection in District Local Market



Photo 4. Sample Collection in Dili Market

Conclusions

This initial testing showed very low levels of Aflatoxin contamination in maize and peanuts in Timor-Leste. Average levels and incidence are much lower than in similar countries.

Aflatoxin levels of above 50ppb have been associated with stunting in other countries. It is unlikely that aflatoxin is causing childhood stunting in Timor-Leste.

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Acknowledgement

Thanks for Funding and Collaborative Support from:



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