

ABSTRACT

Aflatoxin contamination of grain is a major constraint to sustained quality cereal production. The causative fungi, *Aspergillus* species infect crops in the field and continue to do so post-harvest where they produce toxins in store. The current study aimed at establishing seasonal variation in levels and types of aflatoxins in maize from the Eastern region of Kenya- the hot-spot for aflatoxicosis. Maize kernels were collected from farmers' households in May and December 2013 -2 months after long rain and short rain season respectively. The total aflatoxins were quantified using Enzyme-Linked Immunosorbent Assay (ELISA), while the toxin composition was determined using Thin-Layer Chromatography (TLC) and confirmed using High-Performance Liquid Chromatography (HPLC). Generally, grain harvested after the long rains (May) had significantly ($p = 0.019$) lower aflatoxin levels and variation (5.68 ± 6.31 ppb, 100% Aflatoxin B1) than that of short rains (10.77 ± 10.14 ppb, 72% AFB1). Additionally, from the long and short rain seasons, the samples exceeding regulatory allowed limit (10 ppb) were 16 and 44% respectively. In Eastern Kenya, consumption of maize harvested in the long rain season presents a recurrent risk of exposure to low levels of AFB1; while consumption of maize harvested after the short rain season presents a risk of seasonal exposure to high levels and mixed type of toxins. However, this long term risk of exposure to aflatoxins is poorly documented hence these findings necessitate mitigation measures because AFB1- is a potent class 1 mutagenic toxin likely to cause liver cancer.