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Disposal and Alternative Use of Aflatoxin Contaminated Food

EXECUTIVE SUMMARY

Agricultural commodities, including maize, groundnuts, cassava, milk, and cottonseed contaminated with aflatoxin pose serious threats to human and animal health, and to the economies of the EAC Partner States. It is, therefore, desirable that contamination becomes prevented to the greatest extent possible. Given that eradication of aflatoxin contamination in foods is not feasible at the moment, alternative uses should be considered with disposal being the last resort. The EAC, however, doesn't have established and functional mechanisms for disposal of aflatoxin-contaminated agricultural commodities.

Some of the contaminated commodities may be appropriately placed for alternative uses, such as animal feed and production of energy. This is possible because the severity of risk from aflatoxin differs substantially between humans and animals and among animals. It further differs significantly within species of animals and among humans relative to their age and health status. Commodities unfit for human consumption can often be selectively used as animal feed for the appropriate type and category of livestock. Through chemical and physical processing, contaminated commodities can also be processed to yield by-products that become fit for animal consumption, including production of energy, and industrial products such as glue and ethanol. Similarly, products that maybe classified as unsafe for infants may be tolerable by adults. Currently, the options suggested for disposal of the contaminated consignments are burying and incineration.

This policy brief calls for the establishment of a regional policy framework to guide and provide options for alternative uses of contaminated commodities and disposal of contaminated commodities.

THE PROBLEM

Major food commodities in the EAC such as maize, ground-nuts, cassava, milk, and cottonseed are under sustained threat of aflatoxin contamination thereby posing serious human and animal health implications, and to the economies of the EAC Partner States.

The heightened sampling and testing of aflatoxin susceptible commodities followed by regulatory recalls and withdrawals of aflatoxin contaminated commodities has led to confinement of contaminated stocks in institutions of learning, food manufacturing premises, business operator premises, cereal depots, amongst other government and non-government institutions pending an amicably agreed decision on alternative uses and/or mode of disposal.

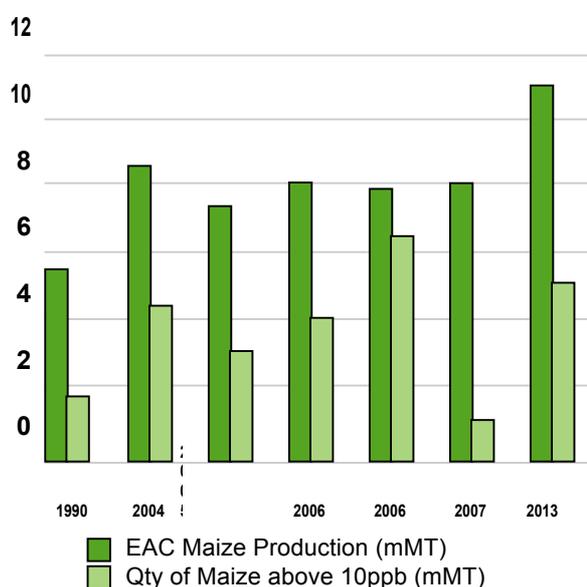


Part of the 13,992 MT of aflatoxin contaminated maize waiting for destruction at a cement kiln in Kenya

SIZE OF THE PROBLEM

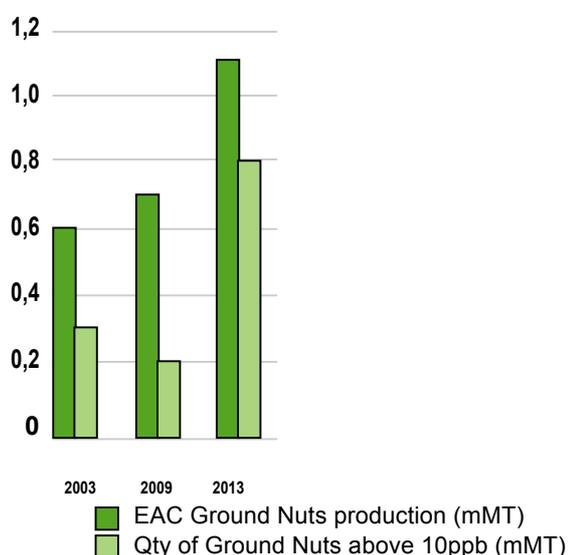
Figure 1 shows the trend of aflatoxin contamination of maize compared to the production in EAC Partner States between 1990 and 2013. The trend has been increasing over the years. However, there is no documented mechanism for disposal of the contaminated produce. For example the Republic of Kenya in 2014, while destroying 13,992 metric tonnes of aflatoxin contaminated maize, faced enormous challenges in terms of collection, transportation, and safe destruction of the contaminated consignment (Personal Communication, Kenya, 2014) (Photo page 1).

Figure 1:
Quantity of contaminated maize in EAC Partner States (millions of metric tonnes)



Source: Kaaya et al. 2005; Lewis et al. 2005; Daniel et al. 2011; Okoth & Kola 2012; Kilonzo et al. 2014

Figure 2:
Quantity of contaminated Ground Nuts in EAC Partner States (millions of metric tonnes)



The EAC has been working on mechanisms that are aimed at restricting exposure to aflatoxin, such as the development of regulations that stipulate acceptable limits or standards for aflatoxins (EAS 2:2013). However, blanket enforcement of such regulations would result in substantial quantities of staple food crops being declared unfit for consumption by either humans or livestock and hence discarded. Lack of a coordinated way of disposing off of the contaminated produce and or turning it into other safe forms for alternative use exacerbates the situation.

CAUSE OF THE PROBLEM

In the EAC Partner States, there is lack of a clear policy direction and legal provisions on approved alternative uses of aflatoxin contaminated commodities neither are there approved disposal methods.

This policy brief, therefore, provides options for alternative uses and disposal of contaminated commodities.

POLICY OPTIONS/RECOMMENDATIONS

It is recommended that the EAC develops a policy and legal framework that will provide guidance on alternative uses and appropriate methods of disposal of aflatoxin contaminated commodities. The policy and legal framework should take into consideration the following options on alternative uses and disposal methods:

1) ALTERNATIVE USES:

Policy Option 1: Cascading direct utilization: aflatoxin contaminated foods will be used according to level of contamination and severity. The table below indicates the category of use depending on the level of contamination;

The severity of the response to aflatoxin differs among humans and animals by health and nutritional status (Gradelet et al. 1998), with diversity of tolerance among species and various age groups (Wogan 1966; Roebuck and Wogan 1977; Pier 1992; Wild and Gong 2010). Therefore, when exceeding 10 ppb, a commodity would be considered for use by animal species in stages that can tolerate higher concentrations.

Lot No.	Total Aflatoxin contamination ($\mu\text{g}/\text{kg}$)	Proposal for Use (in the EAC)
1	Up to 5	For direct human consumption and dog feed
2	Up to 10	Direct human consumption
3	Up to 20	Feed for mature animals excluding dairy animals
4	Up to 100	Feed for mature beef animals excluding dairy animals
5	More than 100	Reject for all classes or Recommend for other alternative use/disposal

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