



Partnership
for Aflatoxin
Control in Africa

Partenariat pour
lutter contre
l'aflatoxine en Afrique

Parceria para o
Controle da
Aflatoxina em África

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الافلاتوكسين في أفريقيا



SUMMARY REPORT

Regional Workshop Report

on the

Aflatoxin Challenge in Eastern and Southern Africa

**Theme: Improving Health, Trade and Food Security through
Regional Efforts to Mitigate Aflatoxin Contamination**

11-13 March 2014

Golden Peacock Hotel, Lilongwe, Malawi



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1. Background to the Workshop

The aflatoxin challenge constitutes a significant threat to food and economic security, and undermines poverty eradication in Africa. It is a major cause of post-harvest loss that further constrains the quantum of food reaching our markets and households across the African continent. In addition, aflatoxin poses a major public health challenge to consumers all over the continent and can result in foregone revenues and profit from domestic and regional commerce and international trade.

Aflatoxin is a poison naturally produced by strains of the fungus *Aspergillus flavus* and related species. Aflatoxin contamination poses a big problem in the entire African continent. Aflatoxin contamination commonly occurs in maize, groundnut, and crops of regional importance in Eastern and Southern Africa such as sorghum and millet. According to Ranajit Bandyopadhyay's research findings, contamination frequency in the tune of 10 – 60% of maize and groundnuts is encountered in many parts of Africa. According to WHO (2011), aflatoxin contamination leads to 64% reduction in food quality in Africa.

Aflatoxin contamination can be associated with a number of health problems. In human health, aflatoxins cause liver cancer and are associated with stunting and kwashiorkor in children and immune suppression (Gong et al., 2002, 2003, 2004; Turner et al., 2003, 2007). In animal health, specifically livestock and poultry, aflatoxin has been associated with deaths and ill health including decreased milk and yield.

Aflatoxin contamination in foods in the Eastern and Southern Africa region are occasionally above the internationally recommended maximum limits. Several studies on aflatoxin have been conducted in Eastern and Southern Africa. In Botswana, the presence of aflatoxins as well as other contaminants in maize meal was reported, with half of the samples containing aflatoxin at concentrations greater than 20 ppb. Levels of up to 1,020 ppb of aflatoxin were reported in Malawian grains (Mphande et al. in USAID and Danya 2012). In 2004, several hundred Kenyans became severely ill, and 125 died, of acute aflatoxicosis: a disease of liver failure associated with consuming extremely high levels of aflatoxin in food (Lewis et al. 2005; Strosnider et al. 2006).

Because of the serious food safety risks, human exposure to aflatoxins is limited by regulations. The maximum concentrations of aflatoxin permitted in food for humans are less than 20 ppb in the U.S.A., and less than 4 ppb in the EU. Contamination therefore



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presents a barrier to cross-border trade and economic growth as the presence of excessive aflatoxin levels causes grain exports to be rejected by importing countries. If all countries were to adopt EU standards on aflatoxins, then global trade would decline by \$3 billion (Dohlman, 2008).

The aflatoxin problem is so complex that it straddles the agriculture and food security, trade and health sectors. Cognisant of these, in March 2011, the 7th CAADP Partnership Platform, noted the importance of advancing sanitary and phyto sanitary (SPS) matters within CAADP to enhance food security and market access. In this context, the meeting underscored the need to address aflatoxin control and other SPS challenges in a holistic and integrated manner across the entire value chains, and urged the African Union Commission and NEPAD Agency to oversee the mainstreaming of sanitary/phyto-sanitary matters in the CAADP framework and the establishment of an Africa-led Partnership for aflatoxin control. Through this call, the Partnership for Aflatoxin Control in Africa (PACA) was established.

PACA aims to provide consistent coordination and coherent leadership to the continental efforts on aflatoxin control. It aims at supporting adoption of proven solutions, and identifies new ones, that will work to mitigate the impacts of aflatoxin on food security and agriculture, trade, and health in Africa. Many actors are involved in developing comprehensive solutions to control aflatoxin along the value chain, from crop production through processing and food preparation to consumption. Many measures can be taken to reduce aflatoxin exposure to local consumers and improve opportunities to sell aflatoxin-safe crops to markets, but some options need to be supported by appropriate policy and regulatory actions. It is expected that comprehensive and feasible solutions being developed for the African context will also be useful for other regions where aflatoxin is a problem. Combating aflatoxin will also contribute to the Millennium Development Goals (MDGs) and PACA will look for ways to contribute to the MDGs and the post 2015 development agenda.

Through the leadership of the African Union Commission (AUC), and with participation from African and other governments, Regional Economic Communities, the private sector, farmers' organizations, and civil society leaders from across Africa, PACA is establishing a comprehensive, Africa-wide approach to mitigate the agriculture and food security, trade, and health impacts of aflatoxin. In this context, regional workshops will further sensitize key stakeholders about comprehensive solutions to control aflatoxin that are appropriate to the region based on priorities identified by stakeholders themselves.



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Therefore, COMESA in partnership with the Partnership for Aflatoxin Control in Africa (PACA), AUC, International Institute of Tropical Agriculture (IITA), African Agriculture

Technology Foundation (AATF), and U.S. Agency for International Development (USAID) jointly held a regional workshop on the aflatoxin challenge in Eastern and

Southern Africa. The theme of the workshop was: “Improving Health, Trade and Food

- Sensitize member states, high-level decision-makers and industry leaders on the magnitude of the Aflatoxin Challenge in the region.
- Engage member states, experts and relevant stakeholders on setting regional priorities and initiating work on the regional action plan.
- Facilitate lesson sharing on industry mitigation practices and public regulatory frameworks.

Security through Regional Efforts to Mitigate Aflatoxin Contamination”. The workshop was held in Lilongwe, Malawi from 11 – 13 March 2014 at the Golden Peacock Hotel. The objectives of the workshop were as follows:

The regional aflatoxin workshop was attended by a total of one hundred and six (106) delegates, including aflatoxin experts drawn from fourteen (14) COMESA member states and three (3) partner states (Tanzania, Mozambique and South Africa). Workshop Process

The overall approach to the workshop was participatory and consultative in nature. COMESA engaged delegates in setting the climate for the workshop. The workshop process ensured the delegates were fully involved through presentations, group discussions and ‘question and answer’ sessions. The workshop started with an opening session which was followed by topical technical briefs, presentations from member states, regional experiences, private sector and industrial experiences. Finally the delegates were split into five (5) parallel working groups. This was followed by group presentations and, question and answer sessions and an official closing ceremony by a representative of the Malawi Government. Workshop presentations are available on the PACA website at:

http://www.aflatoxinpartnership.org/en/Regional_Workshop_on_the_Aflatoxin_Challenge_in_East_and_Southern_Africa.aspx



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2. Discussions- Sub-themes

The following sub-themes were identified to guide discussions at the workshop:

- **Sub-theme 1:** Policy /Regulatory Actions including education and awareness
- **Sub-theme 2:** CAADP as an entry point for increasing investment in Research technology and regulatory function
- **Sub-theme 3:** Public Health and Nutrition
- **Sub-theme 4:** Research and Adoption of Technologies and Best Practices
- **Sub-theme 5:** Research and Adoption of Bio-control Technologies

Intervention areas for Sub-Themes

Delegates highlighted the challenges and identified possible intervention areas for aflatoxin mitigation under each sub-theme which are summarized below:

Sub-theme 1: Policy /Regulatory Actions including education and awareness

Challenges: Inadequate regulatory frameworks (policies, laws; regulations; standards; guidelines; protocols etc.) and inadequate information/scientific data to support and inform food safety policy and measures for aflatoxin control in member states. Where these exist, they are either outdated or unsynchronized at national and regional levels. In addition, low capacity for risk management, monitoring, surveillance and laboratory services in member states was identified as one of the major challenges.

It was noted that these challenges are further compounded by inadequate resources (budget constraints; human resources, infrastructure i.e. unaccredited or lack of laboratories, equipment and analytical knowledge); weak enforcement of existing regulations; low awareness levels amongst various stakeholders in the supply and value chain; lack of political will and political interference; weak coordination and/or cooperation among different stakeholders i.e. inspectors, registrants, ministry of officials, custom officials hence duplication and lack of coordination of roles and institutional efforts to deal with the problem.

The members prioritized the challenges and the proposed interventions into three main themes as presented in Table 1 below:

No	Priority	Area/	Proposed Interventions
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	Challenge	
1	Low awareness among key actors/ stakeholders, knowledge gaps/ignorance	<p>Enhance awareness creation through:</p> <ul style="list-style-type: none"> • Targeted education and knowledge sharing, • Mass media e.g. social media, publications, campaigns and special meetings/events to sensitize opinion leaders; • Knowledge management: contact points/ databases; and • Curriculum review and implementation to include food safety (aflatoxin)
2	Inadequate capacity: human resources; systems; infrastructure	<ul style="list-style-type: none"> • Generate scientific and economic data and establish databases; • Establish and enhance capacity for risk assessment (training; implement monitoring, surveillance programs, infrastructure/ equipment, personnel); • Increase investment and or budgetary allocation for development of research, human resources, training, knowledge and enforcement: at least 1% of GDP ; • review curricular to include food safety – aflatoxin from basic levels; • Incentivise research/application; awards etc.
3	Weak regulatory frameworks	<ul style="list-style-type: none"> • Establish and enhance capacity for risk assessment through training, implementing monitoring and surveillance programs and coming up with infrastructure, equipment, qualified personnel; • Align national policies to encourage intra and interstate cooperation (lead institutions- coordination); • Encourage voluntary labelling of aflatoxin safe foods (limits); and • Increase investment and or budgetary allocation for development of research, human resources, training, knowledge and enforcement: at least 1% of GDP.

Table 1: Prioritized Challenges and Interventions for Theme 1

Sub-theme 2: CAADP & Health Sector Planning & Investment framework

Challenges: It was noted that the scale and level of aflatoxin coverage is yet unknown and that there is lack of integration of interventions on aflatoxin management in most member states. Other challenges included difficulty in securing funding for aflatoxin management.

The members proposed a number of interventions to abate the situation as presented in Table 2 below:

No.	Challenges	Proposed Interventions
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1.	Unknown coverage level and/or scale of aflatoxin	Review investment policies, plans and programmes to see how much covers Food Safety, and aflatoxins in particular.
2.	Many groups and committees already	Integrate in existing structures and initiatives in Agriculture, Nutrition (SUN), Health, Trade, and Education.
3.	PACA / aflatoxin 'home' • Food Production • Food Safety	<ul style="list-style-type: none"> • Draft and submit letter to Minister of Agriculture on CAADP food production/ systems for CAADP aflatoxin focal point to follow on NEPAD Nutrition workshops. • Draft and submit Letter to Minister of Health on food safety. • Follow up and Communication on Nutrition, Trade, Research as appropriate per country.
4.	Securing funding	Sensitize Ministry of Finance to the cost/benefit of addressing the aflatoxin issue.

Table 2: Prioritized Challenges and Interventions for Theme 2

Sub-theme 3: Public Health and Nutrition

The following challenges and intervention areas were identified for sub-theme 3 highlighted in table 3 below:

No.	Challenges	Proposed Interventions
1.	Institutional (Health care/hospital based) challenges, including inadequate capacity for management of aflatoxin at the institutional level (lack of diagnostic capacity, lack of laboratories) and inadequate inter-agency coordination	<ul style="list-style-type: none"> • Establish regional serum based units in existing labs and low cost diagnostic kits for urine and serum screening that can be used on-site at community, hospitals and health care systems • Sensitization training in Food borne illnesses for midwifery and nursing professionals, physicians, pediatricians and Obgyn medical professionals • Inclusion of aflatoxin prevention, control and management and implications in curriculum for Nutrition, Public Health and medical students at the university level • Training of lab technicians to manage diagnostic centers and kits at health care institutions • Promotion Food and Nutrition Labeling at Manufacturers and Consumers level • Development and Implementation Research Protocols: Formative research, and evidence based research Action research at the community level • Sharing and disseminating findings, conclusions and recommendations with stakeholders and policy makers



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		<ul style="list-style-type: none"> Strengthening advocacy from bottom to top approach
2.	<p>Community Based challenges such as disposal of aflatoxin-contaminated food, people left with no choice thereby eating unsafe food especially during rainy season and situations whereby public health and nutritional professionals overemphasis on other diseases, reproductive health issues other than aflatoxins menace and its huge implications</p>	<ul style="list-style-type: none"> Mainstreaming of Nutrition and food safety within existing structures inclusion of community agriculture and health extensions workers Awareness creating campaigns and community empowerment programs: aflatoxin safe food on World Cancer day etc Dietary Diversification and Nutrition Education programs involving mothers as development army including importance of aflatoxin safe food during first 100 days/1000 days after conception (based on Mitchell Obama's promotion) Safe Food, Sanitization and Storage Practices (3 S) for mothers, infants and Children; inclusion of safe weaning foods
3.	<p>Lack of Linkages, working in isolation challenges. Some of the examples are inadequate formative and action research, especially on Behavior Change Communication strategies and Information Education Communication. Another example under this challenge is the inadequate evidence based research to forward advocacy, to share and disseminate new knowledge</p>	<ul style="list-style-type: none"> Sharing and disseminating findings, conclusions and recommendations with stakeholders and policy makers Strengthening advocacy from bottom to top approach Conduct formative and action research, on Behavior Change Communication strategies and Information Education Communication
4.	<p>Lack of Proactive Involvement of institutions: Research Institutions and Universities, Scarcity of information – systematic research data base</p>	<ul style="list-style-type: none"> Provide sensitization training in aflatoxin and food-borne disease diagnostics, prevention, and management for selected medical health professionals (midwives, nursing staff, physicians, pediatricians, obgyn doctors and community health workers), agriculture, and trade professionals
5.	<p>Lack of Dissemination/sharing information</p>	<ul style="list-style-type: none"> Sharing and disseminating findings, conclusions and recommendations with stakeholders and policy makers

Table 3: Prioritized Challenges and Interventions for Theme 3

Sub-Theme 4: Research and Adoption of Technologies and Best Practices

Three top challenges and the associated interventions identified for this theme are as follows in Table 4:



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No.	Challenges	Proposed Interventions
1.	Quality responsive markets	Promotion of alternative uses of contaminated material, Promotion of integrated and structured trading system, and Establishment of context specific standards.
2.	Inadequate knowledge and awareness of the aflatoxin challenge	Development of targeted communication messages and strategy for relevant stakeholders, documentation of available technologies, and undertaking risk analysis.
3.	Inadequate aflatoxin research	Increase understanding of aflatoxin epidemiology, the development of alternative uses of contaminated material; and Developing a risk map of aflatoxin epidemiology and aspergillus hot spots; and The development of resistant varieties.

Table 4: Prioritized Challenges and Interventions for Theme 4

Sub-Theme 5: Research and Adoption of Biocontrol

Aflatoxin can be controlled through use of Biocontrol Technologies such as aflasafe, a proven safe Biocontrol which has successfully been used in the USA in the past twenty (20) years. Each country needs to go through a process of selection of strains. There is need for four non toxin producing strains per country to ensure they can control the toxin producing strains in different environments. To be used in each country, Biocontrol technology must be appropriately approved and subsequently registered. The lead time for all processes to be completed before product is used is three (3) years. Table 5 below highlights the interventions for Theme 5

No.	Challenges	Proposed Interventions
1	Knowledge of prevalence of aflatoxin, on what crops and the risks	<ul style="list-style-type: none"> - Need for regulatory framework to be serious about testing to show importance of aflatoxin in the country - Cost benefit analysis for adoption of technologies – a driver for technology adoption (make more money) - Safety of bio control products to be evaluated/proved by human health specialist this can be proof that the product is safe for registration <p>PACA can help to satisfy the safety concerns and to provide relevant information and also to state that this is not an IITA technology but a farmer's technology.</p>
2	Awareness but not to destroy market (communication)	<ul style="list-style-type: none"> - Careful and clear explanations of risk while bio control product is being developed and made available (e.g. silence on HIV/AIDS, diarrhea) - Delivery to farmers needs private-public-partnership, however it should be realized that the stakeholders are very diverse in nature - private sector to support large traders and public sector should support small scale farmers
3.	Costly to develop bio control technology including quality assurance	<ul style="list-style-type: none"> - Work together across regulators and scientists to develop common approaches and understanding - Fake products- government certification of approved per country

Table 5: Prioritized Challenges and Interventions for Theme 5



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3. Conclusions and Recommendations

- a) **Scaling up use of Biocontrol technology option.** The use of aflasafe is a notable contribution to aflatoxin control and its use is profitable using a package approach, farmers stand to gain more. Proof of efficacy of this bio-control product and others is a necessary process as part or registration of the products in target countries. There is need to hasten registration processes of this technology in member countries. Role of industry is crucial in scaling up use of Biocontrol technology and in the implementation of aflatoxin control regimes.
- b) **Harmonized biopesticides registration framework (e.g. Biocontrol technology).** There is need to consider harmonizing the regulatory framework for registration of biopesticides to provide economies of scale and scale up production of Biocontrol products, which can reduce the price and increase availability to small holder farmers. The private sector should drive the process supported by a conducive regulatory framework. Other technologies other than aflasafe are available and there is a lot of evidence the technology works considering that they have gone through a process of thorough evaluation.
- c) **Role of food control systems.** Aflatoxin control should be anchored on national food control systems. There is need to improve food control systems in most member countries and ensure inter-sectoral coordination of activities towards aflatoxin control. Most critical is up to date standards and regulations, surveillance and monitoring, laboratory services, education and awareness, including promotion of good practices. Including food safety in curriculum on nutrition, agriculture and trade is one way of increasing awareness about the food safety problem. Continuous surveillance is necessary for any risk mapping because some hot spots today may not be such tomorrow. World Food Programme is ever ready to assist member countries strengthen food control systems. FAO is doing work on mycotoxin sampling schemes to improve analytical capabilities. More information can be obtained from <http://www.fstools.org/mycotoxins>

It is also critical to consider how best to enforce food safety at community level.
- d) **Alternative uses of affected products.** Regarding how to deal with contaminated material, there must be disposal regulations developed in the member countries, including provisions for destruction of the contaminated material and enforcement of the regulations. Lack of enforcement remains a notable challenge.



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- e) PACA is considering supporting five (5) countries to pilot aflatoxin control activities, including a situation analysis to inform policy and planning processes under the CAADP framework. Criteria will be established for choosing the pilot countries.

4. Way Forward:

- I. Develop criteria for selecting pilot countries for the action plan
- II. Initiate process of developing the Action Plan (Task Force for Action Planning) and share with delegates
- III. Coordinating & Implementation of the Action Plan
- IV. Providing further inputs into the scoping study
- V. Communication/information sharing --email