



Partnership
for Aflatoxin
Control in Africa

Partenariat pour
lutter contre
l'aflatoxine en Afrique

Parceria para o
Controle da
Aflatoxina em África

الشراكة من أجل مكافحة
الافلاتوكسين في أفريقيا



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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List of Abbreviations and Acronyms

AATF	African Agriculture Technology Foundation
AUC	African Union Commission
CAADP	Comprehensive Africa Agriculture Development Programme
COMESA	Common Market for Eastern and Southern Africa
DALYs	Disability Adjusted Life Years
EAGC	Eastern Africa Grain Control Council
ECOWAS	Economic Community Of West African States
ELISA	Enzyme Linked Immuno Sorbent Assay
EU	European Union
FAO	Food and Agriculture Organization
GAP	Good Agriculture Practices
GHP	Good Hygienic Practices
GMP	Good Manufacturing Practices
GSP	Good Storage Practices
HCC	Hepatocellular Carcinoma
HPS	Hand Picking and Selection
IITA	International Institute of Tropical Agriculture
MOH	Ministry of Health
MDGs	Millennium Development Goals
NASFAM	National Smallholder Association of Malawi
PACA	Partnership for Aflatoxin Control in Africa
ppb	parts-per-billion
RA	Risk Assessment
SPS	Sanitary and Phyto-sanitary
USA	United States of America
USAID	United States Agency for International Development
USDA	United States Department for Agriculture
WHO	World Health Organization

Glossary

Afla B	Afla B is a quantitative method for the detection of aflatoxin in many commodities.
Aflatoxin	Aflatoxin is a poison naturally produced by strains of the fungus <i>Aspergillus flavus</i> and related species
Aflasafe	A brand of biological control comprised of atoxigenic strains of <i>Aspergillus</i> that outcompete the strains that produce aflatoxin. This product was developed by IITA in collaboration with Agriculture Research Service of the United States Department of Agriculture, University of Bonn and University of Ibadan http://www.aflasafe.com/aflasafe
CODEX	The C O D E X A L I M E N T A R I U S international food standards, guidelines and codes of practice contribute to the safety, quality and fairness of this international food trade. Consumers can trust the safety and quality of the food products they buy and importers can trust that the food they ordered will be in accordance with their specifications. http://www.codexalimentarius.org/about-codex/en/ .
ENTEROSORPTION (ES)	A perspective adsorptive method to minimize systemic toxic effects of chemotherapy
NIXTAMALIZATION	The term refers to a process for the preparation of maize (corn), or other grain, in which the grain is soaked and cooked in an alkaline solution, usually limewater, and hulled, its nutritional value is increased; flavour and aroma are improved; and mycotoxins are reduced , Wikipedia.
VICAM	Supplier of Mycotoxin testing Solutions (equipment and supplies).

Executive Summary

COMESA in partnership with Partnership for Aflatoxin Control in Africa (PACA), African Union Commission (AUC), International Institute of Tropical Agriculture (IITA) and U.S. Agency for International Development (USAID) held a regional workshop on the aflatoxin challenge in Eastern and Southern Africa in Lilongwe Malawi from 11 to 13 March 2014. The theme of the workshop was “Improving Health, Trade and Food Security through Regional Efforts to Mitigate Aflatoxin Contamination”. The three objectives of the workshop were to 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 and to facilitate lesson sharing on industry mitigation practices and public regulatory frameworks.

In keeping with workshop objectives, the technical briefs from PACA, IITA, and COMESA sensitized delegates on dangers of aflatoxin, the regional initiatives and technologies and, research solutions that are being successfully applied in other countries to mitigate the aflatoxin challenge. Additionally, COMESA member states provided briefs on aflatoxin situation in their countries which highlighted the fact that while several countries have the necessary laws and regulations in place, few have the capacity to enforce them, and expansion of regional harmonization is necessary for trade

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

The workshop identified priority areas necessary for combating the aflatoxin challenge and the proposed interventions for dealing with the challenges were also proposed. The challenges identified include low awareness among key actors / stakeholders, knowledge gaps and ignorance inadequate capacity in human resources, systems and infrastructure and weak regulatory frameworks.

The workshop proposed interventions which included:

1. Establish Aflatoxin Status and Awareness

Regulatory system to show where Aflatoxin is and how much, determine risk to justify intervention, awareness raising campaigns, institutions and individuals to champion costs and share data. Communication to the farmers - to get buy-in from the farmers and enhancing awareness creation through targeted education, knowledge sharing; mass media etc, to include food safety (aflatoxin).

2. Prove that biocontrol works compared to other methods and is cost efficient.

3. Commercialization

Scaling up use of Biocontrol products. Registration and production capacity to make product available for use.

4. Establish regional serum based labs and low cost diagnostic kits for urine and serum screening that can be used on-site at community, hospitals and health care systems.
5. Include food-borne illness, and aflatoxin in curriculum for nutrition, public health, and medical health professionals, and 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.
6. Mainstreaming of nutrition and food safety within existing structures inclusion of community agriculture and health extensions workers example: Include information about aflatoxin dangers and solutions in nutrition, HIV, agricultural extension awareness campaigns (e.g. dietary diversification, importance of First 1000 days); Include information about aflatoxin in celebrations of World Cancer Day.
7. Development and implementation of research protocols: Formative research, and evidence based research, action research at the community level and sharing the findings with policy makers for advocacy, and further action.
8. Establishing national regulatory food safety system and enhance capacity for risk assessment and enforcement.
9. Increasing investment and or budgetary allocation for development of research, human resources, training, knowledge and enforcement: at least 1% of GDP and incentivise research/application; awards.
10. Building capacity in promotion to good agriculture practices, alternative uses of contaminated material, integrated and structured trading system, and establishment of context specific standards.

PACA is considering supporting five (5) countries to pilot aflatoxin surveillance and control activities in, including a situation analysis to inform policy and planning processes under the CAADP framework. A task force has been set up to develop an action plan for aflatoxin control in the region.

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.

Evidence abounds that aflatoxin ingestion is frequent through contaminated foodstuffs and is one of the major etiological factors in human hepatocellular carcinoma (HCC) in China and sub-Saharan Africa. Children under 5 remain particularly vulnerable to aflatoxin exposure significantly hindering children's growth and development while damaging their immunity. 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).

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). High levels of aflatoxin contamination including outbreaks of acute aflatoxin poisoning leading to hundreds of deaths were also reported from East Africa (Probst *et al.*, 2007).

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 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.

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 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:

- 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.

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). The names, countries of origin and the institutions they represented at the workshop are detailed in Annex 4.

2. 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](http://www.aflatoxinpartnership.org/en/Regional_Workshop_on_the_Aflatoxin_Challenge_in_East_and_Southern_Africa.aspx)

3. Workshop Proceedings

3.1 Opening Session

The workshop opened with introductory remarks by representatives of development partners comprising the Institute for Tropical Agriculture (IITA), USAID Malawi and the African Union Commission (AUC). Before this, COMESA SPS Expert, Ms. Martha Byanyima, presented the workshop objectives and clarified the focus of the workshop to the delegates. Following the introductory remarks, a representative of the Secretary General for the Common Market for the Eastern and Southern Africa (COMESA) Mrs. Emiliana Tembo, Director for Gender and Social Services in COMESA gave an introductory speech on behalf of COMESA. The opening ceremony was chaired by a representative of the Principal Secretary of the Ministry of Agriculture and Food Security who invited the Guest of Honour, the Deputy Minister responsible for Agriculture and Food Security in Malawi, Hon. Bintony Kutsaira, to officially open the workshop.

In his opening remarks, the Honourable Deputy Minister of Agriculture, speaking on behalf of the government of Malawi and its people, welcomed delegates to Malawi. The Deputy Minister applauded COMESA Secretariat for convening the Regional workshop on the aflatoxin challenge in the Eastern and Southern Africa. Noting that aflatoxin contamination is a multi-faceted trans-boundary problem, the minister emphasized that interventions take a holistic approach, involving public and private stakeholder participation, a sector-wide approach, regional and international collaboration and, indeed new approaches, such as, the use of bio-control technologies that have been successful in other countries like the United States of America and Nigeria among others. The Honourable Deputy Minister extended appreciation to the developmental partners (IITA, PACA, and USAID) for their continued support and efforts in addressing the aflatoxin challenge in the region.

Mrs. Emiliana Tembo, Director for Gender and Social Services in COMESA speaking on behalf of the COMESA Secretary General, Mr. Sindiso Ngwenya, welcomed the delegates to the workshop and applauded Malawi for hosting the regional workshop. Expressing COMESA's appreciation for the continued support of partners which has enabled a number of activities to take place as part of the COMESA Sanitary and Phyto-sanitary programme in the region, Mrs. Tembo emphasized the importance of the programme as it is necessary precursor to increased intraregional and international trade. She urged that collective action be an outcome of the workshop, and specifically that all Member States, Partners and Experts to agree on regional actions for a harmonized approach that will protect consumer health and facilitate trade in aflatoxin sensitive foods.

Mr. Frank Mugenyi, Senior Industry Advisor for the Department of Trade in the African Union Commission also made his introductory remarks on behalf Her Excellency Mrs. Tumusiime Rhoda Peace, Commissioner for Rural Economy and Agriculture; Her Excellency Mrs. Fatima Haram Acyl, Commissioner for Trade and Industry and the Chairperson of the PACA Steering Committee, Dr. Abebe Haile Gabriel. In his remarks

Mr. Mugenyi commended COMESA for organizing the regional workshop as one of the many steps taken in ensuring that eastern and southern Africa continues to benefit through regional and inter-regional trade. Commending COMESA's demonstrated leadership in ensuring that the region is economically integrated, he reiterated that to avoid undermining the health of the consumers in the region, there is need to ensure that the food and feed traded regionally and inter-regionally is free from aflatoxin contamination. He added that mainstreaming aflatoxin control initiatives in major agricultural, health, trade, and environmental policy frameworks at national and regional levels will go a long way in mitigating effects of aflatoxin contamination. Encouraging the need to work together, he reiterated that PACA, through its 10 year strategy (2013-2022), aims to provide consistent coordination and coherent leadership to the continental efforts on aflatoxin control. PACA also aims at supporting adoption of proven solutions, and identifying new ones, that will work to mitigate the impacts of aflatoxin on food security and agriculture, trade, and health in Africa which are supported by appropriate policy and regulatory actions.

Dr. Pheneas Ntawuruhunga speaking on behalf of Dr. Ken Dashiell, Deputy Director General for Partnership and Capacity Building, International Institute of Tropical Agriculture's (IITA), stated that IITA, as a leading research partner, works with the public and private sector partners to enhance crop quality and productivity, reduce producer and consumer risks and generate wealth from agriculture by providing agricultural solutions for hunger and poverty in the tropics. To this end, IITA has produced a Biocontrol product "Aflasafe" for several countries in Africa to mitigate the aflatoxin challenge on the continent.

Ms. Stephanie Funk, USAID Deputy Mission Director expressed appreciation to COMESA for the invitation to the regional workshop acknowledged the importance of aflatoxin because of its serious effects on human health and regional trade. She informed delegates that aflatoxin affects two of the most important traditional crops maize and groundnuts lamented Malawi loss of trade market share on the European market due to inability to meet new standards for groundnut aflatoxin limits levels. She applauded COMESA and PACA for the efforts in mitigating the aflatoxin problem with support of Public and private partners. Ms. Funk emphasized that USAID, through the integrated partnership assistance programme, is providing support to COMESA to implement trade promotion, regional integration programmes, agriculture and environmental programmes. USAID has also provided support in research and development of and bio-control technologies, resulting in the USDA/IITA support for trials and field release of a Biocontrol product called Aflasafe.

2.2 Session I: Technical Briefs

Three technical presentations were presented during the workshop. This was for the purpose of sharing information and creating a better understanding of the aflatoxin

challenge. The Partnership for aflatoxin Control in Africa (PACA) representative Dr. Amare Ayalew presented an overview of aflatoxin and PACA. Dr. Ranajit Bandyopadhyay of IITA presented the second technical brief on Technology Solutions and Opportunities available for abating the aflatoxin Challenge. Dr. Sam Kanyarukiga and Dr. Ken Shawa of COMESA jointly closed the technical presentations with a presentation on “Increasing Investments in aflatoxin control through the CAADP framework”. The facilitator then invited questions in the discussion session.

2.2.1 Aflatoxin and PACA Overview – Partnership for Aflatoxin Control in Africa (PACA)

Dr. Ayalew discussed how aflatoxin affects food and nutrition security (access to food, use and safety of food, availability of food). He stated that Africa loses US\$450 million per year from lost export trade due to aflatoxins. In addition, he noted that aflatoxins have also a notorious impact on public health (fatal at high concentrations, can cause liver cancer and is linked to stunted growth and being underweight in children).

Dr. Ayalew said that factors contributing to the aflatoxin challenge in Africa include conducive climatic conditions, traditional crop production practices, inadequate harvesting, drying and storage practices, dietary practices, policy and institutional capacity, and lack of awareness about aflatoxin.

The management of aflatoxin should take into account that aflatoxin contamination is a complex problem. As such, it is hard to solve by a single actor/discipline, requiring multi-stakeholder actions, focusing on the cause rather than the symptoms. There is no single answer but rather integrated and coordinated actions are needed. Therefore, the critical importance for the establishment of PACA, an innovative consortium aiming at coordinating aflatoxin mitigation and management across health, agriculture and trade sectors in Africa, which aims at adapting proven solutions, and identifying new ones, that will work for the African situation, and therefore attain PACA’s vision of “Africa free from the harmful effects of aflatoxins.”

2.2.2 Technology Solutions and Opportunities available for Abating the Aflatoxin Challenge – IITA

Dr. Bandyopadhyay explained that aflatoxin and Biotechnology solutions resulting from research on subject. IITA defines aflatoxin as “a highly toxic metabolite produced by the ubiquitous *Aspergillus flavus* fungus which resides in soil and crop debris infects crops and produces the toxin in the field and in stores”. He explained that favoured by high temperature and dry conditions contamination is possible without visible signs of the fungus and it can occur both before and after crop maturity stating that contamination occurs in groundnuts, maize, cassava, and poultry.

He further explained that Human Health effects of aflatoxin contamination are that it causes both acute and chronic diseases and even death. Of concern also is the effect of aflatoxin on trade. Groundnut export to Europe is rejected due to non-compliance on aflatoxin levels. There is therefore need for both medical and agriculture aflatoxin intervention measures to be taken in prevention of aflatoxin. Of importance is the need for an integrated management of aflatoxin.

He informed that IITA has produced a Biocontrol product called Aflasafe (which is a mixture of 4 native atoxigenic strains) to be used in the field to outcompete the aflatoxin. The following is the status of IITA Aflasafe work in the different countries in Africa:

Products ready for registration in countries	Products under field testing	Products under development	Products development to start
Nigeria, Senegal, Burkina Faso and Kenya	Zambia	Ghana, Tanzania and Mozambique	Mali, The Gambia, Uganda, Ethiopia, Rwanda, Burundi, Malawi and South Sudan

Aflasafe which has been successfully used in the USA as an aflatoxin control for the past twenty (20) years is a Biocontrol solution that could benefit Africa as well. The reduction of aflatoxin will improve human health, increase farm income, improve profitability of animal industries, increase regional and international trade, and reputation of African products in global markets.

2.2.3 Increasing investments in aflatoxin control through the CAADP framework

Dr. Ken Shawa provided the status of COMESA Member State adaptation of the CAADP Agenda into their Agriculture and rural development strategies and programmes. COMESA defined the Comprehensive Africa Agriculture Development Programme (CAADP) as a programme of the New Partnership for Africa's Development (NEPAD), established by the AU assembly in 2003, which focuses on improving food security, nutrition, and increasing incomes in Africa's largely farming based economies. Overall, CAADP's goal is to eliminate hunger and reduce poverty through agriculture. To do this, African governments have agreed to increase public investment in agriculture by a minimum of 10 per cent of their national budgets and to raise agricultural productivity by at least 6 per cent.

The presentation indicated that countries are continuously adapting the CAADP Agenda into their agriculture and rural development strategies and programmes and lists the following countries as having signed their compacts as shown in table below:

Countries that Signed their Compacts	Post Compact Process – Design of NAIPS	Post Compact Process- High Level Business Meeting
Nigeria, Senegal, Burkina Faso and Kenya Rwanda, Ethiopia, Uganda, Kenya, DRC, Djibouti, Sudan, Burundi, Swaziland, Malawi, Zambia, Seychelles, Madagascar, and Zimbabwe	Rwanda, Uganda, Kenya, Ethiopia, Djibouti* DRC, Burundi, Malawi, Zambia, Zimbabwe (Technical Review)	Rwanda, Uganda, Kenya, Ethiopia, DRC, Burundi, Malawi, Zambia.

The paper defined the points of entry for aflatoxin control to include stock-taking level, compact development level, NAIP development level and aflatoxin mainstreaming (e.g. nutrition, climate smart agriculture).

The presentation listed other activities taken at regional level as regional investment programs development, country road maps and follow up of aflatoxin situation.

2.3 Session II: Private Sector/Industry Experiences

The second session of the presentations covered private sector/industry specific experiences from National Smallholder Association of Malawi (NASFAM), the Eastern Africa Grain Control Council (EAGC), Afrinut, Jungle Beat and Exagris Africa Ltd. Following the presentations the delegates engaged in another question and answer session to ensure sharing of experiences.

2.3.1 NASFAM

NASFAM presented a paper on “Challenges from Aflatoxin – The Case of NASFAM”. NASFAM is Smallholder farmers’ organization, which started in 1994 as a USAID funded project. The major products of NASFAM are maize and groundnuts, which are a major part of rural diet in Malawi. NASFAM does not have any means of detecting / testing for aflatoxin levels yet various markets in Europe, USA, - Caribbean and South Africa importers impose a regulatory limit on aflatoxin which NASFAM’s products have to comply with.

Aflatoxin Management interventions employed by NASFAM are:

- Improved farm management systems (use of Mandela farm cork drying technology);
- Removal of visibly contaminated groundnuts (hand picking and selection (HPS))
- Aflatoxin analysis (AfB1 {ELISA}, and Total Afla {VICAM})
- Movement from hand sorting to machine sorting (Electronic eye sorter and illuminated belt)
- Shifting to buying unshelled groundnuts and mechanized groundnut shelling to prevent wet shelling

The challenges faced by NASFAM in mitigating aflatoxin risk are:

- Unavailability of suitable aflatoxin detection technologies at farm and warehouse levels;
- Lack of appropriate shelling technologies;
- High cost of equipment and testing;
- Free for all buying system at farm gate level;
- Developing appropriate messages and sensitization of producers and other value chain actors;
- Lack of harmonized regional standards.

2.3.2 Afrinut

Afrinut's presentation posed the question – “How do we eliminate aflatoxin in ground nuts?” Through use of grading whereby nuts are sorted on a belt. It is set up to pull out

low grade nuts. Afrinut buys groundnuts in shells and use machines to shell the groundnuts. Afrinut also uses ovens to blanch, roast, and make peanut paste as a way of mitigating the aflatoxin contamination.

2.3.3 Jungle Beat

Jungle Beat uses good agriculture practices to mitigate against aflatoxin as follows:

- Using lime to strengthen the shell so that it is a barrier to moisture;
- Planting and harvesting at the correct time;
- Moon Planting;
- Fumigation at storage reduces infestation of aflatoxin;
- Finally, applying Good Agriculture Practices such as grading and sorting.

2.3.4 Eastern Africa Grain Council (EAGC)

The presentation from Eastern Africa Grain Council (EAGC) by its Executive Director– Mr. Gerald Masila looked at the impact of aflatoxin on the private sector. In his presentation Mr. Masila narrated the experience of EAGC when at one point it procured maize infected with aflatoxins. The maize was condemned and organization lost money and disposal of condemned maize became difficult because it simply does not burn, it must be incinerated and that costs lots on money. EAGC also deals in rice produce however rice being scarce commodity in Uganda is sold as is and no testing for aflatoxin is done yet most millers want consignments tested for aflatoxin which increases costs to do so. EAGC is therefore trying to find cheaper kits for measurements/testing of the aflatoxin. EAGC indicated that training of farmers has been done and proposes that further management of aflatoxin should consider the following issues:

- Mitigation to start at farm level and mainstream aflatoxin in education system and apply punitive measures for noncompliance.
- Further EAGC recommended the following preventive measures:
 - Control the occurrence through preventive measures;
 - Knowledge, education and training is key;
 - Proper disposal methods on contamination products must be followed;
 - Food preparation such as nixtamalization (refers to a process for the preparation of maize (corn), or other grain, in which the grain is soaked and cooked in an alkaline solution, usually limewater, and hulled, its nutritional value is increased; flavour and aroma are improved; and mycotoxins are reduced – Wikipedia)

2.3.5 Exagris Africa Ltd

Another presentation from the private sector was done Exagris Africa Ltd, which has its operations in Malawi and is involved in the production of certified seed of groundnuts,

soya, maize and beans as a grower, buyer and exporter. Exagris has an out grower groundnut project.

Aflatoxin Mitigation

Exagris Africa Ltd is involved in two (2) donor funded projects aimed at improving access to export markets for groundnut producers. Exagris engages in the following good agriculture practices:

- Informal trials on estates during crop growth and harvesting – a healthy plant is starting point;
- Plant rotation / and depth;
- Pest control / termites;
- Planting date to be timely.

Other steps Exagris is taking to reduce aflatoxin contamination include:

- Using Aflasafe and Aflaguard, two different brands of biocontrol technology. buy groundnuts in shells, grading; and use of harvest as well as post-harvest mechanization.

2.4 Session III: Country Presentations.

Seventeen member countries, including fourteen (14) COMESA Member States presented their experiences and challenges on aflatoxin management in Africa. The countries included Sudan (Ministry of Health); Kenya (Ministry of Health); Malawi (Bvumbwe Agricultural Research Station); Rwanda (Rwanda Bureau of Standards); Egypt (Regional Centre for Food and Feed); Mauritius (Ministry of Agro Industry, Food Production and Security); Uganda (Makerere University); Democratic Republic of Congo (Ministry of Agriculture and Rural Development); Zambia (Ministry of Agriculture and Livestock); Zimbabwe (Ministry of Agriculture, Department of Research); Burundi (National Centre of Food Technology); Ethiopia (Hawassa University); Swaziland (Ministry of Agriculture, Malkerns Research Station); Madagascar (Ministry of Health); Mozambique (NARI); Tanzania (Nelson-Mandela- African Institute for Science and Technology) and South Africa (Agricultural Research Council), respectively. Later in plenary, presenters responded to questions posed by the participants and clarified issues as appropriate.

COMESA had prior to the workshop given the Member States a template done a preliminary assessment of national food control systems, with focus on aflatoxin control. The assessment addressed the following aspects; to use in the presentation providing information on the following aspects in their countries:

- Food policies, standards, Laws and Regulations that relate to aflatoxin control

- Laboratory capabilities for aflatoxin analysis
- Monitoring and Surveillance of aflatoxins on affected value chains
- Education and Awareness Programme;
- Capacity gaps and priority interventions to strengthen the aflatoxin regulatory Framework

Each of the Member State's presentation is summarized in country matrix in Annex 2 based on the country situation.

2.5 Session IV: Regional Experience

Regional experiences from the ECOWAS on aflatoxin management were presented at the workshop. Mr. Bukola Masha Managing Director of Doreo Partners and Ms. Rose Amari of EatSafe of Ghana each presented a paper at the workshop.

2.5.1 Doreo Partners

A representative of Doreo Partners gave a presentation of a case study on the adoption by smallholder farmers of aflasafe technology as one of the fastest way to create jobs by investing in commercial and highly scalable business that improves the profitability and livelihoods of small scale farmers. The approach, he said, would enable the establishment of a sustainable premium market for low aflatoxin maize and ensure that this premium creates sufficient economic incentive to sustain smallholder farmer's adoption of aflasafe technology. Furthermore, the approach would enable the creation of an integrated private sector solution that solves three hurdles of technology adoption namely: access to finance, high cost per unit due to low yields and access to premium markets.

The presenter contends that it is possible in Nigeria and elsewhere in the African region to create a market for low aflatoxin maize, considering that one of the challenges in Nigeria concerning aflatoxin is that poultry feed is toxic (over 20 ppb). However, it has been demonstrated that aflasafe is a technology that has many benefits, including the reduction in poultry mortality if fed feed on low aflatoxin maize, and so a notable contribution to aflatoxin control. The use of aflasafe in Nigeria as a package approach (aflasafe, fertilizer, seed) has been shown in practice to increase yields of maize up to 6.9 tones/ha, a 400% increase over national productivity average. A dose of aflasafe costs US\$15.60/ha which is recoverable as a result of accessing premium markets (low aflatoxin maize) and the high productivity. The economics for using aflasafe is good because farmers can experience between US\$1,500.00 to US\$2,000.00 per hectare in income.

In discussions, following the presentations, the workshop delegates requested Doreo partners to share its expertise to the region in use of the aflasafe technology. The package approach in the use of aflasafe was lauded to be a very good intervention. There was however, need to review countries' regulatory frameworks to enable registration of

biopesticides such as aflasafe. COMESA is working with IITA to review legislation in Zambia and Malawi in line with the regional registration guide developed by a technical committee of five (5) pilot countries (Tanzania, Kenya, Zambia, Malawi and Mozambique).

2.5.2 EatSafe Ghana

A representative of EatSafe of Ghana made a presentation on aflatoxin awareness creation in West Africa and the application of principles and best practices of risk communication. The presentation highlighted the importance of creating awareness of the challenges of aflatoxin on the basis that evidence exists of aflatoxin contamination in West Africa. Countries affected include Ghana, Nigeria, Senegal, Togo, and Burkina Faso. In these countries, aflatoxin contamination has been recorded in sorghum, maize, cotton seeds, groundnuts and groundnut products, yams and cassava at varying levels with levels usually greater than EU and USDA standards (USAID and Danya International, 2012).

The presentation also highlighted that the major challenge for aflatoxin control is low level of awareness among stakeholders hence the urgent need for raising awareness among all stakeholders including farmers, consumers, extension workers, health professionals, and policy and decision makers. This is in line with the goal of PACA's theme 5, 'public awareness, advocacy and communication' whose main thrust is to increase awareness of the impacts of aflatoxin and its mitigation measures.

2.6 Preliminary Findings from Scoping Study on Relevant Regulations and Standards on Aflatoxin in the COMESA Region

A scoping study was undertaken by COMESA with support from PACA to assess the policies, standards and regulations in place and, whether they are being implemented and enforced. Secondly, the study was meant to examine the institutional framework to coordinate and manage food safety issued at country level and lastly but not least to assess the human and technical capacity to perform regulatory functions. The study methodology used a questionnaire as the main tool for collecting data which was complimented by literature review and interviews from key institutions. The questionnaire was distributed to all nineteen COMESA Member States and as of the date of the workshop, fifteen countries had responded. Initial findings of the study are that several countries have established aflatoxin limits/standards and regulations and there are efforts to implement these, but that capacity to test for aflatoxin and enforce standards is limited. Workshop participants suggested that aflatoxin control be part of the National Food Safety Control system, regulations and standards be established and reviewed in terms of domestic and regional market requirements, and that risk-based inspection and

enforcement mechanisms be established in each country. Presenters and other workshop attendees discussed the need for competent (accredited) laboratories for monitoring the effectiveness of control systems. Continuous education and awareness building programmes for all actors on the value chain, including consumers must be part and parcel of the national food safety control system.

2.7 Parallel working groups

A brief presentation was made to guide the parallel groups' discussions and presentations. The guidance document for the group discussions is attached to this report as appendix 2. Groups were specifically requested come up with three priority challenges and their respective interventions. This output would be a key input into the development of an action plan. The parallel group discussions were as follows:

- Group 1A. Policy /Regulatory Actions including education and awareness
- Group 1B. CAADP as an entry point for increasing investment in Research technology and regulatory function
- Group 2: Public Health and Nutrition
- Group 3: Research and Adoption of Technologies and Best Practices
- Group 4: Research and Adoption of Biocontrol Technologies

Group 1A: Policy, Regulation, Education and Awareness

Group 1 A, chaired by Sudan and Kenya, looked at how policy and regulatory actions including education and awareness impinge on aflatoxin management in Africa. The group members identified a number of challenges and their proposed interventions for aflatoxin management and control as follows:

First, the members pointed out that there are 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. And where these exist, they are either outdated or unsynchronized at national and regional levels. The members also identified low capacity for risk management, monitoring, surveillance and laboratory services in member states.

The group 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:

Table 1: Prioritized Challenges and Interventions: Policy, Regulation, Education and Awareness

No	Priority Area/ Challenge	Proposed Interventions
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;
2	Inadequate capacity: human resources; systems; infrastructure	<p>Knowledge management; contact</p> <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 ;
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

		<p>aflatoxin safe foods (limits); and</p> <ul style="list-style-type: none"> • Increase investment and or budgetary allocation for development of research, human resources, training, knowledge and enforcement: at least 1% of GDP.
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The delegates made the following comments on the presentation:

- There is need to harmonize the frameworks to avoid silo mentality at both the country and regional level.
- The process should secure buy-in of Member States in order to draw ownership and commitment. Therefore, it is important to create awareness through education, training and communication of information to various key stakeholders.
- There is need to review the leadership approach as the bottom-up approach seems not be working in most cases due to political influence.
- There is need to identify pilot countries for the interventions.
- There is need to seriously allocate adequate financial resources for aflatoxin management at country and across regional levels.

Group 1B: CAADP & Health Sector Planning & Investment framework

The group discussed the status and progress of CAADP as an entry point for aflatoxin interventions for member states. The members noted that all African Union (AU) countries had CAADP focal points and that 31 CAADP compacts were signed up. The members also recalled that PACA was launched in Addis Ababa under the ADFNS 2012 and that it was represented at the Niger 2013 Africa Day for Food and Nutrition Security where they elected an exhibition stall. In addition, the NEPAD-CAADP Nutrition Integration in NAFSIPs saw three regional workshops with 49 countries represented by 10 people each from a number of sectors including Agriculture, Trade, Finance, Health, Education, Gender and Welfare, NGOs, CSO, Plus UN, Reach and SUN, among others. The delegates developed roadmaps, and they are currently monitoring and supporting progress on the matter. The countries represented at the workshops use the same framework for aflatoxins and each has a focal person for PACA. Currently, country teams are organically forming in several countries and one person from PACA Country Team is encouraged to link with CAADP. They noted that a scoping Study on Relevant Regulations and Standards on aflatoxins in the COMESA Region was done. The members further noted that AU Commission was planning for the SPS CAADP Integration

process by 2015 and that the Food Safety Authority is under discussion with two workshops held so far.

The member 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 members 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:

Table 2: Prioritized Challenges and Interventions

No.	Challenges	Proposed Interventions
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' <ul style="list-style-type: none"> • 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.

Delegates made the following comments on the group's presentation:

- The key players need to improve communication between PACA, COMESA and NEPAD in order to put in line the efforts made.
- There is need for greater coordination at national level.

- Member states should identify pilot countries to undertake a country situation analysis in those selected member countries.

Group 2: Public Health and Nutrition

The group identified the following challenges and prioritized four interventions highlighted in table 3 below:

Table 3: Prioritized Challenges and Interventions

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

		<p>with stakeholders and policy makers</p> <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
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 Behaviour Change Communication strategies and Information Education Communication
4.	<p>Lack of Proactive Involvement of institutions: Research Institutions and Universities, Scarcity of</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,

	information – systematic research data base	nursing staff, physicians, paediatricians, obgyn doctors and community health workers), agriculture, and trade professionals
5.	Lack of Dissemination/sharing information	<ul style="list-style-type: none"> • Sharing and disseminating findings, conclusions and recommendations with stakeholders and policy makers

Group 3: Research and Adoption of Technologies and Best Practices

Three top challenges and the associated interventions identified by the group are as follows:

Table 4: Prioritized Challenges and Interventions

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.

Group 4: 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: Prioritized Challenges and Interventions

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

2.8 Workshop Closing Remarks

The workshop was officially closed on 13 March 2014 at 2pm by Mrs. Christina Zakeyo Chatima, Director of Trade. In her closing remarks, Mrs. Chatima commended the organizers and delegates for the excellent deliberation which produced an action plan emanating from the five parallel working groups. She noted that the identified challenges and its interventions if implemented are well aligned to combat aflatoxin. Commenting on the shared experiences she noted that delegates and countries have learnt a lot from one another. She urged members, and Malawi, to use lessons learnt to change our approaches to dealing with aflatoxin. She concluded her remarks inviting members to visit the rest of the country especially the Lake Malawi.

Further information may be found on website:

Workshop information: www.comesa.int

PACA website: www.aflatoxinpartners.org

4. 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 of 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.
- 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.
- f) Martha Byanyima proposed the following way forward from the workshop:

- 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

Members of the Task Force are:

- I. COMESA Representative
- II. Malawi
- III. USAID
- IV. IIAT
- V. AATF
- VI. PACA Representatives
- VII. Parallel Working Group 1A Chairperson
- VIII. Parallel Working Group 1B Chairperson
- IX. Parallel Working Group 2 Chairperson
- X. Parallel Working Group 3 Chairperson
- XI. Parallel Working Group 4 Chairperson

5. ANNEXES

ANNEX 1: WORKSHOP PROGRAMME

8:00 am -8:45 am	DAY I – 11 March Registration	Time allocation
8:45 am- 9:40 am	<p>Opening Session:</p> <p>Introductory remarks (Partners, COMESA, AUC):</p> <ul style="list-style-type: none"> • International Institute for Tropical Agriculture (IITA) – Dr. Pheneas Ntawuruhunga • USAID Malawi- Ms. Stephanie Funk, Deputy Mission Director, Malawi. • African Union Commission (AUC) – Mr. Frank Mugenyi <p>Opening Remarks:</p> <ul style="list-style-type: none"> • Common Market for Eastern and Southern Africa (COMESA) – Mrs. Emiliana Tembo, Director General • Deputy Minister of Agriculture and Food Security – Hon. Bintony Kutsaira 	<p>5 min</p> <p>5 min</p> <p>5 min</p> <p>10 min</p> <p>10 min</p>
9:40 am –10:10am	Coffee/Tea Break and Press Briefing	30 min
10:10am-10:25am	Group Photo	15 min
10:25am-10:45am	<p>Setting the Climate:</p> <p>Household Items, Introductions, Rules of Engagement, Office Bearers:</p> <ul style="list-style-type: none"> • Malawi Institute of Management – Mr. Joseph Chalamba <p>Meeting Objectives and Programme Review: COMESA –Ms. Martha Byanyima, SPS Expert</p>	<p>15 min</p> <p>10 min</p>
10:45 -11:45 am	<p>Session I: Technical Briefs:</p> <ul style="list-style-type: none"> • Aflatoxin and PACA Overview – Partnership for aflatoxin 	

	<p>Control in Africa (PACA) – Dr. Amare Ayalew</p> <ul style="list-style-type: none"> • Technology Solutions and Opportunities available for abating the aflatoxin Challenge – IITA – Dr. Ranajit Bandyopadhyay • Increasing investments in aflatoxin control through the CAADP framework – Dr. Sam Kanyarukiga and Dr. Ken Shawa • Questions and Discussion 	<p>10 min</p> <p>10 min</p> <p>10 min</p> <p>30 min</p>
11:45am-1:00 pm	<p>Session II: Private Sector/Industry Experiences</p> <ul style="list-style-type: none"> • NASFAM – Mr. Alexander Chikapula • East Africa Grain Council (EAGC) – Mr. Gerald Masila, Executive Director • Afrinut - Mr. Lisbon Kalundi Qoma/Mr. Hans • Jungle Beat - Mr. Petrus Hendrik Nieuwoudt • Exagris Africa Ltd. – Mr. Jim Goodman • Questions and Discussion 	<p>10 min</p> <p>10 min</p> <p>10 min</p> <p>10 min</p> <p>10 min</p> <p>25 min</p>
1:00 pm- 2:00 pm	Lunch	
2:00 pm-3:30 pm	<p>Session III: Member States Presentations</p> <ul style="list-style-type: none"> • Sudan – Federal Ministry of Health – Mr. Sirageldin Mustafa Mohamed AHMED • Kenya – Ministry of Health – Ms. Brendah N. Obura, Government of Makueni County – Hon Ruth Kyatha, University of Nairobi - Prof. Kangethe • Malawi - Bvumbwe Agricultural Research Station – Mr. Mishek Soko • Rwanda – Rwanda Bureau of Standard- Mr. Antoine Mukunzi • 	<p>180 min</p> <p>(10 min each presentation; 30 min Q&A)</p>
3:30 pm-3:50 pm	Tea/coffee	20 min
3:50 pm-5:50pm	<p>Session III: Member States Presentations (continued)</p> <ul style="list-style-type: none"> • Egypt - Regional Center for Food and Feed – Dr. Khaled Moustafa Elmeligy Shanab • Mauritius – Ministry of Agro Industry, Food Production and Security - Mrs. Chreshma Boodhram Bedacee • Uganda – Makerere University - Prof. Archileo Kaaya • Democratic Republic of Congo – Ministry of Agriculture and 	

	Rural Development - Dr. Damien NGUBA KASONGO	
5:50 pm - 6:00pm	Wrap Up and Closing Session	10 min
	Day II – 12 March	
8:30 am - 8:40 am	Recap of Day 1: Malawi Institute of Management	10 min
9:10 am-10:40 am	<p>Session III: Member States Presentations (continued)</p> <p>Zambia – Ministry of Agriculture & Livestock – Dr Mweshi Mukanga</p> <p>Zimbabwe – Ministry of Agriculture Department of Research – Mrs. Nozipo Nziramasanga</p> <p>Burundi – National Centre of Food Technology (CNTA) – Dr Severin Sindyikengera</p> <p>Ethiopia – Hawassa University – Dr Alemayehu Chala</p> <p>Swaziland – Ministry of Agriculture, Malkerns Research Station – Mr. Ronnie Nsibanda</p> <p>Madagascar – Ministry of Health – Mr. Iarivony Rakotondrianihamina</p> <p>Mozambique – NARI – Anabela Zacarias</p> <p>Tanzania – Nelson Mandela African Institute for Science and Technology – Dr Martin Kimanya</p> <p>South Africa – Agricultural Research Council – Prof. Bradley Flett</p>	90 min (10 min each presentation; 30 min Q&A)
10:40am -11:00am	Coffee/ tea break	
11:00 -11:30 am	Questions and discussion	10 min
11:30 - 11:40 am	Preliminary Findings from Scoping Study on Relevant Regulations and Standards on aflatoxins in the COMESA Region – Makerere University - Maria Bisamaza, Consultant	10 min
11:40 – 11:50 am	Overview of Approach to Parallel Working Groups:	10 min

	<p>PACA</p> <p><i>Parallel working groups will meet in the Huang Shan Hall, Jiuhua Room, and Tianzhu Room.</i></p>	
12.30 pm-1.45 pm	Lunch	
1:45 pm -4:30 pm	<p>Parallel working groups</p> <p>(based on templates to be provided)</p> <ul style="list-style-type: none"> • Policy and regulatory actions • Public health and nutrition research • Adoption of appropriate technologies and best practices • Biocontrol 	
4:30 pm-5:00 pm	Wrap up, Announcements and Logistics	30 min
	DAY III – 13 March	
8:30 am – 8:40am	Welcome and Recap of Day II	15 min
8:40 am -9:10 am	<p>Presentation of working group discussions</p> <p>(following specified template)</p> <ul style="list-style-type: none"> • Group 1A . Policy /Regulatory Actions including education and awareness 	30 min
9:10 am – 9:40 am	<p>Presentation of working group discussions</p> <p>(following specified template)</p> <ul style="list-style-type: none"> • Group 1B. CAADP as an entry point for increasing investment in Resaerch technology and regulatory functions 	30 min
9:40 am–10:10 am	<p>Presentation of working group discussions</p> <ul style="list-style-type: none"> • Group 2: Public Health and Nutrition 	30 min

10:10am -10:40am	Presentation of working group discussions <ul style="list-style-type: none"> • Group 3: Research and Adoption of Technologies and Best Practices 	30 min
10:40 am-11:00am	Tea break	20min
11:00 am-11:30am	Presentation of working group discussions <ul style="list-style-type: none"> • Group 4: Research and Adoption of Biocontrol Technologies 	30 min
11:30 am-12:00am	Final Questions and Discussion	30 mi
12:00 pm-12:45pm	Wrap up and closing session	45 min

ANNEX 2: SUMMARY MATRIX OF COUNTRY PRESENTATIONS

COMESA MEMBER STATE / PARTNER COUNTRIES	FOOD POLICIES, STANDARDS, LAWS AND REGULATIONS THAT RELATE TO AFLATOXIN CONTROL	LABORATORY CAPABILITIES FOR AFLATOXIN ANALYSIS	MONITORING AND SURVEILLANCE OF AFLATOXINS ON AFFECTED VALUE CHAINS	EDUCATION AND AWARENESS	CAPACITY GAPS AND PRIORITY INTERVENTIONS TO STRENGTHEN THE AFLATOXIN REGULATORY FRAMEWORK
BURUNDI	No national aflatoxin control / no national food safety system in place. No policies and regulations for aflatoxin control are in place.	Not many laboratories operating with working equipment to test aflatoxin levels. Very few laboratory technicians	Established maximum accepted tolerable limit of aflatoxin in some crops	A workshop on aflatoxin challenges took place in Burundi	Not Stated
DEMOCRATIC REPUBLIC OF CONGO (DRC)	There is no policy and regulatory control against aflatoxin.	Directorate of Production and Plant Protection (DPPV); Congolese Control Office (CCO); Veterinary Laboratory Kinshasa.	Monitoring and control of contaminated products is done from harvest to local marketing through storage.	Not stated	Implement regulations for control of aflatoxin at country level.
EGYPT	Regulations exist for food controls. Policies and laws are also in place.	Egypt has accredited laboratories	Monitoring and surveillance occurs on domestic as well as on imported food.	Advocacy, awareness takes place regularly and the education system has incorporated food safety issues and is taught in higher education system.	Prevention of mycotoxin contamination Hygienic measures; Proper transportation, handling, processing and storage of feed, Proper aeration.

ETHIOPIA	Lack of regulation framework. No protocols, standards and regulations	Limited facilities and trained personnel: Labs in : Hilina Food Processing Company; Ethiopian Standards Authority; Nutrition Institute; Universities	Lack of monitoring facilities	Not taking place	Well equipped laboratories and knowledgeable laboratory technicians required. Regular monitoring/ surveillance is needed.
KENYA	Food Drugs and Chemical Substances Act Cap 254 LOK Public Health Act Cap 242 LOK The Crops Act 2013 National Horticulture policy 2012 Food and Nutrition Policy	KEMRI KEBS Institutions (UON) National Public Health Laboratory Services Government Chemist	Done by the District Disease Surveillance Officers - Ministry of Health, Institutions e.g. Universities and KEMRI generate scientific data Agriculture Extension Officers conduct monitoring and surveillance.	Some awareness in parts of the country taking place. Mainstreaming into education system yet to be done	National Food Safety Policy to be adopted into law. Strengthen Food Safety Surveillance Laboratories to generate scientific data. Policies, Legislation and Standards to be reviewed. Disposal of contaminated maize.
MADAGASCAR	A preliminary draft of food law prepared not yet passed into law; No regulation or legislation on aflatoxin. Law for quality control checks and certificate of compliance on products.	Public laboratories in Ministry of Agriculture for the control of pesticides and in Ministry of Trade, Private Sector Institute, National Centre for Environmental Research	Not stated	Minimal awareness	develop inter-ministerial coordination and regulation Improving capacity of laboratories and training of technicians. Set standards based on the codex standards and guidelines.

MALAWI	Policy Malawi Program for aflatoxin Control (MAPAC)	Available but are rather limited. Used in Research – resistance screening, Biocontrol	not happening on regular basis	Mainstreaming (Integrating) good practices and technologies into key value chains Awareness creation, training and technology dissemination is also taking place	supply-chain coordination for mainstreaming practices/ technologies; Testing, Standards & Policies Diagnostic testing and accreditation Increase access to rapid screening for mycotoxin to farmers.
MAURITIUS	Food Act 1998 Public Health Act Trades and Industries Classification Act Health and Safety Act National food safety management certification scheme	Food Technology Laboratory (FTL) Microbiological and Chemical analysis of foods, animal feeds and water	Food control centrally administered and enforced by the Ministry of Health (MOH) Local authorities participate in enforcement to a limited extent only.	Not stated	Adoption of a national food control strategy Amendment of the food law Cooperation and coordination among different bodies in the system
RWANDA	Rwanda Bureau of Standards (RBS) was established in 2002	RBS has the necessary testing equipment for wide range of mycotoxins:	Surveillance is being done through regular inspection, market surveillance and certification audits.	Awareness on aflatoxins sources; Regular training offered on aflatoxins. Cereals processing companies and cooperatives trained on use of aflatoxins test kits.	Need for more research to establish standards levels based on country and regional problems Support in equipment maintenance, troubleshooting; waste disposal

SUDAN	Public Health Act 1939 Food Control Act 1973	laboratory support services in regulatory agencies; Some samples are sent to be tested in Belgium	Food-borne disease surveillance is carried out by The Federal Ministry of Health	Done by Federal Ministry of Agriculture and Irrigation – awareness in Good Agricultural Practice (GAP) and enforcement of different Acts and regulations.	There is need for more laboratories in country.
SWAZILAND	Aflatoxin standard is being developed by Swaziland Standards Authority There are no established regulations as at now.	None	Not stated	Done by extension workers; Onsite training; Awareness through media; and in schools.	Develop aflatoxin regulation; establish coordination between private sector, regulatory agencies and support services, general extension; set up monitoring surveillance programmes
UGANDA	No specific laws and regulations on aflatoxin UNBS has set aflatoxin regulatory standards for grains, Establishment of PACA Uganda Chapter; Plans to initiate aflasafe work in Uganda	Expensive aflatoxin testing procedures: Laboratory services not well-developed; very few; expensive supplies.	No proper monitoring and surveillance procedures are in place	Low level of awareness Training/awareness of stakeholders (farmers, traders) done but to a limited extent	Integrated Approach to aflatoxin contamination is best: enforcement of standards and regulations; Linking farmers to better markets; More accredited labs needed; simple aflatoxin testing kits

ZAMBIA	Food and Drugs Act and Public Health Act Cap 295. Food regulations of 2001; Fair trading Act Cap 416 Statutory Instrument number 102 of 2010; Statutory Instrument number 23 of 2001.	Makulu Central Research Station, ZARI (x2) Zambia Bureau of Standards Food and Drug Control Laboratory, MOH Private owned Laboratory Aflatoxin lab rehabilitation at Msekera, Chipata	No laboratory is dedicated to this activity as consequence no data is generated;	very little awareness and any awareness activity that occur is a result of being embedded with a specific project mandate	Inadequate coordination and communication among food regulatory agencies in the food safety system; Inadequate capacity and/or resources to enforce food regulation effectively; Laboratories accreditation.
ZIMBABWE	Food and Food Standards Act (Chapter 15:04) of 2001 and its related Statutory Instruments: Food and Food Standards Regulations, 2013	Ministry of Agriculture Laboratory being refurbished to be a state-of-the-art Food and Agricultural Products Testing Laboratory; Trained staff testing for mycotoxin; available for trade-related services	The surveillance of products on the market is done in conjunction with the Ministry of Health. Results/Data is sent to Ministry of Health for risk assessment	Field days for growers of agricultural produce; Agricultural Shows and exhibitions; Sharing of information on the impact of aflatoxins in food within Ministry of Agriculture.	strengthen awareness programme on agricultural products and food handling, Education on good agricultural practices in the field and storage facilities Encourage the use of Bio-Pesticides

OTHER PARTNER STATES					
MOZAMBIQUE	There are aflatoxin regulations in Mozambique (but they are not enforced) FAO (1994); More than 400 atoxigenic L-strains of <i>Aspergillus flavus</i> identified; Selected 8-12 VCG strains to be formulated in aflasafe-Moz Biocontrol products for testing in farmers' fields in 2014 crop growing season	Universidade Lurio (UniLurio) in northern Mozambique – Aflatoxin testing and monitoring for different crops (laboratory not accredited) Madal Ltd in central Mozambique – private company working with some 3,000 groundnut farmers (sorting and aflatoxin testing for the farmers).	Not Stated	Awareness raising is taking place in Mozambique.	Infrastructure and human capacity building, policies; Equipping and certifying laboratories; Recruiting and training Mozambican technicians and students; Awareness raising Advocacy, regulations and enforcement
TANZANIA	Policies exist (1) National Food Security Policy, (2) National Food Safety Policy, and (3) National Nutrition Policy	Not Stated	Not Stated	Not Stated	Coordination with relevant ministries and institutions and propose mycotoxin levels for feed; monitoring and surveillance, Vaccinations.
SOUTH AFRICA	Grain sorghum, maize and groundnuts are possible aflatoxin contaminated crops; Policies, laws exist but not Regulation	Laboratories Exists	Yes	Yes, Surveys and Research taking place	aflatoxins are a major problem in groundnut production.

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