



3ÈME RÉUNION DE LA PLATEFORME DE PARTENARIAT DE PACA

2-4 OCTOBRE 2018

ÉLARGIR LES
APPROCHES
NATIONALES POUR
UNE ATTÉNUATION
DURABLE DES
AFLATOXINES EN
AFRIQUE



Partnership
for Aflatoxin
Control in Africa

Partenariat pour
la lutte contre
l'aflatoxine en Afrique

Parceria para o
controlo da
Aflatoxina em África

الشراكة من أجل مكافحة
الأفلاتوكسين في أفريقيا



Upcoming events

- Third PACA Partnership Platform Meeting (PPM), Dakar, Senegal, 2-4 October 2018
- [12th International Working Conference on Stored Product Protection](#), Berlin, Germany, 7-11 October 2018
- [320th International Conference on Pharma and Food](#), Nairobi, Kenya, 10-11 October 2018

Vision

An Africa free from the harmful effects of aflatoxins.

Contact

The PACA Secretariat
PACA-DREA, AUC
PO Box 3234, Addis Ababa
Tel: (251) 115517700 ext. 4571
Email: paca@africa-union.org

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3rd PACA Partnership Platform Meeting - A Summary

The 3rd PACA Partnership Platform Meeting (PPM) will take place in Dakar, Senegal from 2-4 October under the theme: Scaling-up Country-led Approaches for Sustainable Aflatoxin Mitigation in Africa.

Over 200 stakeholders will come together from the African Union Commission (AUC), Regional Economic Communities, officials from member states' government ministries (agriculture, trade and health), farmers' organizations, the private sector, civil society, development partners and donor communities, among others.

The PACA PPM is an innovative biennial forum of diverse partners and stakeholders in aflatoxin control in Africa. The forum provides participants with the opportunity to share information about the lessons with regard to overcoming the challenges that constrain aflatoxin prevention and control efforts, and to chart effective solutions to advance aflatoxin mitigation efforts across the continent.

The 3rd PPM will specifically look at the successes and challenges of the country planning process in six pilot countries (Malawi, Nigeria, Senegal, Tanzania, The Gambia and Uganda) and identify ways to scale up this approach to other African countries, as well as to establish mechanisms for monitoring progress. The country planning approach, executed in five stages, consists of the following:

- generating locally relevant data;
- developing, validating and finalizing country plans;
- mainstreaming country plans in major national frameworks such as National Aflatoxins Investment Plans (NAIPs);

- building government capacity, while providing support to implement the plan; and,
- monitoring progress of implementation and advocacy.

This PPM comes at a critical period when the continent and the international community are advocating for increased food safety measures to protect human lives and increase intra-Africa and international trade of agricultural commodities. The widespread occurrence of aflatoxins is currently undermining the achievement of continental commitments including ending hunger, tripling intra-African trade in agricultural commodities and services, and implementing the Continental Free Trade Area. Aflatoxins continue to contribute to large post-harvest losses in many crops, further contributing to food insecurity and economic loss in Africa.

Other major highlights at the 3rd PPM include the following:

- market place exhibitions;
- recognition and celebration of 'champions of change'; and,
- an award of US\$ 15,000 seed fund each for two researchers in Africa. The award will be given to the two most innovative research project proposals that have the potential to reduce or eliminate exposure to aflatoxin-contaminated foods and feeds in Africa. The award is being jointly supported by PACA, the Global Alliance for Improved Nutrition, the Sight & Life Foundation and Mars, Incorporated.

Message from H.E. Ambassador Josefa Sacko, Commissioner for Rural Economy and Agriculture, African Union Commission (AUC)

I am glad to note that this meeting is taking place at such a historic moment when food safety in Africa is beginning to gain traction within the AUC, and aflatoxin, one major food safety issue that has bedeviled the continent is being curtailed.

I want to commend the Chairperson of the AUC, H.E. Moussa Faki Mahamat for his exemplary commitment to the issues being addressed at this conference, demonstrated through his presence at this event.

The theme of the meeting – Scaling-up Country-led Approaches for Sustainable Aflatoxin Mitigation in Africa – is very encouraging, as it is indicative that lessons learnt from the successful implementation of aflatoxin mitigation efforts in the six pilot countries are being considered for replication across the continent, as well as to step up implementation efforts in the pilot countries.

As the Commissioner for Rural Economy and Agriculture, I am particularly appreciative of PACA's initiatives, because of the significant impact of controlling aflatoxin levels in our agricultural commodities would contribute towards the achievement of the Malabo Declaration adopted by Heads of State and Government in June 2014 to accelerate agricultural growth and prosperity in Africa by 2025.

For example, the successful implementation of aflatoxin mitigation efforts in member countries would save Africa about US\$ 670 million annually. In other words, this is the amount that the continent is currently losing for its inability to access important international markets due to the high and unacceptable levels of aflatoxin in some exportable agricultural commodities, such as groundnut and maize. In addition, controlled levels of aflatoxin in the agricultural value chain will improve the health of people across the continent, as well as their food security.



H.E Josefa Sacko © AUC

On this note, I formally welcome all participants to Dakar and wish you all successful deliberations. It is my hope that the meeting will, as usual, come out with a more pragmatic approach to help mitigate aflatoxin across Africa.

H.E. Ambassador Josefa Sacko

Message from Dr. Godfrey Bahiigwa, AUC Director, Rural Economy and Agriculture



Dr. Godfrey Bahiigwa © AU-IAR

I want to wish a successful meeting of the 3rd PACA PPM, which is aimed at galvanizing the support of stakeholders to increase and advance the aflatoxin mitigation efforts by PACA using the experiences gained from the six pilot countries to the entire continent.

I am optimistic of the success of this PPM based on the outcomes of the two previous ones, which have become the foundation stone for the sterling performance of PACA in aflatoxin mitigation effort across the continent.

The 1st PACA PPM, which was held on 7-9 October 2014 in Addis Ababa, Ethiopia, endorsed the country planning process as a model for piloting effective aflatoxin control in African countries, and that has become the groundwork for the proposed scale up.

The 2nd PPM held on 11-13 October 2016 in Entebbe, Uganda, assessed the progress of implementation in the pilot countries and endorsed the approach for PACA Phase II, which was launched in December 2016, and that is

culminating in the proposed plan to submit a proposal at this PPM to gain stakeholder buy-in to expand the aflatoxin control efforts to other countries, as well as, step up the mitigation efforts in the pilot countries where PACA has been working, namely: Malawi, Nigeria, Senegal, Tanzania, The Gambia and Uganda.

The PPMs have, thus, become a useful fundamental platform to harness the knowledge and expertise of diverse stakeholders to propel the work of PACA in aflatoxin mitigation across the continent. It is my hope that, just as the previous two PACA PPMs have been so helpful, so the 3rd PACA will be. On this note, I wish all participants fruitful deliberations.

Dr. Godfrey Bahiigwa

Flashback – PACA PPMs

1st PACA PPM

The 1st PACA PPM was held from 7-9 October 2014 in Addis Ababa, Ethiopia, under the theme 'Working Together to Accelerate Actions to

Reduce the Harmful Effects of Aflatoxin in Africa'. The major outcome was the endorsement of the 'Country Planning Process' as a model for piloting effective aflatoxin control in six African countries.



Participants at 1st PACA PPM © PACA

2nd PACA PPM

The 2nd PPM was held from 11-13 October 2016 in Entebbe, Uganda. The theme was 'Tracking Commitments, Sustaining Implementation for Results and Impact' where progress in the implementation within the pilot countries using

the 'Country Planning Process' was assessed and ways forward recommended. The 2nd PPM also marked the conclusion of PACA Phase I from 2013-2016, and endorsed the approach for PACA Phase II from Dec 2016 to Nov 2020.



A panel discussion by PACA country officers at the 2nd PACA PPM © PACA



A group picture with President Yoweri Museveni of Uganda (in hat) - Special guest at the 2nd PACA PPM in 2016 © PACA

Working on aflatoxin control in pilot countries

As part of the effort to drive aflatoxin mitigation across the continent, PACA commissioned studies between 2016-2018 in each of the six pilot countries (Malawi, Nigeria, Tanzania, Senegal, The Gambia and Uganda) to determine aflatoxin levels in some major food value chains; the social, economic and health impacts in each country; and the required mitigation efforts. The outcomes of each of the country study, titled '*The Country-Led Situation Analysis and Action Planning (C-SAAP) Report*' were used to guide in the development of appropriate aflatoxin intervention strategies in each of the countries.

The C-SAAP Reports also enabled PACA to achieve significant milestones in its aflatoxin mitigation efforts. These include the following:

- The development of the NAIP aflatoxin intervention strategies and National Aflatoxin Action Plans (NACAPs) for each of the pilot countries;
- The NAIPs and NACAPs have since been streamlined into the National Agricultural Investment Plans of each of the countries under the Comprehensive African Agriculture Development Plan;
- Business meetings have been held in each of the countries, involving national stakeholders, development partners and donors to raise funds and resources to support the NAIP and NACAP which is proving successful; and
- Data from the C-SAAP Reports have facilitated the development of national policy recommendations to help guide governments in national policy formulation in their aflatoxin mitigation efforts.

The following pages provide short summaries of each C-SAAP Report on the significant efforts made by each of the six pilot countries to mitigate the effects of aflatoxins.

a. Malawi

The C-SAAP Report for Malawi found aflatoxins in groundnut, maize and sorghum, which are produced for both domestic consumption and market sales.

The study involved analysis of 1,371 groundnut samples collected from 19 districts between

2009 and 2016, which revealed that 64% of the samples exceeded acceptable limits. Similarly, 60% of maize samples from 20 districts exceeded acceptable limits. With sorghum, 90% of samples contained aflatoxin levels greater than the national tolerable limit.

The study further estimated that, based on available maize and groundnut consumption data, the risk of aflatoxin-induced liver cancer in the hepatitis B virus (HBV) positive population was 27.4 cases per 100,000 individuals.

It was estimated that Malawi could earn an additional US\$ 31 million from groundnut jointly from the European Union (EU) and East African markets annually, if the country was able to meet international standards. In other words, that is how much Malawi is losing due to its inability to meet the minimum standards for these two markets.

Findings of the research have informed the development of policy recommendations for aflatoxin mitigation in the country. A number of local and international organizations are complementing government efforts in the control of aflatoxins in Malawi with different initiatives.

For detailed information, see:

<https://bit.ly/2DrJYvS>

Significant milestones in aflatoxin mitigation in Malawi

The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) has approved a grant of €933,222 from the German government to the African Union for the PACA country office in Malawi to support the implementation of a project titled 'Aflatoxin Management for Improved Competitiveness of the Groundnut Value Chain of Malawi'. This project will complement the ongoing work of GIZ in the groundnut value chain in Malawi through the Green Innovation Centres for the Agriculture and Food Sector.

b. Nigeria

Data from the European Commission's Food and Feed Safety Alerts revealed that aflatoxin contaminated produce contributes to the largest percentage of agricultural commodities rejected by the EU. Between 1980 and 2016, a total of 389 Nigerian agricultural export shipments

were rejected or seized by the EU, with 39% the rejections attributed to aflatoxin contamination.

This data gives credence to the C-SAAP Report for Nigeria, which established that 51% of groundnut sampled were above the EU limit and 14% were above US limits. Aflatoxin content in 31% of the sampled maize was higher than the EU limit, while 9% of sesame was above the US limit.

Maize is a staple food for about 50% of Nigerians. Groundnut is the most nutritive oilseed used in Nigeria, while sesame is also emerging as an important source of oil and protein. This means a significant number of Nigerians are at risk from aflatoxin contamination by consuming these crops.

The C-SAAP Report estimates that Nigeria would record 2,437 new cases of aflatoxin-induced liver cancer annually, leading to a health cost of about US\$ 997 million annually.

PACA has established an office in Nigeria and is providing technical support to the government through a number of national institutions:

- a. The Standards Organization of Nigeria;
- b. The National Agency for Food and Drug Administration and Control;
- c. The Nigeria Agricultural Quarantine Services; and
- d. The Nigerian Institute of Animal Science.

For detailed information, see:

<https://bit.ly/2xyXAJD>

Significant milestones in aflatoxin mitigation in Nigeria

Aflatoxin mitigation efforts have been captured in the Nigeria National Food Policy. In addition, the International Institute of Tropical Agriculture (IITA), working with other development partners, has established a factory in Ibadan, where it is producing a biocontrol product known as Aflasafe®. It has also established the Aflatoxin Technology Transfer Commercialization initiative to make Aflasafe® accessible to farmers, as well as undertaking sensitization efforts among value chain actors.

c. Senegal

Senegal is a major exporter of groundnut, which is also a lifeline to the economy, however, the C-SAAP Report established that aflatoxin



Launch of the National Policy on Food Safety for Nigeria © PACA

contamination could be the biggest threat to this industry. About 36% of groundnut production contained aflatoxins levels that exceed EU minimum standards, which is a major market for groundnut from Senegal.

Senegal exports about 60,000 tons of groundnut cake annually. Detoxifying this quantity of groundnut cake through ammoniation is estimated to cost US\$ 3.6 million annually to the economy.

Maize is another important agricultural product in terms of its high production and contribution to food supply in Senegal. Yet it was found out that about 27% of the samples had high and unacceptable levels of aflatoxins.

Using biomarkers, an aflatoxin measuring device in humans, it was established that the risk of developing liver cancer (when individuals are exposed to aflatoxins) in Senegal is 30 times higher in people exposed to HBV compared to those who are not.

The findings have been used to develop the NACAP and policy recommendations to help in the country's mitigation efforts. PACA has established an office in Senegal and is providing a coordinating function among national stakeholder institutions to ensure the proper implementation of the recommendations. Key stakeholders include:

- Senegal Bureau of Standards;
- Division of Consumption and Consumer Safety;
- National Health Service;
- Plant Protection Directorate;
- Livestock and Veterinary Services Directorate;
- Domestic Trade Directorate; and
- Food Technology Institute.



A cross section of stakeholders at a meeting in Senegal on aflatoxin mitigation © PACA

For detailed information, see:

<https://bit.ly/2MYUj1F>

Significant milestones in aflatoxin mitigation in Senegal

The government, through The Office of the Prime Minister, has validated the C-SAAP Report, and officially endorsed state funding of CFA 2,148,700,000 (US\$ 3,803,199) under the Public Investment Program to support the implementation of the NACAP, which was developed using the results of the C-SAAP Report.

d. Tanzania

The C-SAAP Report has revealed that aflatoxin levels are high in maize and groundnut. Maize is a staple food in Tanzania and, although groundnut is not a major dietary product in Tanzania, it is one of the main ingredients in children's foods.

The C-SAAP Report made the following findings:

- the annual economic impact caused by aflatoxin-related liver cancer cases is estimated to be as high as US\$ 100 million; and
- an estimated 4,825 new cases of aflatoxin-related liver cancer may occur each year in Tanzania.

The Tanzania Food and Drugs Authority (TFDA) is coordinating the aflatoxin mitigation effort in Tanzania. Other national stakeholders include:

- a. Ministry of Industry, Trade and Investment;
- b. Ministry of Health, Community Development, Gender, Elderly and Children;
- c. Ministry of Livestock and Fisheries; and
- d. Tanzania Bureau of Standards (TBS).

For detailed information, see:

<https://bit.ly/2MWvP9n>

Significant milestones in aflatoxin mitigation in Tanzania

Tanzania has been awarded a US\$ 20 million grant by the Global Agriculture and Food Security Program of the African Development Bank to implement a proposal submitted with the support of PACA. The proposal, *Tanzania Initiative for Preventing Aflatoxin Contamination*, aims to support aflatoxin mitigation in Tanzania through strengthening post-harvest measures, especially through infrastructural development, institutional capacity support, advocacy and awareness creation.

The grant, which was announced in 2017, will focus on the maize and groundnut value chains and will be implemented through the Ministry of Agriculture, Livestock and Fisheries as the lead ministry. However, it will also involve the Ministry of Industry, Trade and Investment, the Ministry of Health, Community Development, Gender, Elderly and Children, as well as government agencies such as the TBS, the TFDA and the Tanzania Food and Nutrition Centre. Other stakeholders include research institutions, universities, private sector companies and local government authorities.

e. The Gambia

In The Gambia the C-SAAP Report revealed that the prevalence of aflatoxins in groundnut vary from 30-100% depending on the region of production. Groundnut contributes approximately 66% of the country's earnings from agricultural exports.

This could account for reports by the EU's Rapid Alert System for Food and Feed, which indicated that, between 2012 and 2015, groundnut exported from The Gambia was rejected by the EU because of high aflatoxin levels. These cases of rejection undermined business confidence, thereby affecting the economy as lack of markets impacted adversely on farmers' incomes.

Healthwise, it was estimated that about 15% of the population are HBV positive, therefore the risk of developing liver cancer will be higher if the population is exposed to aflatoxins through consumption of contaminated foods.

The findings have been used to develop the NACAP and policy recommendations to help in

the country's mitigation efforts.

PACA is working with The Food Safety and Quality Authority under the Office of the President as the lead national agency. Other key national partners are:

- The Gambia Standards Bureau;
- National Agricultural Research Institute;
- Department of Agriculture;
- Department of Livestock Services;
- National Nutrition Agency;
- Ministry of Trade and Industry;
- Plant Protection Services;
- Ministry of Health and Social Welfare; and
- Medical Research Council.

For detailed information, see:

<https://bit.ly/2O3S025>

Significant milestones in aflatoxin mitigation in The Gambia

The government of The Gambia has taken aflatoxin mitigation seriously. A Bill for aflatoxin control has been approved by the government at cabinet level. It is awaiting parliamentary approval to become law that will enforce aflatoxin intervention and preventive practices.

The Gambia, however, has gone further to endorse Aflasafe® SN01, an all-natural biocontrol product developed by IITA, in collaboration with national and international partners. The product was officially launched in Banjul on 24 March 2017.

f. Uganda

Aflatoxin contamination in the key food crops of maize, groundnut and sorghum is high and widespread in Uganda. Maize is the third most produced crop in Uganda, after plantain and cassava and is also the most consumed cereal in Uganda. Groundnut is the second most important legume after beans. Most of the groundnut produced in Uganda is consumed locally as a snack or as sauce, while some produced into groundnut butter.

The use of these crops as staple foods can lead to aflatoxin-related illnesses because there is the tendency for households to prepare groundnut sauce to accompany their main meal of either maize or sorghum, which can expose HBV positive people

to a higher risk of liver cancer. This may account for the estimation that, on a yearly basis, Uganda experiences about 3,700 new cases of aflatoxin-induced liver cancer. This estimation is based on the assumption that a person in Uganda consumes maize, sorghum and groundnut every day.

The findings have been used to develop policy recommendations that will help in mitigation efforts, such as the promotion of good agricultural practices, among others. In order to ensure that these efforts are well coordinated, PACA has established an office in Uganda to provide technical support and also ensure synergy with the following national institutions:

- Ministry of Health;
- Ministry of Agriculture, Animal Industry and Fisheries; and
- Ministry of Trade, Industry and Cooperatives.

For detailed information, see: <https://bit.ly/2xIBIXH>

Significant milestones in aflatoxin mitigation in Uganda

The Office of the Prime Minister in Uganda sanctioned a multi-sectoral approach to contain the growing threat of aflatoxin in the country through collaborative action, which involves the Ministry of Health, the Ministry of Trade, Industry and Cooperatives, the private sector, Operation Wealth Creation (which is a presidential initiative to boost agricultural production), and the Ministry of Agriculture, Animal Industry and Fisheries.



A trader sorting groundnuts at a market in Uganda © PACA

Congrats! From PACA to EAC on the launch of policy briefs on aflatoxin control

The maxim in advocacy that 'The name of the game is evidence' has been demonstrated by the Eastern Africa Community (EAC) with the production of [nine policy briefs](#) on aflatoxin – which has become endemic in the region – to influence decision-making among stakeholders, particularly policymakers.

The evidence-based policy briefs were launched at a two-day forum held from 15-16 August 2018 in Nairobi, Kenya. The forum, which was aimed at creating awareness among stakeholders, involved presentations and discussions on the dangers aflatoxins pose to countries, and how it can be mitigated.

The production of the policy briefs is as a result of a decision of the [36th Meeting of the EAC Council of Ministers](#) held in 2017, which urged EAC member countries to develop and mainstream an aflatoxin prevention and control strategy in their respective national budgets and National Agriculture Investment Plans. This is because aflatoxin contamination in major food commodities, such as maize and groundnut, have been identified

as the biggest threat to the competitiveness of agricultural commodities from the EAC, as well as intra-regional and international trade.

Consequently, the EAC Secretariat, with funding from the USAID's Feed the Future program and technical support from IITA prepared eleven technical papers and produced [nine policy briefs](#) as advocacy and information materials.

At the forum to officially launch the policy briefs, Prof. Hamadi Boga, Principal Secretary for Agriculture and Research, Kenya, commended the EAC Secretariat for prioritizing aflatoxin prevention and control as one of its flagship projects in the region.

Ms. Kathryn Begeal, USAID/Kenya and East Africa Feed the Future Regional Coordinator, called on member countries to help in aflatoxin mitigation efforts by disseminating information to communities, supporting improved post-harvest handling practices among agricultural commodities value chain actors and promoting the use of the biocontrol, Aflasafe®.



Officials and stakeholders launch the EAC aflatoxin control policy briefs. From left to right: Mr Alex Bambona, Assistant Commissioner of Food and Nutrition Security, Uganda, Ministry of Agriculture, Animal Industry and Fisheries; Ms. Kathryn Begeal, USAID Regional Feed the Future Coordinator; Hon. Christophe Bazivamo, Deputy Secretary General for Productive and Social Sectors, EAC; Prof. Hamadi Boga, Principal Secretary, Agriculture and Research, Kenya; Hon. Mathias Kasamba, MP East Africa Legislative Assembly Committee on Agriculture; and Dr Victor Manyong, IITA East Africa Hub © EAC

Hon. Christophe Bazivamo, EAC Deputy Secretary General in charge of Productive and Social Sectors, announced that aflatoxin has become one of the flagship programs of the EAC because of its effects on food and nutrition security, trade and health.

The development of policy briefs and the technical papers by the EAC is in line with PACA's strategic plan to encourage Regional Economic Communities to initiate and adopt aflatoxin mitigation plans/measures that are particular to their member states.

In one of the presentations, Ms Liz Ogutu, PACA Strategy and Operations Senior Officer, stated that preliminary data gathered recently by PACA in six countries, including EAC members Tanzania and Uganda, revealed that there was sufficient detectable levels of aflatoxins in some major agricultural commodities that required

countries to adopt mitigation strategies. The sampled agricultural commodities include maize, groundnut and sorghum, as well as animal and poultry feed.

Ms. Ogutu disclosed that plans were underway to use best practices and some of the successes of PACA in aflatoxin mitigation across the continent to guide the development of a broader agenda for food safety mechanisms for Africa.

The closing ceremony for the two-day forum was addressed by Hon. Mathias Kasamba, the Chairperson of the East African Legislative Assembly Committee on Agriculture, who called on the private sector and the donor community to actively support aflatoxin mitigation efforts in the region.

The policies can be accessed at:
<https://bit.ly/2NxJ2uo>



Liz Ogutu receives a copy of the policy briefs on behalf of PACA from Prof. Hamadi Boga, © EAC

Empowering women can help to contain aflatoxins in food

This is a topic that Lynn Brown assesses in a recent Gender, Climate Change and Nutrition Integration Initiative (GCAN) policy note, as well as how aflatoxins are linked to climate change and nutrition.

One key avenue for addressing aflatoxins includes minimizing contamination in the growing cycle. This can be achieved through the use of good agricultural practices, such as biocontrols, fungicides, herbicides and irrigation, and by mitigating toxin development in the post-harvest supply chain. The second pathway to controlling aflatoxins is to reduce the consumption of contaminated foods by diversifying people's diets to include more animal-sourced foods, fruits, legumes and vegetables. This reduces levels of toxin ingestion, increases the consumption of micronutrients, which are essential for growth in children and good nutrition, and reduces the dominance of calorie-dense staple foods.

In most developing countries, the gender dynamics of agriculture mean that women have more limited access to resources. This includes sources of knowledge, such as agricultural extension, as well as sources of finance, which can be spent on inputs

for crops and new technology. Moreover, women have a larger range of tasks in both the domestic and productive sphere and are less likely to own key resources, such as plots of land or technologies that could reduce aflatoxin levels. Among these tasks is the shelling of groundnuts, which women tend to soak in water to soften the shells. This introduces additional moisture into the shells which, combined with inappropriate storage methods, can result in higher aflatoxin levels.

The successful implementation of good agricultural practices and diet diversification, to limit the effects of aflatoxins in African diets, is impossible without empowering women. Women are farmers, post-harvest processors as well as the primary care givers in their households. Female empowerment is needed to combat aflatoxins. Women need improved access to knowledge and inputs in order to tackle the challenges that aflatoxins present. This is especially pertinent in the face of climate change, which may increase the severity of aflatoxins. A forthcoming GCAN modeling study, by IFPRI and the University of Florida, is currently researching this.