



BREAKING THE MOLD: HOW MYCOTOXINS IMPACT AGRICULTURE, NUTRITION AND DEVELOPMENT

WEBINAR CHAT TRANSCRIPT

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PRESENTERS

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WEBINAR CHAT TRANSCRIPT

USAID Agrilinks: Good Morning everyone! We will begin at 9:30am EDT

USAID Agrilinks2: With about 15 minutes until start time, please feel free to introduce yourselves including your organization and title!

Jacob Behler: Hello all! My name is Jacob Behler, I'm about to leave for volunteer service w/ Peace Corps Ecuador as a Health advisor. Looking forward to learning from you all!

Edgar Guardia: Good morning. My name is Edgar Guardia. Executive Director of Fundacion Valles in Bolivia

USAID Agrilinks2: Hi Jacob, thanks for joining and introducing yourself!

USAID Agrilinks2: Where are others joining from?

Anastasia Buyanova: Good morning. Anastasia Buyanova from USAID/Honduras

USAID Agrilinks2: Wonderful! Thanks for joining from Hondura's, Anastasia!

Biniam Iyob: Biniam Iyob from USAID/Washington

USAID Agrilinks2: Welcome, Biniam!

Dave Hoisington: Dave Hoisington, Director of the Feed the Future Peanut & Mycotoxin Innovation Lab at UGA

USAID Agrilinks2: Welcome, Dave! Thanks for joining!

Gary Burniske: Hi, this is Gary Burniske, with the Center for Global Food Security at Purdue

USAID Agrilinks2: Hhi Gary, thanks for joining!

Jeremy Schwartzbord: Hi, Jeremy Schwartzbord from Cornell University here

USAID Agrilinks2: Glad to see participation from diverse universities!

USAID Agrilinks2: Welcome all!

USAID Agrilinks2: We will start a few minutes late while the room settles into their seats!

Kristen Kappos: Good morning from DC- Kristen Kappos, SPRING Project. In Ghana, SPRING is working to reduce aflatoxin in groundnuts

USAID Agrilinks2: Throughout the seminar, please post questions to the chat, share resources, and share examples from your work!

Edgar Guardia: Thanks!! Happy to be attending this webinar

mandana arabi: Hi everyone, this is Mandana Arabi from Global Alliance for Improved Nutrition (GAIN), connecting from New York City.

David Castellanos 2: Hi David Castellanos from USAID/Honduras

Johanna Lindahl: Hi! This Johanna Lindahl from International Livestock Research Institute/Swedish University of agricultural sciences, working on aflatoxins in the dairy value chain and impact of aflatoxins on animal productivity

USAID Agrilinks2: As your introducing yourselves, please take a moment to fill out our polls!

Rocio Morales: hello, I am Rocio Morales from Fundacion Valles in Bolivia

Augustin Ngeleka: Hi everyone. This is Augustin Ngeleka from DR Congo

USAID Agrilinks: Thanks for joining everyone, our in-room folks are getting settled and we will begin shortly

Sarah Halfman: Good morning, this is Sarah Halfman from Mercy Corps

Lisa Roner: Good Morning! This is Lisa Roner with Land O'Lakes International Development

Susan Pomar Nuijten: Hello everyone, joining from IFC/World Bank in Washington

KDAD AV Tech: Hello everyone! We're still getting settled in the room and will start in a couple of minutes.

Brian Bartle: Hello. This is Brian Bartle from USDA Foreign Agricultural Service

Zachary Baquet: Good Morning All! Joining from sunny and cool DC.

Jeremy Schwartzbord: Our team at Cornell is studying mycotoxin contamination and exposure in the Caribbean nation of Haiti, and we are also assessing a few mycotoxin interventions at critical points of the groundnut value chain in Haiti

Rangaswamy Muniappan: Hi, Muni Muniappan joining from IPM Innovation Lab

Dan Brown: Dan Brown from Cornell University Department of Animal Science

Natalie Weber: Hello everyone, this is Natalie Weber, joining from PepsiCo Scientific Affairs.

David Mowbray: David Mowbray her from Farm Radio International in Ottawa, Canada

Zachary Arney: Morning all. Joining from Fintrac Inc., in DC

Alexander Loladze 2: Hi I am Alexander Loladze from CIMMYT/Mexico

Nadine Frost: Good morning eveyone, This is Annamaria Ruscito and Nadine Frost, graduate students from Carleton University in Ottawa, Canada

Marie Connett: Marie Connett, University of Melbourne and Global Good

Mellen Tanamly: Greetings all. Mellen Duffy Tanamly, USAID Nutrition consultant

KDAD AV Tech: We have not started yet, I just opened up some mics so you can make sure your sound is working ...

Jacob Behler: Lot of knowledge here! Thats great!

Richard Bailey: Good Morning. Hart Bailey from Mississippi State University

Ashley Dean: Greetings, Ashley Dean from ACDI/VOCA

KDAD AV Tech: Please make sure you're NOT using Google Chrome!

Erica Phillips: Erica Phillips, Cornell University

KDAD AV Tech: Julie MacCartee, Facilitator, is introducing the event

Christy Fricks: Christy Fricks from Feed the Future Peanut & Mycotoxin Innovation Lab, Univ. of GA

Madeleine Smith: Good morning, Madeleine Smith, from the SPRING project.

USAID Agrilinks2: Jeremy, your work at Cornell sounds fascinating. Thanks for sharing!

Carrie Melgarejo: from World Vision International Nutrition Centre

USAID Agrilinks2: Johanna- do you have resources to share? In food security we talk a lot about the agricultural products rather than dairy.

Avital Friedman: Avital Friedman, Helen Keller International

Sandrine Chetail: Sandrine Chetail, joining from Mercy Corps

Vinesh Kapil: Vinesh Kapil- USAID, Global Health

USAID Agrilinks2: Don't forget to post any of your questions about the topic throughout the presentation. We will pose as many of them as possible during the Q&A session.

Doudou Ndiaye: Regional Agriculture Specialist, USAID/Senegal, Sahel Regional Office

USAID Agrilinks: Thanks for joining Doudou, what are your experiences with mycotoxins in Senegal?

Abel Nyoni: Abel and Kumbukani joining from Malawi

Doudou Ndiaye: I worked more on aflatoxin in the CAADP process. I am a former employee of CAADP Pillar II and we discussed with the CAPA involved in Aflatoxin controle

Hector Santos: Is an environmental assessment needed to test Aflasafe in other regions?

Carla Mejia: Carla Mejia, from the UNWFP Asia Regional Bureau

McDonald Homer: McDonald Homer, USAID Afghanistan on line

Doudou Ndiaye: In Senegal, most of the scientist think that aflatoxin attack only peanut. I was so surprise that afflatoxin affect also cereals and others legumes. All efforts in Senegal are focus on peanuts

Johanna Chavez: Good moring, Johanna Andrews from Tufts University/NIL

nina Schlossman: Nina Schlossman from Global Food & Nutrition/Tufts University joining from Washington DC - we work with food products often mae from corn/maize, peanuts and dairy

Doudou Ndiaye: I think the challenge on aflatoxin controle is to limit the economic loss and promote the processing of affected grains for non food products like soap

Johanna Lindahl: Some resources from our work in the dairy value chain in Kenya:
<http://www.slideshare.net/ILRI/combating-aflatoxins>
<https://www.youtube.com/watch?v=3XxTQ4J3uJ0>
https://portal.mtt.fi/portal/page/portal/mtt_en/projects/foodafrica/Workpackage5

USAID Agrilinks: very interesting point, Doudou. Anyone working on alternative market uses for aflatoxin contaminated product?

USAID Agrilinks: What are your thoughts on using infected maize for ethanol?

McDonald Homer: Are there any USAID projects on mycotoxins that involve the cooperation on UNICEF?

Johanna Lindahl: Interesting point Doudou, however, our concern is that in areas with very high contamination levels, such as Eastern Africa, we can't divert all of the crops contaminated above legal limits away from the food chain

USAID Agrilinks: Thanks for your question McDonald, we have recorded it for the QA session

Dan Brown: We are focussing our work with peanuts in Haiti on alternative use and rehabilitation of contaminated peanuts in Haiti (Cornell PMIL-funded research)

Erin Bowers: in ethanol production, co-product dried distiller's grains are used as animal feed and mycotoxins concentrate 3x in the distiller's grains as compared to the originating corn.

Dan Brown: Wow 3X in distillers vs Original corn? I had no idea.

Zachary Baquet 2: Is there anyway to destroy aflatoxin other than incineration?

Johanna Lindahl: We are not having any USAID funded project at the moment, but we are very interested in future projects aiming at looking at alternative uses of contaminated crops, especially the potential of using it as animal feeds, either with higher levels to less sensitive species, or in combination with binders or biological control measures.

Dan Brown: Ammonia and heat; more useful for preparing ruminant diets than human food, of course.

Johanna Lindahl: Ozonization (probably wrongly spelled) also works

USAID Agrilinks: How does the audience feel about Nixtamalization: <http://en.wikipedia.org/wiki/Nixtamalization>

Abel Nyoni: There is also need to greatly focus on behaviour change as most farmers are not well aware of aflatoxin and its impact. Farmers mostly reserve the affected nuts for home consumption after grading and the good ones are sold which is posing a huge health risk

Dan Brown: Treating with base will reduce apparent aflatoxin concentration, but it is reversible by lower pH. For the irreversible destruction of the ring structures requires the addition of ammonia to high pH treatments.

E Manning: Good morning. I have seen only one paper addressing aflatoxin in (buffalo) milk. Does anyone know of other studies looking at pasteurization (not likely to be effective in disabling the toxin) or other methods of controlling in milk?

Johanna Lindahl: We have been discussing nixtamilisation in our group, but how not found a way in adopting it to the African problem at a large scale. However, we are open to discussing that if anyone sees an option here.

Daniel Bailey: But these are just correlations, not causation to Aflatoxin. Thinking of the Guatemala context, it is part of a larger problem around diets and healthy homes.

Johanna Lindahl: pasteurization is not having any effect on reducing aflatoxins, in fact we see high levels in formal market, pasteurized and packaged milk, also UHT

USAID Agrilinks: This is an issue that really does require interventions throughout planting, harvest, processing, storage, market and consumption!

Hector Santos: Is there evidence that nixtamalization reduces mycotoxins and to what extent??

Johanna Lindahl: Designing a study to show causation in human subjects is difficult and have ethical implications. We hope to be able to conduct a longitudinal study in East Africa based on interventions, and if anyone have identified good sources to apply for funding for such studies, I would be happy for some advice

Johanna Lindahl: yes, some studies show good effect of nixtamilisation, but I believe more could be done to study this

McDonald Homer: Can someone speak to the prevalence of mycotoxins in horticultural crops?

David Castellanos 2: I am wondering if there is any intervention to diagnose and treat populations infected with aflotoxins? Any thoughts?

Daniel Bailey: On the study of Aflatoxin and stunting prevalence in Africa, was a multivariable analysis run for correlation with poverty, WASH practices, protein intake, etc?

Dan Brown: Is anyone working on *Mucor circinelloides* toxins? I believe there are problems with fermented foods in Asia, and there has been brain damage in people consuming contaminated sugar cane. In the US, there was a food poisoning outbreak a year and a half ago from *Mucor circinelloides* in Greek Yoghurt.

Daniel Bailey: I've heard that nixtamalization can actually be reversed in the digestive system, thus reactivating the aflatoxin. Does anyone have any science behind this?

Johanna Lindahl: Daniel, that is very interesting, and actually one of my concerns with many of the biological binders as well, such as Lactic acid bacteria, and I think this would be worth studying further

Anastasia Buyanova: What is the method by which cruciferous vegetables help detoxify mycotoxins. Do the vegetables have to be consumed at the same time as the mycotoxin-contaminated food?

Jack Davis: Jack Davis here with JLA. We are a series of commercial labs specializing in raw material testing, including peanut (groundnut). I am based, and JLA is headquartered, in beautiful Albany, GA.

Daniel Bailey: Johanna, it makes sense to me. If Nixtamalization (a base process) neutralizes it, subjecting it to an acid in the stomach could reverse it.

Jacob Behler: I'd love to hear what Felicia had to say on relative cost effectivity of treatment.

McDonald Homer: Stunting is a problem in Afghanistan according to UNICEF. Our program with the Ministry of Agriculture attempts to understand the prevalence of mycotoxin in wheat (the food staple) and high value horticultural crops such as grapes.

Susan Pomar Nuijten: Any information on appropriate storage for maize, cocoa and coffee?

Johanna Lindahl: ILRI and IFPRI currently are doing some research on Willingness to pay among Kenyan consumers

Edgar Guardia: Are there any experiences with aflatoxin detection in human urine?

Judy Canahuati: USDA is doing quite a bit of work here, particularly with AFLASAFE, but the question in my mind is how to reach the small holder farmer?

Dan Brown: In Haiti, we are looking using contaminated stocks for cooking fuel, decontaminating for animal feeds for animals that carry over the least of residual aflatoxin that survives decontamination.

Jacob Behler: Could we get that paper?

Johanna Lindahl: there is lots of work to be done with aflasafe adoption among smallholders in Africa, and large scale rollouts provide a good way of looking at impacts on stunting etc, but we should also look at how livestock industry can be tied to it, and how to create sustainable ways of reaching smallholders

Daniel Bailey: Once a country starts exporting grains to a developed country with high standards for aflatoxin, does it cause an increase in aflatoxin exposure in the exporting country population since the high quality grain is no longer available? Or does such a practice encourage lower aflatoxin among all supplies?

USAID Agrilinks: Thats a great question! I noticed someone from the World Food Programme has joined and perhaps they could elaborate on that

Doudou Ndiaye: On the Malabo declaration, that is the new CAADP Commitment, the Heads of State and Government adopt commitments to halve the current levels of post harvest losses by the year 2025. I think it is a great opportunity to develop aflatoxin control programs in Africa.

Daniel Bailey: Or is there a null effect because grain grown for export is a completely different supply change?

Daniel Bailey: chain

ivan rodriguez: Is there a good quality, updated, and public study, on this issue in Honduras?...please share to: ir@swisscontact.org.hn

Hector Santos: Has anyone worked on this before? In the 90s there was considerable work on improving storage and providing solutions to prevent spoilage, which included Aflatoxins. I've seen similar technologies promoted now, 20 years later. So it seems that we should also look at the adoption of technologies and practices to reduce aflatoxins, being this Aflasafe, plastic bags, silos, etc. Why do growers use it and then drop it? Why is this still a problem after investing in it?

USAID Agrilinks2: What does it mean when a person raises their hand?

USAID Agrilinks2: Apologies; please ignore above.

Dan Brown: I don't believe the competitive atoxigenic strain approach is appropriate for use in developing countries. *Aspergillus flavus* and *parasiticus* cause damage to peanuts beyond the production of aflatoxin. In the US, this technology is applied farm by farm where informed decisions can be made for specific sites according to the strains present. Proposed widespread coverage of regions in developing countries without regard to what is already in the soil of specific farms, doesn't one risk introducing a spoilage organism, even if it might temporarily reduce aflatoxin?.

McDonald Homer: What role could the private sector play in screening for and mitigating against mycotoxins?

Daniel Bailey: how much does this strip test cost per test?

Ranjit Bandyopadhyay: I agree with Lynn regarding targeting productivity and quality (aflatoxins) being a must. An example of such a project can be found in <http://agresults.org/en/283/NigeriaAflasafePilot> The first year pilot show that increased productivity and quality enhancement is possible.

James Rhoads: I appreciate Dr. Bowman's point on sampling. In general >90% of error can be attributed to sampling strategies and sample preparation. Strip tests are good and getting better/cheaper, but rarely are people knowledgeable or willing to do these steps correctly.

Jacob Behler: Thanks for the link!

Rocio Morales: i was wondering which are the latest techniques to do a quantitative detection of aflatoxins in foods?

Ranajit Bandyopadhyay: In Africa, the regulatory authorities approve the use of aflasafe based on safety considerations

Johanna Lindahl: One issue for us is that the population most at risk is the poorest, and these will seldom eat crops that have been tested, and they will not afford a test. Even if a test could be done, we would need a strategy for what to do with contaminated products, since many do not have an alternative food source.

Bryan Sobel: Can you please share the citation for the study linking cruciferous and leafy green vegetables' with detoxification of aflatoxin?

Hector Santos: Can you please share the studies on nixtamalization reducing mycotoxins and the zeroing out in the stomach?

nina Schlossman: probably need different aflatoxin strategies to mitigate stunting - immediate - vs preventing liver cancer - over the long term

USAID Agrilinks2: Thank you for all the great questions and requests.

USAID Agrilinks2: We will assemble links for sharing on Agrilinks.org within two weeks.

USAID Agrilinks2: Please stay tuned and check out the original event page for those updates.

USAID Agrilinks2: <http://agrilinks.org/events/breaking-mold-how-mycotoxins-impact-agriculture-nutrition-and-development>

Jacob Behler: Will there be anyway to access this recording? I took notes, but there is a lot of information and I'd like to go over this again

Judy Canahuati: Thanks to the presenters and organizers. Very important presentation

David Castellanos 2: Are you going to respond for those questions that were not responded in the forum?

USAID Agrilinks2: Jacob; yes the webinar recording will be shared on Agrilinks.org. You will be able to access within two weeks and it will be posted at the link above.

nina Schlossman: Yes - excellent seminar - very well rounded and complementary presentations thank you

Doudou Ndiaye: Thanks everyone, great presentations and discussion

USAID Agrilinks: We will try to share the unanswered questions with the speakers

Jacob Behler: Wonderful, thank you. Great seminar!

Hector Santos: Who bears the cost of purchasing the Aflasafe? If an extremely poor household has to purchase it, then it is difficult to achieve adoption. If it is supplied from the public sector, as this is a public health issue, then this could work. This implies that there should also be policies to have incentives to aflatoxin-free grain

Edgar Guardia: The webinar was great. Very informative. Thanks!!!

Dan Brown: Ranajit Bandyopadhyay: The increased yields in the Nigeria Aflasafe trial were due to accompanying increases in fertilizer use, better seed and other agronomic interventions unrelated to Aflasafe use. Low aflatoxin levels claimed there were not contrasted with farms with the other interventions, but without the aflasafe. This was a marketing promotion. Not convincing evidence of efficacy of the product.

Hector Santos: This has been great. Greetings to John Bowman from Honduras

Johanna Lindahl: Could there be a maintained online discussion forum? It seems like good ideas could come out of discussing with others?

Vinesh Kapil: Great webinar. Thank you!

USAID Agrilinks2: Please take the end polls!

Bryan Sobel: Aflatoxin-detoxification achieved with Mexican traditional nixtamalization process (MTNP) is reversible by Méndez-Albores, JA; Villa, GA; Del Rio-García, JC; Martínez, EM *Journal of the Science of Food and Agriculture*, ISSN 0022-5142, 09/2004, Volume 84, Issue 12, pp. 1611 - 1614

USAID Agrilinks2: It helps us to improve these events.

mandana arabi: Thank you very much for organizing the seminar.

Jacob Behler: Thanks Bryan

David Castellanos 2: Thanks it was very interesting

USAID Agrilinks2: Thank you all for attending!

USAID Agrilinks2: The conversation, sharing of resources and networking is fantastic and much appreciated.

Edgar Guardia: Bye!!!

USAID Agrilinks2: Please continue the conversation online at AGrilinks.org. There is already a comment on the event page!

USAID Agrilinks2:

<http://agrilinks.org/events/breaking-mold-how-mycotoxins-impact-agriculture-nutrition-and-development>