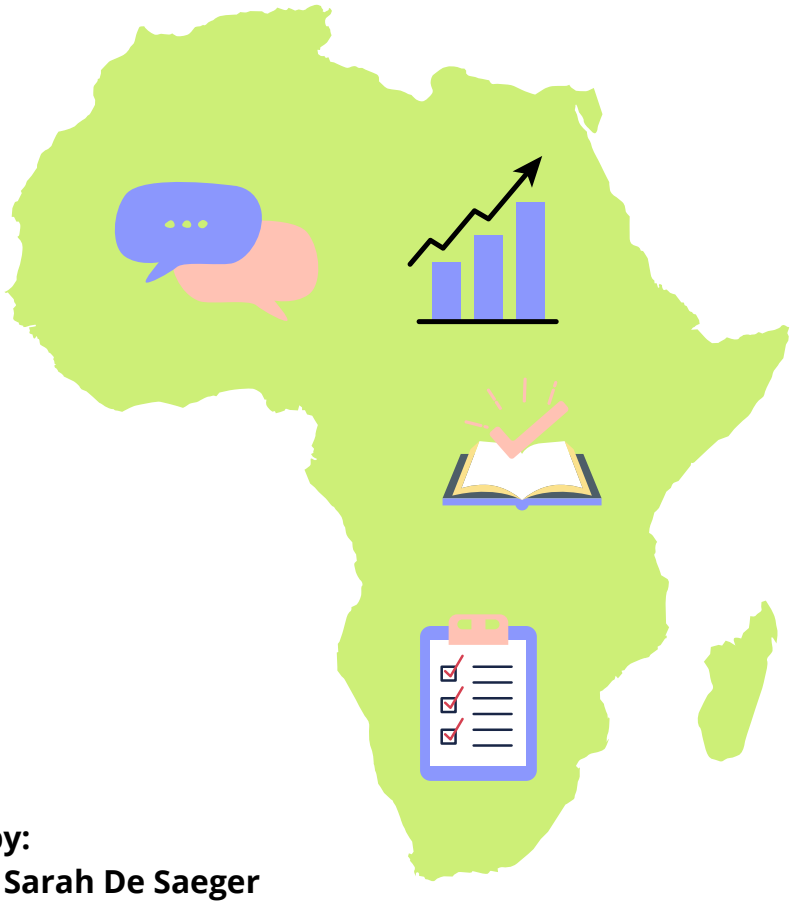
GHENT UNIVERSITY

MYTOX SOUTH

Mycotoxin legislation in Africa

Webinar 6/5/'21 | REPORT



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INTRODUCTION

This webinar was organized to share and discuss the results from the survey on mycotoxin control and regulations in Africa sent out in mid-March 2021. The webinar started with a short introduction by prof. dr. Sarah De Saeger, Ghent University. The operation of MYTOX-SOUTH®, a multi-disciplinary international partnership striving to enhance the capacity to solve the mycotoxin problem on a global scale, was explained. The MYTOX-SOUTH® Facebook community: "Advances in mycotoxin research and legislation" was presented, in order to stimulate networking with researchers and regulators worldwide. Then, a brief positioning of the master thesis of Pascaline Moyersoen was given. The introduction was concluded with an indication on the objectives of the webinar.

The presentation is available via the following link:

https://drive.google.com/file/d/11_Rw1D13wlfCrXN6Qu9UjSluXsNf2ZUP/view?usp=sharing

PRESENTATION OF THE SURVEY RESULTS

The results obtained from the survey on Mycotoxin Control and Regulations were presented by Pascaline Moyersoen, Ghent University. The presentation started with some information concerning the methodology of this study, followed by a short overview of the questions in the survey. Then, the results of each question in the survey were presented. These results were completed and compared with the results obtained from a literature review on mycotoxin legislation in Africa. The distinction between survey and review results was made clear by using a different background color for these slides and by stating 'Survey' or 'Review' in the lower right corner. Following conclusions were drawn from the presentation:

- Participants from 12 of the 20 participating countries indicated that maximum limits for mycotoxins exist in their country
- Regulations mainly exist for aflatoxins in maize and peanuts
- The mycotoxin limits are mostly formulated by the government or by scientists
- Awareness, regulations and limited analytical capacity are the major challenges regarding mycotoxin control
- 6 participating countries do not have access to mycotoxin standards
- Participants from 13 countries indicated that mycotoxin awareness campaigns have been organized in their countries

The presentation is available via the following link:

https://drive.google.com/file/d/1miZ3bBGAEdTXkPNlqvr2tXu777RyvPYi/view?usp=sharing

These are preliminary results, they will be updated when more information is obtained.

ROUND TABLE DISCUSSION

The round table discussion was moderated by dr. Limbikani Matumba and following questions were discussed:

- **There are a lot of countries from which no information was received regarding mycotoxin legislation. We would like to collect information from institutes other than universities and research institutes: Who should we contact? How can we get that information? Embassies, Agriculture ministries, others?**

  - *Burkina Faso:* Institutions that can be contacted are ministries of agriculture and directions of nutrition. In Burkina Faso, the National Institute of Public Health could also be contacted.

  - *Egypt:* Every country has a Codex Alimentarius national commission contact. The Ministry of Trade is in every country even more relevant than the Ministry of Agriculture or Health, because the focus is mainly on trade and not on national concerns on mycotoxins.

  - *South Africa:* Not just universities and specific research institutions should be contacted, but also extension officers from the agriculture sector. They work with small holder farmers, that are unaware and not governed or protected by national legislation.

  - *Benin:* Contact food safety agencies from Middle and West African countries, they know about hazards.

  - *Nigeria:* A lot has been done on mycotoxin research. Standards are adopted, most times EU standards, for trade but not for local consumption. Even standards that are adopted are not open to the public. There are different agencies: the Standard Organisation in Nigeria, and many countries are part of the international codex committee.

- **For those countries which have mycotoxin legislation in Africa: Which were the main drivers for the establishment of these legislations? Is it domestic market, export market to protect human health or to improve competitiveness of international trade?**

  - *South Africa:* There is a legislation for fumonisins and deoxynivalenol, but I am not sure what it is driven by. It comes from Codex but does not protect the population due to different daily intake of maize in South Africa.

- *Tanzania:* The limits for aflatoxins are driven by the public health sector because doctors linked groundnut with liver cancer incidents. Interventions were implemented through FAO, the awareness increased because of the African Economic Community (AEC). Countries came together through AEC. Aflatoxins started with health, the competitiveness (with EU) came at a later stage as people started being aware.

- *Egypt:* The driver is import of cereals. It is the staple diet. We are working on reducing import and improved storage facilities that are safe for all mycotoxins. Lots of efforts are made for staple diet. But still a lot has to be done for other foods. The main driver is the Ministry of Trade and Agriculture.

- *Nigeria:* The driver in Nigeria is trade competitiveness (international trade). There are rejections because of high levels of mycotoxins. Recently, the need to also look at the health effects increased. Efforts are made by the national food safety commission. It began with trade interest, but now health interest takes over.

- A discussion arose on the establishment of the African Food Safety Authority.

  PACA is contributing to the establishment of the African Food Safety Authority. The summit assembly of the African Union has already approved the African Food Safety Authority. The basis for the work and structure of the authority are set. It is ongoing, but not fully operational.

- Another discuss started on regulations related to aflatoxin intake of animals. Ghent University coordinates the LEAP-AGRI MYCOSAFE-SOUTH project. A survey was performed on mycotoxin contamination in Kenya without raising the question on how much of moulded food that is rejected for human consumption goes to animal feeding. We need to put in place other surveys to have more insight on moulded feed in Africa. Their health (of the animals) suffers, but the health of the people suffers too (milk contamination). A PhD student published a review paper on legislation for feed in Africa, https://www.mdpi.com/2072-6651/12/4/222. Moreover, on the 1st of March, BIOMIN and Romer Labs hosted a webinar featuring an in-depth discussion on upcoming mycotoxin threats to poultry, swine, ruminants and aquaculture worldwide based on recent BIOMIN Mycotoxin Survey results. https://youtu.be/heQOKD-vY4M

- *South Africa:* There is a regulation since 2010 for animal feed for aflatoxins in final feed but also in commodities and raw material that they use.

- **Are some African countries justified to have no mycotoxin legislation in place? What are the challenges thwarting establishment and implementation of mycotoxin legislation in African countries?**

  - *Tanzania:* Countries based in the tropics are likely to be contaminated with high levels, so there is no justification. They do not have limits because of low level of awareness on the effect of mycotoxins on trade and health. There is limited access to the market, this can improve if contamination is controlled. People are suffering, there is a focus on making profits rather than preventive senses. Some countries do have legislation for food hygiene and how to control fungi or regulations for public health prevention that are food safety based, but there are no limits for mycotoxins.

  - *Egypt:* The African Nutrition Society works in a number of African countries. In Egypt and some other countries, scientists and legislators have a beautiful and correct legislation but there is often a dissociation between presence of legislation and implementing it. They are not serious or there is no infrastructure/capacity for implementation for many reasons.

  - *Nigeria:* No legislation is justified because of the following reasons:
    - The issue of data, there is no sufficient data to convince the government that there is a need for legislation. This is a problem for a lot of African countries.
    - There is no external pressure for setting regulations. Internally, there are no outbreaks, so people are not aware.
    - Political willpower is important (global problem). For selfish reasons, some politicians own big farms, and they don't want to establish regulations for trade purposes.

  - *Tanzania:* There is a need for validation. The observation that there are no limits in some countries could be because they are not enforced, so participants are not aware. Validation by other institutions/sectors is needed.

  - *South Africa:* The problem is that few countries reach legislation and awareness. In some of the countries, if there are no or only a few papers published the government and the people are not aware. The political world is important regarding to regulations. There is a need for finances and technical development. We should unify countries by implementing testing methods and see if those methods are approved. There is a lot of work in Africa in terms of harmonizing, because people are dying due to mycotoxins and their effect on the immune system. We need to put in place a coordinated system in Africa.

  - *Belgium:* There still seems to be a disconnection between scientists and policymakers. Scientists forward the survey to fellow scientists, but it remains difficult to reach the policymakers. There is a European Horizon 2020 project, FoodSafety4EU, to create a better connection on EU level between stake holders (scientist, policy and consumers) and better communication (https://foodsafety4.eu/). *(Note to reader, you are invited to become part of the multi-stakeholder platform as indicated on the welcome page of the website.)*

Comments in the Chat:

- *South Africa:* Implementation and enforcement are missing
- *Kenya:* Apart from willingness to implement legislation, the costs of enforcement are challenging for most countries.
- *Ghana:* Questions like the existence of limits/standards must be directed to specific institutions, e.g. standard-setting or food safety authorities.
- *South Africa:* Maybe a tool that can be used: http://www.commodityregs.com/
- *Tunisia:* In Tunisia we have a project to set up legislation about Mycotoxins (now we have a limit for aflatoxins, ochratoxins…) I think it is important to elaborate African legislations. And create an African committee to discuss the possibility to elaborate an African project.

- **Fumonisins are equally important mycotoxins in African context. Why are they not regulated in most cases?**
  - *Tanzania:* Fumonisins are more recently discovered, compared to aflatoxins. This explains the low awareness. It is hard to find funds and convince policy makers about the problem due to limited knowledge and awareness on fumonisins. Outbreaks of aflatoxins created some awareness to address research and limits. Another problem is that fumonisins infect maize and maize is mainly traded within the country and with neighboring countries where there are no rules in place. Therefore, there are no drivers to have limits. There is also no acute toxicity for fumonisins.
  - *South Africa:* A lot of research is still needed. But nevertheless, there is existing evidence for health effects, but it is often ignored. More research is needed for research on exposure to fumonisins, especially in rural regions of South Africa, because they consume a lot of maize.
  - *Belgium:* There should be funding for research on the impact of mycotoxins on human health as such. The focus should lay on exposure studies instead of occurrence studies.
  - *Nigeria:* Fumonisin contaminations are below standards, there are no signs of acute toxicity. Nigeria reported fumonisin levels far lower than the limits that they have. So, this is one of the reasons why there is not much effort in regard to fumonisins as there is to aflatoxins. Lower levels mean less efforts. Maize is staple food and very important in Nigeria. The standards of 1000 ppb are adopted from Codex and EU, but there is no supporting data to confirm that those standards are good for human health.
  - *South Africa:* National legislation in South-Africa is based on Codex, but it is not sufficient. Especially in rural areas, the intake of maize in a day is a lot higher than in the EU, so European standards do not make sense. Scientists are working on this matter and on exposure to show its impact on public health. Fumonisins are not genotoxic, people don't die from it, so there is not a lot of awareness.

- *Egypt:* Regarding health impact, primary level health workers should be trained to recognize symptoms of mycotoxin exposure. This must be integrated in training for the health team. This is another aspect where mycotoxins are not considered. Regarding the question why fumonisins are not regulated, it is not correct. They are often not regulated, but every country is member of Codex Alimentarius. These limits are adopted by countries that do not have any national legislation. It is the implementation of regulations that is the problem, not their presence.

- *South Africa:* If we reduce the level of fumonisins in maize, the trade will be affected.

- *Tanzania:* When Codex has a limit, it means that in trade every country has a mandatory limit. But these are not protective for Africa. Codex's risk assessment is global. In a global risk assessment 2000 ppb is ok, but it is not ok for every country. In order to implement/have a protective limit in a health perspective, you need a risk assessment to prove this. Not all countries have a risk assessment body that would advise these protective limits. The codex is informed by JECFA, which is looking at a global pattern. Africa does not have a lot of risk assessments and this needs to be solved. You either follow Codex or provide risk assessment to provide justification for a more stringent regulation.

- *Kenya:* Most countries follow Codex limits to regulate trade, but Kenya is stopping imports following their own limits. Countries can also follow their own rules to control what gets in, which is seen in Kenya during trade with Nigeria and Uganda. Kenya is also planning on risk assessment. Companies requested higher limits so that they are able to feed the country, but scientists say health comes before trade. The nations are responsible to protect their own people.

- **Do you think it is necessary to strengthen and harmonize legislation among African countries?**

  - *Tunisia:* Proposition to make an African committee to discuss and to have an African project. It is important to harmonize legislation.

  - *South Africa:* Different crops are consumed across Africa. There are different mycotoxins, different access to equipment and standards for these different mycotoxins, different health effects because of other factors like climate change, environmental factors and other diseases. I am not sure if it is possible to harmonize because of these differences. But an African Food Safety Authority to enable strengthening of resources and expertise to establish standards that could protect the public and look at different sides, not just commercial but also small holder farmers, would be a good idea. So that we can depend more on each other and so that people don't just fly in but leave something behind. Scientists should be trained for the future and stay in their country to improve the situation.

  - *Tanzania:* Harmonization of the limits creates an opportunity to share knowledge. If there is a harmonized law, it can be suitable for countries that don't have the resources to do that. With an African continental fare trade area, there would be more trade amongst African countries with common limits, so it would become easier to trade.

- *Egypt:* Harmonization is an objective for the Free Trade Agreement and the African Standards Organization (ARSO).

- *Benin:* The African Food Safety Agency could accelerate a harmonization process. Risk assessments in the African context should not only be performed on national level.

- *Kenya:* Striving for national standards is in conflict with trade, where it is codex standards that are used. National standards should be Codex standards, why don't we go for it? Why own standards if Codex standards are followed for trade?

- *Tanzania:* The objectives of Codex are public health and trade, if a country feels that codex limits are not sufficient, they should perform a risk assessment to prove the need for more stringent legislation (WTO SPS agreement). Own standards must be based on science that show that Codex limits are not sufficient for the health of your own country. These standards must be approved.

- *Kenya:* Africa is not able to do a risk assessment and must follow the regulations of the Codex.

* Clarification regarding the discussion on SPS Agreement (Agreement on the Application of Sanitary and Phytosanitary Measures) was sent via email:

SPS has four facets:
1. Codex - food safety
2. IPCC - plants
3. OIE - animal
4. WTO - trade
The role of codex is only to set Standards.
WTO regulates trade and have Dispute Settlement Courts.

In summary:
1. WTO- SPS agreement provides and gives right to each member to have its own level of protection to its population. Each country has to have their own regulation.
2. Each member has to comply to the transparency provision of the same agreement. Members must notify all members about their standards and any modifications.
3. When two members are trading, then the importing country must comply to regulations of exporting country. In the absence that importing country did not notify the exporting country of their standards, they can now make reference to Codex Standards or any other available, as basis of trading.

If the above three are not respected, then No. 4 below follows:
4. When two countries are trading and exporting country is using Codex Standards or any other, then importing country must comply. In this case harmonisation of Standards is the best option.

- *Morocco:* There is an official body in Morocco which is responsible for risk assessment in our country. We have the most detailed legislation on mycotoxins in Africa, the regulations are similar to European regulations. Some mycotoxins are not regulated, but most of them are. The problem is control and the need for human capacity and laboratory capacity for control. I would suggest harmonizing amongst countries with the same food habits, in different subregions. Harmonization is difficult for the whole continent because of the different habits.

Comments in the Chat:

- *Tanzania:* Harmonization to omit obstacles for trade between countries.
- *Nigeria:* The impact may be low, because interregional trade does not seem so much of a priority compared to intercontinental trade. But the idea should be given a chance considering the African Union efforts to unify the region common interests.
- *Egypt:* Harmonization of legislation and standards is an objective of the Africa Free Trade Agreement as well as the African Standards Organization (ARSO) and much is being done to achieve it.
- *Ghana:* Harmonization is key for Africa, particularly in the context of AfCFTA (African Continental Free Trade Area). Article see: https://www.qascf.com/index.php/qas/article/view/668
- *Burkina Faso:* Where harmonization proves to be difficult initially, a process of mutual recognition is also possible.
- *Kenya:* Country risk assessment is more important than harmonization of legislation for purposes of trade.

- **Conclusions**
  - Africa is situated in tropics where the environment is suitable for mycotoxin production. More effort is needed on this topic. There is shift to the trade of processed foods, regulations should protect humans. There is a need to strengthen the capacity in the continent with collaborators. We need an organization that would help Africa as a continent, but at local level capacities. We have good papers on this subject, we have limits, but they are not implemented. We can do this, because we are the champions of change.
  - Change is a step-by-step process, it will take long, but we will get there.

ACTION POINTS

- Reach more countries and institutions with our survey
  https://www.enquete.ugent.be/survey322/index.php/329462?lang=en (ENG)
  https://www.enquete.ugent.be/survey322/index.php/329462?lang=fr (FR)
  https://www.enquete.ugent.be/survey322/index.php/329462?lang=pt (PT)
  https://www.enquete.ugent.be/survey322/index.php/329462?lang=es (ES)
- Free registration at the International Society for Mycotoxicology (ISM) (http://www.mycotox-society.org/?page_id=6)
- Join the Facebook community from Mytox-South to share and receive updates in mycotoxin research and legislation (https://www.facebook.com/groups/1120172588494148/)
- The results of the Master thesis research project of Pascaline Moyersoen regarding mycotoxin legislation in Africa will eventually be published in a scientific journal. Please inform us if you would like to take part in this scientific paper.

SHARED DOCUMENTS/LINKS

- Kick-off event: Advisory Group on African-European Research and Innovation Cooperation
  https://europa.eu/capacity4dev/desira/news/kick-event-advisory-group-african-european-research-and-innovation-cooperation (shared by Francois Stepman)
- IITA and their implementation of Aflasafe (shared by Francois Stepman)
  AgResults Impact Evaluation Report: Nigeria AflasafeTM Challenge Project
  Structuring the Business Relationship Guide
  Market Assessment and Strategy Development Guide
  Investor Selection Guide
  Implementation of the Business Development Strategy Guide
  Burkina Faso Country Status Report September 2020
  Gambia Country Status Report September 2020
  Ghana Country Status Report September 2020
  Nigeria Country Status Report September 2020
  Senegal Country Status Report September 2020
  Tanzania Country Status Report September 2020
- Open survey for African countries, work realised through collaboration between the African Society of Mycotoxicology, the MycoKey and Mytox-South networks and the Joint Research Centre (JRC) of the European Commission. Five questionnaires were prepared to cover different groups of food operators. (shared by Monica Ermolli)
  https://docs.google.com/forms/d/1axeFfte3_Vn9Brc1NsjTI8jdRnmIlaG2IBOaHWOMOfA/edit (Farmers)
  https://docs.google.com/forms/d/10ceaPFXaNaicglP41loNGmZbzgDiYl7CiEvY_YR-ZWY/edit (Food processors)
  https://docs.google.com/forms/d/1ZEZg9b4ylazIw51LUQYDeX3WCCCLLLUFUneduEjtHGo/edit (Food scientists)
  https://docs.google.com/forms/d/1KtJU1C_LwHWjRkTuxvMP9PfUqibO7zlS3-MWIiXA7k4/edit (Food traders)
  https://docs.google.com/forms/d/1C2nToMbID7wZXYx2xgUrl5tzNk_IvNq8Qqf3Ky2Bl1Q/edit (Food Policy Makers)

- South Africa Maize and Wheat Crop Survey
  https://sagl.co.za/mycotoxin/ (shared by Willem Joubert)
- Review of animal feed contamination
  https://www.mdpi.com/2072-6651/12/4/222 (shared by prof. Croubels)

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