

## New training for Aflatoxin-safe peanuts

Aflatoxins are a family of mycotoxins that contaminate a wide range of food commodities from maize to dried fruits, spices, and nuts. Among nuts reports show that peanuts can be heavily contaminated with aflatoxins reaching concentrations sometimes 3,000-fold the maximum regulatory limit in the European Union (EU) and United Kingdom<sup>1</sup> (Figure 1 - Example of peanuts contaminated by *Aspergillus flavus* in Ethiopian field. Courtesy of Dr Abdi Mohammed Hassen, Haramaya University.). Thus, it is not a surprise that, in 2022 only, the aflatoxins contamination in nuts (including all nut products) represented 413 notifications at the EU borders (9.43% of the total EU rapid alert system notifications in 2022). This contamination puts significant pressure on the worldwide markets where nuts are traded with markets such as Europe preferably importing nuts from other European countries, China, and the USA at the expense of African countries.



*Figure 1 - Example of peanuts contaminated by *Aspergillus flavus* in Ethiopian field. Courtesy of Dr Abdi Mohammed Hassen, Haramaya University.*

### Reducing the aflatoxin pressure

To support the agrifood industry and reduce the impact of aflatoxin on global health, programs at international, national, industrial, and community levels have been developed throughout the last 30 years. Among these, the recent project [NutriNuts](#) led by the [Applied Mycology Group](#) at [Cranfield University](#) aimed to develop ready-to-use solution through a supply-chain approach. The project included the implementation of research-guided pre-harvest to processing innovations and technologies towards a

sustainable management of the food chain. A video summarising the project is available [here](#).

## How is NutriNuts different?

1. Supply-chain empowerment. The project developed a collaborative approach with farmers (independently of their gender<sup>2</sup>), buyers, wholesalers and processors. For each of the actors, an assessment of the potential easy-to-use and affordable solutions available were explored and a time course for aflatoxin formation was assessed for their supply chain (Figure 2).

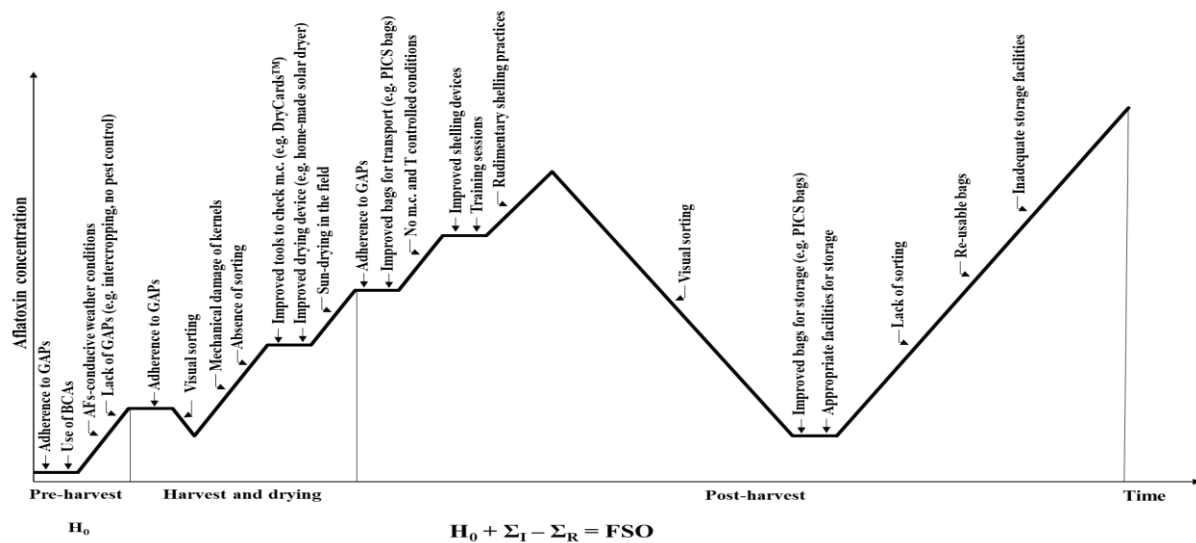


Figure 2 - Time course of aflatoxin formation in relation to proposed mitigation strategies in Ethiopian peanuts<sup>3</sup> (BCA: Biocontrol Agent, GAP: Good Agricultural practices).

2. Applied and sustainable solutions. The mitigation strategies identified were discussed against costs, accessibility, ease of implementation and maximum potential for reduction in aflatoxins occurrence. Among the solutions, drying and shelling were identified as the main priorities for the Ethiopian community's context (Figure 3) and locally available solutions were pilot trialled. Among the solutions adopted, a passive-dryer made from locally available raw materials coupled with [DryCard™](#) technology was able to reduce peanut humidity to safe storage within less than 24h purely based on passive solar energy.

3. Know-how transfer and worldwide accessibility. The know-how and lessons learned from this project are converted into online courses available from everywhere around the world with the goal of learning from the project and promoting critical thinking in the implementation of the rightful technology for the targeted supply chain environment. This course is embedded into the [Mycotoxin Training Hub](#) which aims to break the bridge between academia and the supply chain.



Figure 3 - Empowering the community.

### **The aflatoxin management online course.**

This training is a unique online interactive concept. The trainee register and start the [online course](#) at the time of their choice. The course is 100% self-paced to ensure accessibility and flexibility of working.

It is divided into two sets of modules:

1<sup>st</sup> part (circa 15h) understanding of key concepts related to mycotoxins from introduction to food mycology to a focus on mycotoxins including chemistry, toxicity, regulation, sampling and detection.

2<sup>nd</sup> part (circa 15h) focused on aflatoxin management in peanuts. This section focuses on each part of the supply chain and provides key concepts and reflections on what should be the good practices and how to implement them depending on the socio-economical setting.

To ensure maximum knowledge and skill gain, each key concepts are presented and complemented with activities and quizzes to implement and reflect. The key activities are gathered into a workbook that helps the trainee to build their workplan into their own workspace/supply chain context.

At the end of the course, to assess the trainees and provide feedback on their workplan, a **unique one-to-one interactive session** with one member of the Mycotoxin Training Hub research team is planned. This session is tailored to help implement the course outcome in their own supply chain and nurture partnership and communication with our team of experts.

Upon successful completion of the one-to-one session, the trainee will receive a certificate of completion from Cranfield University.

### **Now is the time to make a change.**

Are you a business manager? A safety officer? An academic? An agricultural extension worker or a food enthusiast? This course is for you and your team/suppliers! Learn about aflatoxin management, develop a plan with researchers and kick-start your journey towards aflatoxin-safe peanuts!

Hurry up! Early bid pre-registration discount price (£250) until February 19<sup>th</sup>, 2024.



[Dr Carol Verheecke-Vaessen](#), Director of the Mycotoxin Training Hub

### **References:**

1. Mohammed A, Chala A, Dejene M, et al. *Aspergillus* and aflatoxin in groundnut (*Arachis hypogaea* L.) and groundnut cake in Eastern Ethiopia. *Food Addit Contam Part B*. 2016;9(4):290-298. doi:10.1080/19393210.2016.1216468
2. Cervini C, Abegaz B, Mohammed A, et al. Assessment of agricultural practices by Ethiopian women farmers: existence of gender disparities in access to mycotoxins training. *World Mycotoxin J*. 2023;16(3):227-238. doi:10.3920/WMJ2022.2827
3. Cervini C, Verheecke-Vaessen C, He T, Mohammed A, Magan N, Medina A. Improvements within the peanut production chain to minimize aflatoxins contamination: An Ethiopian case study. *Food Control*. 2022;136:108622. doi:10.1016/j.foodcont.2021.108622