**Group:** Organic Chemistry (ORC), Wageningen Food Safety Research (WFSR)

**Project:** Factors affecting mycotoxins in sorghum produced in Ethiopia

**Supervisors:** Gert Salentijn (ORC), Laura Righetti (ORC), Ine van der Fels-Klerx (WFSR)

**Background and research interests**

The presence of mycotoxins in staple crops in Africa causes high economic and human health burden. Major mycotoxins are fumonisins and aflatoxins. In the course of a running project, sorghum samples have been collected from farmers/household in Ethiopia, both at harvest and 6 months after harvest (so after 6 months of storage).

**Objectives – topic 1**

The aim of the study is to investigate the influence of agronomic and environmental factors (i.e. geographical origin, storage conditions) on the accumulation of parent and modified mycotoxins in sorghum samples harvested in Ethiopia.

**Methodology / what students can learn**

Sorghum samples will be analyzed using liquid chromatography coupled to mass spectrometry with the aim to identify and quantify a broad range of parent and modified mycotoxins (i.e. aflatoxins and fumonisins). Different sample preparation procedures will be applied to selectively extract a class of mycotoxins. Data analysis will be performed to evaluate the influence of agronomic and environmental factors (i.e. geographical origin, storage conditions) on mycotoxins accumulation. Data on possible influencing factors have been collected from practice, together with the samples.

**Objectives – topic 2**

The aim of the work is to compare the on-site testing approaches with traditional lab-based methodologies. The results will contribute to a route in which samples can be screened at their point of origins, rather than having to be transported to the lab. Only those samples that are considered suspect based on this tentative screening will be further analyzed in the lab.

**Methodology / what students can learn**

Sorghum samples will be analyzed by different screening methodologies that can be applied in and outside of the lab, for example, based on immunochemistry. Moreover, attention will be paid to how those the extraction can be performed in a manner that is compatible with field research, which means that it has to be easy-to-operate, and safe-to-perform. Liquid chromatography coupled to mass spectrometry will be used to analyze those samples as well, as benchmark technique.

**Requirements**

We are looking for MSc students interested in learning advanced analytical techniques, data analysis and gather knowledge about food safety. The project will have a duration of 6 months.

**Contact information**

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