In 2014, the majority of EU’s RAŠFF (Rapid Alert System for Food and Feed) rejections were due to mycotoxin contamination that exceeded the regulatory limits.\(^5\) Grain and foods based on these grains account for the largest contribution to mycotoxin exposure in all age classes of the EU population, in particular due to the mycotoxins produced by Fusarium spp. In general, it is estimated that mycotoxins account for 5-10% of annual crop losses worldwide.\(^6\) Considering an average EU-wide production of wheat, maize and oats of about 203 Mt since 2005 (worth about 32.95 billion €), losses could easily exceed 1 billion € per year.\(^7\) On top of that, extreme weather events as a result of climate change is increasingly affecting the mycotoxin map in Europe and world-wide. Thus, there is a pressing need to mobilise the wealth of knowledge that exists from the mycotoxin research conducted over the past decades and to perform cutting-edge research where knowledge gaps still exist.

**Motivation & Approach**

Previous studies have shown that the combination of more than one control strategy in an integrated system has a synergistic positive effect (i.e., the combined effect is greater than the sum of the parts). Thus, the consideration of the entire crop production and post-crop-food processing-waste management-entrepreneurial energy to ensure food & feed security and safety within a sustainable economic approach, is a major motivation behind MyToolBox. The project will build on existing knowledge, combined with novel findings, which will be integrated into an internet-based tool that provides decision support to actors along the food and feed chain to effectively reduce mycotoxin contamination – this is the mission of MyToolBox.

**Post-harvest Objectives**

- To establish real-time post-harvest environmental monitoring systems for storage of cereals and peanuts.
- To develop non-invasive real-time sorting of dried figs for aflatoxin B1 using hyperspectral imaging.

**Pre-harvest Objectives**

- To implement alternatives to conventional fungicides (suitable for organic farming) for cereals.
- To integrate cultural control protocols targeting the Fusarium moniliforme within crop debris using biofumigation and accelerated biodegradation combined with minimum tillage.
- To reduce aflatoxin contamination in EU maize through resistant plant cultivars and the use of atoxicogenic Aspergillus strains.
- To develop novel forecasting approaches to predict potential fungal contamination of cereals at an early growth stage.

**Safe Use Options**

- Utilising a novel generation of mycotoxin degrading enzymes for the safe use of contaminated batches to efficiently produce biogas and biofuel.
- To minimize the mycotoxin content in dried distillers’ grain soluble (DDGS).

**Outlook**

- The outcome of the MyToolBox project with novel intervention strategies will be assembled in the web-accessible MyToolBox e-platform based on new ICTs.
- MyToolBox will provide multiple information to support decision-making in mycotoxin management by all actors along the food and feed chains.
- The incentives of all actors will be studied and used to build up this web-based decision-support-system to maximise the opportunities for practical use of the e-platform by all stakeholders.

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**References**


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