SAFE FOOD AND FEED THROUGH AN INTEGRATED TOOLBOX FOR MYCOTOXIN MANAGEMENT (MyToolBox)

Ferenc Bagi[1], Mila Grahovac[1], Dragana Budakov[1], Vera Stojšin[1], Helena Stanko[2], Igor Jajić[1], Sonja Vučinić[1], Dragana Savić[1]

[1]*University of Novi Sad, Faculty of Agriculture, Trg D. Obradovića 8, Novi Sad, Serbia*

[2]*Agrocentrum Bečej d.o.o., J. Popovića 16, Bečej, Serbia*

mila@polj.uns.ac.rs

Globally every year there are several billion Euro losses to cereals and other crops through fungal infection, which also causes harm to human health from toxins (mycotoxins) produced by these moulds. In a new initiative that is being funded by the European Union's Horizon 2020 Programme, a group of scientists, engineers and IT specialists have teamed up to provide knowledge transfer to farmers and other decision makers in the food and feed chains. Using smart technology available on phones and tablets, decision-making tools will be made available to the agricultural and food communities to guide them in taking the most cost-effective actions to minimise fungal infection and mycotoxin formation.

MyToolBox is a 4-year, €5 million project funded under the EU Horizon 2020 framework programme with 23 partners from 11 countries (Austria, Netherlands, United Kingdom, Turkey, Italy, Spain, Serbia, Germany, Norway, China and Ukraine). The project consortium includes some 40% partners from industry of which 5 partners are end users from the farming community, agronomists and professionals working in agriculture and food manufacturing. Information and decision support tools will be developed for each level of the chain and will be integrated into the ergonomic and secure web-based MyToolBox platform that will also be accessible over all mobile platforms. As such, the MyToolBox platform will guide the end user to the most effective measure(s) to reduce biological contamination in crops, and will provide the necessary intelligence to ensure these measures take into account the prevailing conditions such as geographical location, meteorological conditions, land-use, crop management, storage and intended end use with relevance to specific crops.

MyToolBox project will not only pursue a field-to-fork approach along the food and feed chain, but will also consider safe use options of mycotoxin contaminated batches such as microbial energy conversion to efficiently produce biofuels. A consideration of the entire chain to ensure food and feed security and safety within a sustainable economic environment, is a major motivation behind MyToolBox.

AGROCENTRUM + = MyToolBox IN SERBIA

Mastering skills for isolation of atoxigenic *Aspergillus flavus* strains as potential biocontrol agents against toxigenic *A. flavus* at University of Arizona, Tucson, 2016

Dead millet seed treated with atoxigenic *A. flavus* strains applied under maize plants to prevent infections with toxigenic *A. flavus* (trials conducted in Serbia at two localities)

Trial fields in Serbia

Artificial inoculation of maize ear with *A. flavus*

In Serbia in 2016, susceptibility of 50 maize hybrids to *A. flavus* were tested, as well as the potential of use of atoxigenic strains of *A. flavus* in control of toxigenic *A. flavus* strains. The trials were set at two localities (Bečej and Sombor). Currently, laboratory tests are being carried out to detect spreading potential of atoxigenic strains in trial plots, as well as its natural distribution in maize fields in Serbia. Detection of aflatoxin contamination in samples of fifty different maize hybrids artificially inoculated with toxigenic *A. flavus* and in samples from biological control trials is also running.

According to preliminary results, significant differences in hybrid susceptibility to *A. flavus* exsist and differences in aflatoxin contamination levels are also present. Biological control agent is also showing promising results. In 2017, twenty maize hybrids with the lowest susceptibility recorded in 2016 will be chosen for further field trials, and biological control field trials will be continued.

The project is funded under EU Framework Programme for Research and Inovation, Horizon 2020 ,under the contract number 678012 — MyToolBox — H2020-SFS-2014-2015/H2020-SFS-2015-2.