

OCCURRENCE OF MYCOTOXIGENIC FUNGI AND MYCOTOXINS IN MAIZE IN HUNGARY IN 2010-2012

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Maize is the most important ingredient of feeds, and one of the most important agricultural export product of Hungary. Several fungal pathogens are able to infect maize, many of them are able to cause mycotoxin contamination. The most important mycotoxin producers include *Fusarium*, *Aspergillus* and *Penicillium* species. In this study, we investigated the occurrence of these species and their mycotoxins on maize in various maize-growing areas in Hungary in 3 consecutive years after harvest. Surface-sterilized cereal seeds were placed on selective media, and the isolated fungal strains were identified using morphological methods. Species identifications of selected isolates have been carried out using sequence-based methods. In 2010 the weather was very rainy, while in 2011 and 2012 the weather conditions were more hot and dry. In 2012, extreme weather conditions were observed in Central Europe, when July and August were almost 3 °C warmer than the 100 year average, and the amount of precipitation in August was only 13% of the average. In 2010-2012, 81.94%, 14.33% and 9.16% of the samples were found to be contaminated with potentially toxigenic isolates. Several *Aspergillus flavus* isolates were identified, which are potential aflatoxin producers. Besides, other mycotoxin producer species were also isolated, including black *Aspergilli* which potentially produce ochratoxins and fumonisins, and *A. clavatus*, which produces patulin. In 2010, a large number of *Penicillium* species occurred in the samples, possibly due to the colder weather conditions. *Penicillia* are able to produce a wide range of mycotoxins, including e.g. ochratoxins or patulin. In 2012, *Aspergilli* (and especially *Aspergillus flavus*) were observed in much larger quantities than previously, possibly due to the dry and hot weather conditions. The mycotoxin content of the samples was also analysed using the ELISA and HPLC techniques. In 2010-2011, aflatoxins were not detected in any of the samples, while they were detected in several samples in 2012, even in high quantities. Ochratoxins and fumonisins were also successfully identified in some of the maize seeds.

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