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Technological Measures to Control Mycotoxin Concentration along the cereal chain

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The occurrence and dispersion of mycotoxins in crops and food are highly variable and depend on the nature of infection, the type of fungi, the terms during cultivation and at harvest time, the storage or transportation conditions and the diverse treatments during food production. Due to this variability, the technological measures influencing the mycotoxin concentration are of great diversity.

One example of cereal contamination interesting the public sphere is the major cause of sclerotia and resulting ergot alkaloid content in grain and grain based food. Since the risk evaluation of the European Food Safety Authority (EFSA) resulted in low tolerable intake levels, the whole German cereal production chain is prompted to minimize sclerotia and ergot alkaloid contamination at any step of grain handling. In addition, the Codex Alimentarius Commission, the intergovernmental body with over 180 members established by the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO), recently adopted an annex for minimization of sclerotia and ergot alkaloid contamination in the Code of Practice for the Prevention and Reduction of Food and Feed contamination (ISBN 978-92-5-107119-9).

Even when the recommendations to prevent and reduce mycotoxin contamination were strictly applied, it cannot be excluded that residues will remain in the final product. It is therefore essential to reveal production factors as appropriate for setting guideline values or maximum limits in cereal based food items. Furthermore, the official bodies monitoring food safety issues need to be able to resort to harmonised and validated methods for reliable detection and quantification of contaminants once maximum levels have been established. Additional rapid test systems enabling the contamination level are desirable at every step along the cereal production chain.

The presentation will address the before mentioned objectives based on examples, relevant literature and own investigations.