Title Post-Harvest Fungal Ecology: Impact of Fungal Growth and Mycotoxin Accumulation in Stored Grain

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Abstract

Grain quality after harvest is influenced by a wide variety of abiotic and biotic factors and has been studied as a stored grain ecosystem. Important factors include grain and contaminant mould respiration, insects and mites, and the key environmental factors of water availability and temperature. Interactions between these factors influence the dominance of fungi, particularly mycotoxigenic species. Studies have shown that growth, mycotoxin production, competitiveness and niche occupation by mycotoxigenic species are influenced by the presence of other contaminant moulds and environmental factors. This has been demonstrated for both *Fusarium culmorum* and deoxynivalenol production, *Aspergillus ochraceus/Penicillium verruscosum* and ochratoxin production and *Fusarium* section Liseola and fumonisin production. Interactions between mycotoxigenic spoilage fungi and insects do occur but have not been studied thoroughly. Some insects disseminate mycotoxigenic species, others are known to use spoilage moulds as a food source, while others avoid certain fungal species. Thus, a more holistic ecological view is needed when considering management approaches to long-term-safe storage of cereal grains after harvest.