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qPCR for *Fusarium* traceability in cereal plants, grain and derived products

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The grain contamination with mycotoxigenic *Fusaria* is of great economic concern to cereal producers and to the grain processing industry and is of great relevance for the quality and safety of the final products, like human food and animal feed. The predominant toxin produced by fungal species associated with Fusarium Head Blight in wheat is deoxynivalenol (DON), a thricotecene that has been shown to cause both acute or chronic toxic effects in human and animals.

The aim of the present study has been the development of a real time qPCR based approach for detection and quantitation of *Fusarium graminearum* and *Fusarium culmorum* presence in bread wheat samples and its validation in comparison with ELISA and HPLC methods. The qPCR assay has been applied for the quantitative detection of the presence of these micotoxigenic fungi on a panel of DNA samples extracted from plants inoculated with Fusaria strains at different developmental stages. Moreover, this assay has been applied to grain samples showing different levels of infection from natural *Fusaria* population. The persistence of *Fusaria* contamination has been followed along the bread production chain on wholemeal, flour and bread.