

Title Effects of maize residues on the *Fusarium* spp. infection and deoxynivalenol (DON) contamination of wheat grain

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Abstract

Fusarium head blight (FHB) of small grains is a worldwide spread disease that reduces yield, causes mycotoxin production in grain and reduces seed quality. Previous crop residues such as maize stalks and grain, and straw of barley, wheat, and other cereals are considered the principal inoculum sources for *Fusarium graminearum* and *Fusarium culmorum*, the most important *Fusarium* spp. causing FHB in Europe. The residues present on the soil surface and in the first 10 cm of soil in tilled and not tilled fields were quantified and their relative influence on *Fusaria* infection and deoxynivalenol contamination was evaluated. The total amount of residues in the first layer of the soil (10 cm) and on its surface was found to be correlated with DON contamination ($R^2=0.848$), but ANOVA showed that tillage was not significant ($P>0.05$) and that the major role in *Fusarium* spp. infection and DON contamination was played mainly by the residues lying on the surface of the soil ($P<0.05$). These results were used to evaluate management strategies of four different previous crop residues by comparing their effectiveness in reducing crop residues from the surface of the soil and the consequent contamination and their costs.