



Biological control of toxigenic *Fusarium* spp. in crop residues: a new tool for IPM in cereals

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Abstract

Infections by toxigenic *Fusarium* spp. can cause Fusarium head blight (FHB) in cereals leading to severe losses. Furthermore, *Fusarium* spp. can produce various mycotoxins resulting in quality losses of grain. Crop residues colonised by *Fusarium* spp. are the main inoculum source for FHB epidemics. Crop rotation and tillage form the corner stones in IPM to prevent FHB by reducing the inoculum load in cereal crops. However, economical reasons often force growers to produce cereals including maize in narrow rotations and use direct drilling or reduced tillage. Under these conditions, the presence of crop residues increases the risk of FHB significantly.

Fusarium spp. were monitored in residues of wheat crops using species-specific qPCR. Under field conditions, *Fusarium* spp. survived better in stem bases than in residues of other plant parts. Antagonists were selected which suppressed colonisation and sporulation of *Fusarium* spp. in crop residues of wheat and maize under controlled conditions in bioassays. Two isolates of *Clonostachys rosea* were subsequently tested under field conditions in Argentina at two locations during two years. The application of spore suspensions of *C. rosea* on crop residues in autumn led to significant reductions of the colonisation by *Fusarium* spp. in the following spring.

Biocontrol products based on *C. rosea* can be a new tool in IPM, especially in cropping systems of cereals with narrow crop rotation and reduced tillage.