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Histopathological assessment of the infection of maize leaves by *Fusarium graminearum, F. proliferatum* and *F. verticillioides*

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Abstract

Young maize plants were inoculated on unfolded mature leaves and on folded immature leaves with *Fusarium graminearum*, *F. proliferatum* and *F. verticillioides* suspensions. Infection and symptom development of disease on these asymptomatic mature leaves and immature leaves were then documented. Subcuticular infection was found by the three *Fusarium* species on both symptomatic and symptomless leaves. The three *Fusarium* species penetrated the stomata of immature leaves by the formation of appressoria-like structures, infection cushions or by direct penetration. Infection by the three species of *Fusarium* via stomata is reported here for the first time. The superficial hyphae and re-emerging hyphae of the three species produced conidia. The macroconidia of *F. graminearum* produced secondary macroconidia and *F. proliferatum* formed microconidia inside the leaf tissues that sporulated through stomata and trichomes. The infection of maize leaves by the three species of *Fusarium* and their sporulation may contribute inoculum to cob and kernel infection.

Key words: *Fusarium* spp., stomata, sporulation, symptom, penetration, foliage infection

1. Introduction

Several fungal species belonging to the genus *Fusarium* are known to constrain cereal production in many regions of the world. Among the economically important diseases of cereal crops caused by *Fusarium* spp. are root, stem and ear rot of maize, Fusarium head blight (FHB)