

Abstract:

Objective: To study the differential response of corn leaves to invasion by *Exserohilum turcicum* comparing compatible and incompatible host-pathogen systems. **Methodology and results:** Maize leaves excised from 14 day-old plants were inoculated with 13 different *E. turcicum* isolates following the detached leaf bioassay technique. The infection process was studied by fluorescent microscopy after clearing leaves using a mixture of ethanol:chloroform, 75:25 (v/v) containing 0.15% trichloroacetic acid, and subsequent staining with calcofluor. Forty-six percent of the isolates had bipolar germination with direct penetration. Penetration occurred by the formation of a fine penetration peg beneath the appressorium. A chlorotic reaction was observed in areas beneath and adjacent to the appressoria and germ tubes. Hyphal growth was scanty in the resistant reaction and abundant in the susceptible reaction. However, there were no significant differences in spore germination and penetration between the resistant and susceptible reactions. **Conclusion and application of findings:** Although the initial pathological histology of *E. turcicum* infection appears to be similar in both resistant and susceptible reactions, mycelial growth is later restricted in the xylem vessels of resistant reactions. Inhibition of mycelial growth results into reduced lesions, delayed wilting and tissue necrosis. Biochemical or other factors that restrict mycelial growth could be studied further for exploitation in breeding programs for maize varieties with resistance to *E. turcicum*.