

originates in the parenchymatous hypoderm, which becomes highly discoloured. Early infection of pith parenchyma cells is also frequent. Vascular tissues become colonised by anthesis and this occurs more rapidly in susceptible genotypes. Occlusion of large xylem vessels was rare during moderate infections while infection of phloem sieve tube elements is common.

### **Quantitative PCR and histopathological investigations of cereal tissues during infection by the crown rot pathogen *Fusarium pseudograminearum***

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Crown rot of wheat is a significant cause of yield losses in many wheat producing countries, particularly Australia where the predominant cause is the fungus *Fusarium pseudograminearum*. Other cereals such as durum wheat and barley can also be affected. Partial resistance has been identified in a small number of wheat lines, such as 2-49 and Sunco, but the mechanisms of resistance shown by these lines have not been identified. Using quantitative PCR based on fungal translation elongation factor  $\alpha$  DNA we have established that fungal biomass in partially resistant genotypes is reduced compared to susceptible genotypes in both seedling and adult cereal tissues. Histopathological examination of infection and colonisation of seedling and adult tissues, using the fluorescent dye solophenylflavine, has not revealed any differences in tissue responses between partially resistant and susceptible host tissues, although there is a significantly slower spread of the fungus in the tissues of resistant genotypes. Infection is initiated predominantly through the stomata of surface-inoculated leaf sheaths. Colonisation of expanded stems frequently