View metadata, citation and similar papers at core.ac.uk

brought to you by CORE

provided by SFA ScholarWorks

Stephen F. Austin State University
SFA ScholarWorks

Faculty Publications | Biology

1991

Fungal Development and Host Cell Responses to the Rust Fungus Puccinia substriata var. indica in Seedling and Mature Leaves of Susceptible and Resistant Pearl Millet [Abstract]

Josephine Taylor
Stephen F Austin State University, Department of Biology, jtaylor@sfasu.edu

C. W. Mims

Follow this and additional works at: http://scholarworks.sfasu.edu/biology


Part of the Biology Commons, and the Plant Sciences Commons
Tell us how this article helped you.

Recommended Citation
Taylor, Josephine and Mims, C. W., "Fungal Development and Host Cell Responses to the Rust Fungus Puccinia substriata var. indica in Seedling and Mature Leaves of Susceptible and Resistant Pearl Millet [Abstract]" (1991). *Faculty Publications.* Paper 82.
http://scholarworks.sfasu.edu/biology/82

This Abstract is brought to you for free and open access by the Biology at SFA ScholarWorks. It has been accepted for inclusion in Faculty Publications by an authorized administrator of SFA ScholarWorks. For more information, please contact cdsscholarworks@sfasu.edu.

Fungal Development and Host Cell Responses to the Rust Fungus Puccinia substriata var. indica in Seedling and Mature Leaves of Susceptible and Resistant Pearl Millet [Abstract]

The rust fungus *Puccinia substriata* var. *indica* established a compatible relationship with host cells, characterized by large numbers of haustoria and an extensive system of intercellular hyphae, in seedling leaves of the susceptible pearl millet cultivar Tift 23DB. At some infection sites, however, necrotic host cells and papillae formed by plant cells adjacent to infection hyphae or haustorial mother cells were noted. In seedling leaves of the moderately resistant cultivar 86-8770, the initial interaction between host cells and the pathogen was quite variable and included successful haustorium formation as well as papilla deposition. Necrosis of host cells apparently developed as a gradual disorganization of the cytoplasm of invaded and surrounding host cells and occurred at all infection sites by 2 days postinoculation. In seedling leaves of the highly resistant cultivar Tift 85DB, haustoria were established at early stages of development, followed by a rapid necrosis response at 1 day postinoculation. Host cell disintegration was noted both before and after abnormalities in haustoria were observed. In mature leaves of all three cultivars, wall deposits were quite extensive at 12 h postinoculation. In addition, necrotic plant cells appeared rapidly in both susceptible and resistant cultivars. Both of these factors may have contributed to the increased resistance to fungal colonization observed in mature leaves.