

Stephen F. Austin State University SFA ScholarWorks

Faculty Publications

Biology

1989

Ultrastructure of the Early Stages of Infection of Peanut Leaves by the Rust Fungus *Puccinia Srachidis* [Abstract]


C. W. Mims

Josephine Taylor

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

E. A. Richardson

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

Mims, C. W.; Taylor, Josephine; and Richardson, E. A., "Ultrastructure of the Early Stages of Infection of Peanut Leaves by the Rust Fungus *Puccinia Srachidis* [Abstract]" (1989). *Faculty Publications*. Paper 81.
<http://scholarworks.sfasu.edu/biology/81>

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.

Ultrastructure of the Early Stages of Infection of Peanut Leaves by the Rust Fungus *Puccinia Srachidis* [Abstract]

Peanut rust disease proved to be an excellent system for ultrastructural study of development of infection structures by the fungus *Puccinia arachidis*. Fungal structures were clearly visible by light microscopy in fixed and embedded samples and could be located either on leaf surfaces or within the large substomatal chambers of peanut leaves. Samples could easily be oriented for thin sectioning. The infection process was a highly orchestrated process involving precisely timed events and highly specialized structures. Infection pegs developed from appressoria over stomata and entered the leaf by growing into the openings between guard cells. Once past the rim formed by the guard cell walls, the infection peg expanded to form a substomatal vesicle in which a synchronous mitotic division of the four nuclei occurred. A primary infection hypha then developed from the vesicle and grew into the mesophyll of the leaf until its tip or side contacted a host cell. A septum then delimited a binucleate or trinucleate terminal haustorial mother cell from the remainder of the infection hypha. The wall of the haustorial mother cell became closely appressed to that of the host cell. Following differentiation of the haustorial mother cell, a penetration peg arose from it and penetrated the host cell wall. The peg invaginated the host cell plasma membrane as it elongated and then expanded at its tip to form the haustorium body into which most of the contents of the haustorial mother cell moved. Meanwhile, the primary infection hypha formed secondary hyphae that gave rise to additional haustorial mother cells and haustoria. *Key words:* *Puccinia arachidis*, peanut rust, infection process, ultrastructure.