EFFECTS OF THIELAVIOPSIS BASICOLA AND MELOIDOGYNE INCOGNITA ON COTTON SEEDLINGS: DO SPATIALLY AND TEMPORALLY SEPARATED PATHOGENS INTERACT ON A HOST? Terea J. Stetina Craig Rothrock Department of Plant Pathology The University of Arkansas Fayetteville, AR Terry L. Kirkpatrick University of Arkansas Hope, AR

<u>Abstract</u>

An interaction between Meloidogyne incognita and Thielaviopsis basicola on cotton has been well established. A previous temporal study suggested that the pathogens do not need to infect at the same time for an increase in disease severity to occur. Controlled environmental experiments evaluated a method of spatial and temporal separation to examine the interaction between M. incognita and T. basicola on cotton. Each pot contained a pasteurized silt loam field soil (40% sand, 56% silt, and 4% clay) having two separate regions. An interior soil area and an exterior soil area were infested with M. incognita (4 eggs and juveniles/g soil) or with T. basicola (100 chlamydospores/g soil), neither pathogen, or both pathogens. Roots were unchallenged or challenged with the appropriate pathogen as they grew through the soil from one region into the other region. Pilot experiments determined that seedling roots were limited to the interior soil region for approximately 14 days after planting. Results showed either T. basicola or M. incognita reduced plant height and root weight. The pathogen interaction reduced plant height when challenged with both pathogens for the first 14 DAP or for the entire 35 days. Plant height was also reduced when both pathogens were separated spatially with each pathogen in separate soil regions, regardless of sequence. Galling by *M. incognita* was reduced when *T. basicola* was present across all treatments, including treatments where T. basicola and M. incognita were located in separate soil regions. Results suggest that the interaction between these pathogens does not depend on intimate contact, and occurs even when they are spatially and temporally separated. These results suggest this interaction may be similar in nature to the interaction between *M. incognita* and *Fusarium oxysporum*.