

**PREVALENCE OF *THIELAVIOPSIS BASICOLA* IN ARKANSAS;
ASSOCIATION WITH ABIOTIC AND BIOTIC SOIL FACTORS**

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Historically, black root rot on cotton, caused by *Thielaviopsis basicola* (Berk. & Broome) Ferraris (syn. *Chalara elegans* Nag Raj & Kendrick), has been recognized as an important seedling disease on cotton in the southwestern United States, but was not considered to be an important component of the seedling disease complex on cotton in the midsouth United States. One reason that *T. basicola* is not detected when isolating from seedlings is because nonselective media are often used and the slow growth of this pathogen limits its detection when other faster growing fungi are present. Selective media have aided in quantifying soil populations of this pathogen and isolation of the pathogen from diseased seedlings. An intensive survey of cotton fields in Ashley County, Arkansas, was undertaken on soils collected between 1995 and 1998 to determine the prevalence of *T. basicola*. Soil samples were collected from cotton fields following harvest. Soil samples were split for fertility and nematode analyses, with an aliquot of the nematode sample being used to assay for *T. basicola*. Fertility analyses were conducted by the state soil testing and research laboratory, and the nematodes were assayed using a semi-automatic elutriator and centrifugal flotation. The fungus was quantified by dilution plating using the pour-plate technique in the selective medium TB-CEN, amended with penicillin G (60 mg/l). The association of *T. basicola* with the root-knot nematode, *Meloidogyne incognita*, was examined as a result of an important interaction between *T. basicola* and *M. incognita* which causes early season seedling death and reduced plant growth and development of surviving plants. *T. basicola* occurred in 75% of 455 fields surveyed (561 samples). The percentage of fields having *T. basicola* populations greater than 100 propagules/g of soil (ppg) was 32%, with 50% of fields having populations greater than 20 ppg. This prevalence of *T. basicola* in Arkansas is similar to areas of California where Holtz and Weinhold detected the pathogen in 24 of 27 cotton field soils also using a modification of the selective medium TB-CEN. The mean population in the California study was 78 ppg compared to 75 ppg in this study. A positive correlation was found between root-knot nematode populations and *T. basicola* populations, 0.34 ($P=0.0001$). Soil fertility factors correlated with *T. basicola* populations included soil pH, 0.13 ($P=0.007$), Ca, -0.13 ($P=0.008$), Mg, -0.18 ($P=0.0002$), and Bo, -0.24 ($P<0.0001$). No association was found between soil populations of *T. basicola* and cropping history, however, only 2.5% of fields had a crop other than cotton the previous season. This study indicates that *T. basicola* is widespread in Ashley county and may also be common throughout the Midsouth. In addition, *T. basicola* is more common in fields having the root-knot nematode indicating an increased likelihood of an interaction between the two pathogens and thus increased plant damage.