

THE EFFECTS OF ROOT-KNOT (*MELOIDOGYNE INCOGNITA*) AND BLACK ROOT ROT (*THIELAVIOPSIS BASICOLA*) ON COTTON (*GOSSYPIUM HIRSUTUM* CV SUREGROW 501) IN MICROPLOTS

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Abstract

The root-knot nematode (*Meloidogyne incognita*) (Kofoid & White) Chitwood) [Mi] is a serious pest of cotton (*Gossypium hirsutum*) worldwide. *Thielaviopsis basicola* (Berk. & Broome) Ferris (syn. *Chalara elegans* Nag Raj & Kendrick) [Tb] is the causal organism of black root rot of cotton. Both Mi and Tb are commonly found in Arkansas cotton fields at population levels which can suppress cotton yields. Methyl bromide-fumigated microplots (76 cm d) constructed of concrete drainage tiles located at the University of Arkansas Southwest Research and Extension Center, Hope, AR, were infested with Tb (21 and 20 spores/cm³ soil in 1994 and 1995, respectively) Mi (5,000/500 cm³ soil) and Tb in combination with Mi. Uninfested micropots served as a control. Plots were planted with 36 Suregrow 501 cottonseeds on 2 May 1994 and 14 April 1995. Smithdale fine sandy loam soil was used, and a completely random design with 10 replications of each treatment was used for both years of this study. Seedling stand survival for Mi x Tb 14 days after planting was lower than the control for both years and for Mi alone in 1994. At 6 weeks seedling stand survival was also lower for Mi x Tb and Mi alone, but there were no differences in seedling survival in 1995 with the set treatments in comparison with that of the control or Tb alone. Plant heights 30 days after planting were lower for Mi x Tb and Mi than the control and Tb alone for both years. The control treatment had fewer nodes above white flower 100 and 108 days after planting in 1994 and 1995, respectively, than where Mi x Tb was present. The number of days that were required until first cracked boll was greater for Mi x Tb and Mi than either the control or Tb alone. Total microplot lint yields were lower for Mi x Tb in 1994 and Tb x Mi or Mi in 1995 than either the control or Tb treatments. There was no effect of treatments on the number of sympodial branches or total bolls per plant, however, the number of branches with bolls in both the first and second position was lower for plots treated with Mi or with Mi x Tb. There was no difference between Mi x Tb or Mi alone in end-of-season nematode population density.