

**SURVIVAL OF PARASITIC AND SAPROPHYTIC
FUNGI ON INTACT SENESCENT COTTON
ROOTS IN GEORGIA**

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Abstract

The survival of pathogenic and saprophytic fungi on residual cotton (*Gossypium hirsutum*) roots was investigated over two years using intact senescent root systems collected from Burke (southeast), Floyd (northwest), and Tift (southwest) counties in Georgia. Tissue sections (1 cm) of primary and secondary roots were assayed to determine mycobiota diversity monthly from December 1994 through April 1996. Forty genera of fungi were isolated including *Alternaria*, *Chaetomium*, *Lasiodiplodia*, *Melanospora*, *Pestalotia*, *Phoma*, and *Trichoderma*. Isolation frequencies of the important cotton seedling disease fungi *Rhizoctonia solani* AG-4 and *Pythium* spp. were low throughout the study. However, *Rhizoctonia* and *Pythium* were present in the roots collected in April of both years, just prior to cotton planting in Georgia. Mean isolation data for total fungi identified in 1995 ranged from 8.8% on the primary roots to 8.1% on the secondary roots. In 1996, primary roots contained 14.8% and secondary roots 14%. Isolation frequencies of *Lasiodiplodia*, *Pestalotia*, and *Phoma* which are common boll rot pathogens varied between the two years. *Fusarium oxysporum*, responsible for seedling disease and wilt of mature plants, was routinely isolated from the root tissues throughout the sampling period. Pathogenicity tests evaluating 30 isolates of *F. oxysporum* collected from the roots in 1995 and 60 isolates from 1996 were conducted on cotton seedlings in the greenhouse. Of the *F. oxysporum* isolates tested, 91.0% were pathogenic, and 13.5% and 15.7% of the isolates caused seedling death in greenhouse trials conducted in 1995 and 1996, respectively. Injury caused by the *F. oxysporum* isolates included cotyledon or leaf lesions, root tissue necrosis and tap root pruning. Mean isolation frequencies of *F. oxysporum* and total *Fusarium* spp. Incidence by *F. oxysporum* for all sites were greater than any other fungi identified during both years of the study. These results proved that seedling disease and boll rot pathogens can overwinter on intact senescent roots.