

**MYCOFLORA ASSOCIATED WITH COTTON
PRODUCTION IN ALABAMA**

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Abstract

A mycoflora study was initiated in the spring of 2000 with the cotton planting season. Six cotton field locations were chosen throughout the state representing the cotton growing regions. Ten cotton plants from each field location were randomly collected monthly throughout the season. To date, 50 plus species of fungi have been identified including several species that have never been isolated from cotton in Alabama.

Introduction

Upland cotton (*Gossypium hirsutum*) is considered to be the most important fiber crop grown in the world and the United States is ranked among the top five producing countries. Alabama produced a cotton yield of 771,114 bales worth approximately \$185,000,000 in 1999. It is estimated that 10% of the yield was lost to fungal pathogens causing pre and post emergence damping-off, leaf spots, wilts, and boll rot diseases. There are conflicting results in the literature pertaining to fungal diseases and information about fungi associated with cotton production in Alabama is limited. Therefore the research objective was to conduct a mycoflora study of cotton to identify and determine the incidence of fungal pathogens in Alabama.

Materials and Methods

Ten cotton plant samples were collected monthly from fields representing the major cotton growing regions of the state. Plant tissues were surface sterilized in 95% ethanol followed by 0.10% sodium hypochlorite. Surface sterilized roots, petioles, leaves, and bolls were then aseptically plated on acidified potato dextrose agar (APDA). Plates were allowed to incubate at room temperature for 5 to 7 days. Fungi were subcultured for identification to species and isolation frequency was recorded for each anatomical location, sample date, and test site.

Results and Discussion

There were a total of 57 species of fungi isolated and identified. Of these 29 have never been reported on cotton in the literature.

The majority of fungi isolated belong to the phylum Deuteromycota. However there were 6 genera which belong to the Ascomycota consisting of *Gelasinospora*, *Chaetomium*, *Talaromyces*, *Theilavia*, *Sordaria*, and *Neocosmospora*. The genus *Rhizopus* which belongs to the Zygomycota and the genus *Pythium* which is now in the kingdom Stramenopila and in the phylum Oomycota were also isolated.

From the known cotton pathogens that were isolated *Fusarium* species were observed the most frequently in the early part of the growing season. From first bloom through full bloom *Alternaria alternata* accounted for more than 75% of the fungi that were isolated from the petioles and leaves of the cotton samples. From full bloom to maturity the majority of fungi isolated were Ascomycetes most of which are not known to be plant pathogens.

The large number of fungi isolated during this study that have never been reported in the literature on cotton are most likely a result of the severely dry growing conditions experienced in Alabama throughout the 2000 season. Future pathogenicity studies will indicate which of these fungi that have not been previously reported on cotton are pathogenic.

Table 1. Fungi Previously Reported on Cotton.

<i>Acremonium strictum</i> *	<i>Lasioidiploidia theobromae</i> *
<i>Alternaria alternata</i> *	<i>Macrophomina phaseolina</i> *
<i>Aspergillus fumigatus</i> *	<i>Myrothecium roridum</i> *
<i>Aspergillus niger</i> *	<i>Neocosmospora vasinfecta</i> *
<i>Cercospora sp.</i>	<i>Nigrospora sp.</i>
<i>Cladosporium herbarum</i> *	<i>Penicillium spp.</i>
<i>Colletotrichum gleosporoides</i>	<i>Phoma sp.</i>
<i>Curvularia lunata</i> *	<i>Phomopsis sp.</i>
<i>Epicoccum purpurascens</i>	<i>Pythium ultimum</i> *
<i>Fusarium equiseti</i> *	<i>Rhizoctonia solani</i> *
<i>Fusarium moniliforme</i> *	<i>Rizopus stolonifer</i> *
<i>Fusarium oxysporum</i> *	<i>Theilavia sp.</i>
<i>Fusarium semitectum</i>	<i>Theilaviopsis basicola</i> *
<i>Fusarium solani</i> *	<i>Trichoderma sp.</i>

* Known to be pathogenic on cotton.

Table 2. Fungi Not Reported on Cotton.

<i>Aspergillus parasiticus</i>	<i>Fusarium subglutinans</i>
<i>Aspergillus sydowii</i>	<i>Gelasinospora sp.</i>
<i>Chaetomium aureum</i>	<i>Gliocladium catenulatum</i>
<i>Chaetomium bostrychoides</i>	<i>Gliocladium roseum</i>
<i>Chaetomium nigricolor</i>	<i>Idriella lunata</i>
<i>Chaetomium sp. nov</i>	<i>Neocosmospora ornamentata</i>
<i>Cladosporium cladosporoides</i>	<i>Paecilomyces inflatus</i>
<i>Cladosporium tenuissimum</i>	<i>Penicillium variable</i>
<i>Colletotrichum dematium</i>	<i>Periconiella sp. nov</i>
<i>Drechslera bicolor</i>	<i>Paecilomyces variotii</i>
<i>Drechslera hawaiiensis</i>	<i>Pestalotia sp. nov</i>
<i>Fusarium lateritium</i>	<i>Sordaria fimicola</i>
<i>Fusarium longipes</i>	<i>Sporothrix sp.</i>
<i>Fusarium proliferatum</i>	<i>Talaromyces sp.</i>
	<i>Theilavia terricola</i>