IMPACT OF VERTICILLIUM WILT ON FIBER QUALITY OF GREENHOUSE-GROWN COTTON (*GOSSYPIUM HIRSUTUM L.*) BREEDING LINES

Addissu G. Ayele
Terry A. Wheeler
Jane K. Dever
Texas A&M AgriLife Research
Lubbock, TX

Abstract

Verticillium wilt is a soil-borne disease that causes significant losses in yield and fiber quality of cotton worldwide. To investigate the impact of Verticillium wilt on fiber quality, six upland cotton genotypes including a susceptible and resistant check were grown at Texas A&M AgriLife Research, Lubbock, TX under greenhouse condition. Genotypes (both inoculated with *V. dahliae* and not infested) were arranged in a randomized complete design with six replications. Data on photosynthesis rate and other related physiological traits were recorded using LI-6400 portable photosynthesis systems at 15-day intervals starting from 30 days after planting (DAP) up to 105 DAP. Fiber quality of bolls harvested from the first and second fruiting positions were tested using High Volume Instrument and Advanced Fiber Information System. The genotypes with Verticillium wilt were highly variable for photosynthesis rate and fiber quality. The rate of photosynthesis and different fiber properties were significantly affected when each genotype was inoculated with microsclerotia of *V. dahliae* suggesting that Verticillium wilt impacts photosynthesis rate, and ultimately cotton fiber quality. Compared to the resistant check, breeding lines 16-13-601V and 17-17-206V maintained good fiber quality and are potential candidates as sources of resistance to develop Verticillium resistant/tolerant varieties in a cotton breeding program.