## ROTYLENCHULUS RENIFORMIS RESISTANT COTTON LINES EXHIBIT HIGHER EARLY-SEASON VIGOR AND FIBER YIELD, WHEN COMPARED TO SUSCEPTIBLE VARIETIES

Bhupinder Singh Daryl R. Chastain Mississippi State University Starkville, MS John L. Snider University of Georgia Tifton, GA K. Raja Reddy Larry J. Krutz Mississippi State University Starkville, MS Salliana R. Stetina USDA, ARS Stoneville, MS

## Abstract

The average loss in cotton production due to Rotylenchulus reniformis in Mississippi exceeds 8% on average. Currently, there are no commercially available cultivars resistant to reniform nematode, which limits producers to chemical control methods. A field experiment was therefore conducted to evaluate new resistant cotton lines (Gossypium barbadense introgressions; 08SS110-NE06 and 08SS100) to reniform nematode infection along with a susceptible genetic standard (Deltapine 16) and commercial susceptible cultivar (PHY 490 W3FE) based on plant growth, development, and yield responses. All four genotypes were grown in the soils naturally infested with reniform nematode exceeding or at economic thresholds for Mississippi. Classical growth analysis was conducted for a two-meter row length at every 1-2 week interval following emergence and was used to derive crop growth indices. Significant genotypic variability was observed for: (1) classical growth traits such as plant height, leaf area, and dry biomass, (2) derived crop growth indices such as crop growth rate and leaf area index, (3) physiological traits such as net photosynthesis, and (4) lint yields. Resistant line 08SS110-NE06 and susceptible cultivar PHY 490 W3FE showed significantly highest and lowest values for most of the measured and calculated traits throughout the growing season. No pattern was observed for seasonal changes in reniform nematode populations extracted from soil samples taken at planting, and peak bloom. Our results indicated that greater vigor in the resistant lines 08SS110-NE06 and 08SS100 might have significantly lowered the degree of damage caused by reniform nematode and contributed to the increased yield, compared to susceptible cultivar PHY 490 W3FE.