1500 Reniform Nematode Resistance in G. arboreum

Mr. Carlos A. Avila , University of Arkansas, Fayetteville, AR
Dr. James McD Stewart , Department of Crop, Soil, and Environmental Sciences, University of Arkansas, Fayetteville, AR
Mr. Robert T. Robbins , Plant Pathology, University of Arkansas, Fayetteville, AR

The reniform nematode (RN), *Rotylenchulus reniformis*, represents a serious threat to cotton production. Resistance is found in diploid *G. arboreum*, but little is known about the resistance mechanism. In this study, we attempted to transfer resistance into upland cotton and to describe the cotton root responses to infection. The transfer of resistance into upland cotton has been accomplished by crossing *G. arboreum* (A2-194) with *G. trilobum* to produce an interspecific hybrid and doubling the chromosome number with colchicine. The resulting allotetraploid was backcrossed with DP491. Plants from the BC_2F_1 and the BC_2F_2 showed resistance to the RN. *G. arboreum* response to infection was evaluated through cDNA-AFLP analysis 16-days after inoculation using a resistant and susceptible accession. Cellular transport, cell cycle, and DNA processing had more transcripts in the susceptible accession than in the resistant one. We hypothesize that the transcripts associated with those processes may be related to syncytia formation. Opposite, processes that may be involved in resistance mechanisms, such as cellular rescue, defense and transcription, had more transcripts in the resistant accession.