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ESTIMATING THE IMPORTANCE OF THE INTERACTION BETWEEN *THIELAVIOPSIS BASICOLA* AND THE ROOT-KNOT NEMATODE ON COTTON USING PAIRED PLOTS IN GROWERS' FIELDS

C.S. Rothrock
University of Arkansas
Fayetteville, AR
T.L. Kirkpatrick
University of Arkansas
Hope, AR

Black root rot on cotton, caused by *Thielaviopsis basicola* (Berk. & Broome) Ferraris (syn. *Chalara elegans* Nag Raj & Kendrick), and the root-knot nematode, *Meloidogyne incognita* (Kofoid & White) Chitwood, have been demonstrated to interact synergistically to cause more damage than either pathogen alone on cotton in microplot and controlled environmental studies where the populations of both pathogens were controlled. In the 2000 and 2001 growing seasons, paired plots were established in growers' fields in Ashley County to try to estimate the potential yield losses from this interaction. Paired plots were established by selecting areas of fields where cotton plants were stunted early in the season and adjacent areas that appeared to have normal plant growth. Plots were a minimum of four rows by 50 ft in length. Soil from plots were assayed for populations of the root-knot nematode and *T. basicola* and soil fertility. The severity of black root rot was assessed as root discoloration and isolation of the pathogen and nematode damage as root galling. The galling index was 0=no galls to 5>50 galls per root system. Plant growth was monitored throughout the growing season and six plants per plot were harvested for yield. Soil population differences between the affected and normal plots were small, with populations of *T. basicola* and *M. incognita* being significantly lower in normal areas of the field compared to affected areas in 2000. A smaller area of the root system had *T. basicola* associated with it for normal plots compared to affected plots, however these differences were small. Large differences were found for galling at mid-season between normal and affected areas, 1.9 and 5.0 in 2000 and 1.9 and 4.1 in 2001, respectively. These differences in galling also were evident at harvest. Few differences were found in soil fertility analyses between affected and normal areas. Affected areas had shorter plants throughout the growing season in both years. In addition, the crop was delayed as indicated by a higher first fruiting node in 2001 and the number of grean bolls at harvest in 2000. Seed cotton yield was reduced 33% in 2000 and 21% in 2001for affected plots compared to normal plots . These results are similar to results from microplot studies for changes in plant growth and yield reductions between microplots infested with both pathogens and control plots not containing either pathogen. These data support the use of paired plots to estimate yield losses when no effective control strategies are available to look at disease losses.