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COMPARISON OF NEMATICIDE EFFICACY IN STRIP-TILLAGE AND CONVENTIONAL TILLAGE COTTON

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Abstract

Acreage of strip-tilled cotton has increased rapidly in the past three years and comprised approximately 25% (375,000 acres) of the cotton acreage in Georgia in 2001. The strip-tillage method adopted in Georgia uses a single sub-soil shank to provide deep tillage for each row and a combination of disks and rollers to create a narrow (8-10 inch) seedbed leaving a majority of the field surface undisturbed with cover crop residue largely intact. Planters may be attached to the strip-tillage implement so that tillage and planting can both be performed with a single pass through the field, thereby saving time and money. Strip-tillage generally increases early-season soil organic matter and soil moisture, but decreases soil temperature, and such changes may affect the efficacy of soil-applied nematicides such as alicarb (Temik) and 1,3-Dichloropropene (Telone II). To minimize the risk of phytotoxicity, the label for Telone II does not allow planting at the same time as fumigation. *Hoplolaimus columbus*, the Columbia lance nematode, is one of the most damaging nematode pathogens of cotton in Georgia and is managed primarily with nematicides. The objectives of this study were to determine if *H. columbus* management in cotton with nematicides is affected by tillage, if tillage affects *H. columbus* populations, and if Telone II fumigation can be used effectively in strip-tilled cotton. A 2x4 factorial arrangement of treatments in a randomized complete block design with six replications was used in a field with Dothan sandy loam soil in Midville, GA, naturally infested with *H. columbus*. One factor was tillage (conventional tillage or strip-tillage) and the other factor was nematicide treatment (3.0 gal/A Telone II at-planting plus 3.5 lbs/A Temik in furrow, 3.0 gal/A Telone II 5-days before planting plus 3.5 lbs/A Temik in furrow, 3.5 lbs/A Temik in furrow, and 6.0 lbs/A Temik in furrow). Cotton was planted on 23 May and harvested on 17 Oct. The number of seedlings in forty feet of row were counted 37 days after planting to determine if nematicide treatment or tillage affected the number of seedlings per foot of row. Soil samples for nematode analysis were collected on 18 May, 29 Jun, and 4 Oct. The number of plants per foot of row was not affected by tillage method or nematicide treatment, including Telone II application at-planting. For each nematicide treatment, mid-season nematode populations were numerically lower in strip-tilled plots than in conventionally-tilled plots, but differences were not statistically significant (P 0.05) and numerical differences were not evident at harvest. Neither nematicide treatment or tillage method affected nematode population levels or cotton yield statistically, though yield was numerically higher in strip-tilled plots than in conventionally-tilled plots.