POTENTIAL IMPLICATIONS OF THRIPS CONTROL FOR NEMATODE MANAGEMENT

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Abstract

Multi-purpose seed treatments, those which combine insecticide, fungicide, and nematicide, have gained acceptance in recent years. In Georgia, years of research indicate that insecticide seed treatments often provide reduced thrips control compared to the standard in-furrow insecticide/nematicide aldicarb (Temik). Available nematicides -- including fumigants, in-furrow materials, and seed treatments -- are short-lived in the environment, typically involve only a limited treatment area, and therefore provide only temporary effects on nematodes. The apparent goal of these treatments is to foster rapid, early crop root growth before nematode populations resurge. An irrigated field trial was conducted at Tifton, GA, to evaluate the cotton growth and yield effects of at-plant treatments, including three commercial seed treatments (Avicta Complete Pak, Aeris Seed-Applied System, and Cruiser) and an in-furrow application of aldicarb at 5.0 lb/A, each with and without follow up foliar applications of acephate (Orthene). All plots included a fungicide seed treatment. 'DP 555 BG/RR' was planted on April 30, and harvested on September 25, 2007. Experimental arrangement was a split plot design with four replications. Main plots, which were 4 rows (36-inch) by 40 ft, were the at-plant treatments; sub-plots were 2 rows wide and consisted of the foliar insecticide treatments and an untreated control. The acephate treatment included two applications at 14 oz/A made 5 and 12 days after cotton emergence. Data collection included stand counts; thrips damage ratings; cotton seedling vigor ratings; fresh root and shoot weights from three plants 29 and 42 days after planting; soil samples for nematode assay at planting, 6 wk after planting, and at harvest; seed cotton and lint yields and fiber quality analysis. Thrips pressure was moderate; nematode numbers were extremely low. Visual ratings of thrips injury were significant for at plant treatments: untreated > seed treatments > aldicarb; and for foliar sprays: untreated > acephate. In the absence of the follow up foliar insecticide treatment, fresh root weights followed the exact reverse trend: aldicarb > seed treatments > untreated. Acephate statistically enhanced root weight for the at-plant untreated control and the Cruiser seed treatment. Root weights were well correlated with visual thrips damage. Lint yields were influenced by at plant treatments: aldicarb, Avicta Complete Pak > Aeris Seed-Applied System, Cruiser > untreated; likewise, foliar acephate resulted in increased yield compared to the plots which did not receive follow up sprays. The important point is that poor thrips control, because of the resulting plant damage and negative effects on early root growth, may diminish the potential positive effects of nematicide treatments.