IMPACT OF EARLY SEASON THRIPS CONTROL ON ROOT DEVELOPMENT AND NEMATODE MANAGEMENT

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Abstract

Thrips are a predictable insect pest of seedling cotton in Georgia. Thrips damage results in stunted plants, delays in maturity, and in severe cases loss of apical dominance and even stand loss. Systemic insecticides are often used at planting and provide effective control of thrips resulting in positive economic returns in most situations. Nematodes infest over 70 percent of Georgia cotton acres. At plant pesticide treatments often target both nematodes and thrips. One goal of an effective nematode management program is to achieve rapid early root growth before the buildup or resurgence of nematodes following a nematicide application. Does thrips injury impact early season root growth? If so, does excessive thrips injury impact nematicide performance?

Previous studies have suggested that excessive thrips injury negatively impacts root growth (Sadras and Wilson 1998, Grey et al. 2006, Brown et al 2008). Data from a trial conducted in Tift Co. GA during 2008 in the absence of nematodes further confirmed that thrips injury negatively impacts early season root growth. A very strong correlation (R^2>0.90) was also observed for above ground and below ground plant growth in this trial. A field trial evaluating the impact of thrips control (i.e. root growth) and nematode management was also established during 2008 in a root knot nematode infested field in Tift Co. GA. A split plot design was used; main plots consisted of untreated, Cruiser seed treatment, Avicta Complete Cotton seed treatment, and Temik. Split plots included untreated and foliar sprayed (2 applications of acephate) to minimize thrips injury. Thrips damage ratings at 29 days after planting (DAP) were greatest in untreated plots, followed by the seed treatments, and lowest in Temik plots; foliar acephate sprays significantly reduced thrips damage and no treatment interaction was observed. Root knot nematode gall ratings were assessed by visually examining roots from 5 randomly selected plants at 30 and 45 DAP. No significant differences were observed in gall ratings at 30 DAP. A significant interaction ($p<0.1$) was observed for gall ratings at 45 DAP. Differences in gall ratings at 45 DAP between sprayed and unsprayed main plots tended to be greater in at plant treatments which did not provide acceptable thrips control and/or did not have nematicidal activity; the greater differences in gall ratings may have been due to differences in root mass among treatments which diluted similar nematode populations. Similar responses were observed in terms of yield. These preliminary data do not suggest we need to make wholesale foliar thrips treatments. Unneeded early season foliar insecticides may create additional problems, potentially flaring aphids or spider mites. The primary point is that poor thrips control may potentially off-set the positive effects of nematicides by limiting early season root growth. Additional investigation is needed in this area.

References

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