A COST-EFFECTIVE APPROACH FOR COMBINING NEMATICIDES, STARTER FERTILIZERS, AND PLANT GROWTH REGULATORS IN ORDER TO CREATE A SUSTAINABLE MANAGEMENT SYSTEM FOR THE SOUTHERN ROOT-KNOT NEMATODE, *MELOIDOGYNE INCOGNITA*

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Abstract

In Alabama, the southern root-knot nematode (RKN), *Meloidogyne incognita,* ranks second in importance to cotton producers behind the reniform nematode, *Rotylenchulus reniformis*. Corn is a host to RKN but not reniform, making management of RKN in cotton-corn rotation systems extremely important. The objective of this research is to develop an economical management strategy for RKN that combines nematicides with starter fertilizers and plant growth regulators with goals of increasing plant health and limiting RKN reproduction. This research was performed in field studies over a two-year span (2016-2017) at PBU in Tallassee, AL and at BARU in Brewton, AL. In 2016, Counter 20G + Ascend + Pop-up (nematicide + PGR + starter fertilizer) was the most effective treatment in increasing early plant growth at both locations, increasing both plant height and plant biomass over the control ($P < 0.05$). The early plant growth increases translated to a positive net gain on yield ($113.13/ha) at BARU, but not at PBU. Counter 20G + Ascend was the only treatment that provided a net increase in dollars per hectare at both PBU and BARU ($2.61/ha and $54.98/ha, respectively). In 2017, a 5x5 starter fertilizer application was evaluated (5 cm below; 5 cm beside the planting furrow) along with the previous in-furrow starter fertilizer application. Because of excess rain in the 2017 growing season, yield differences were not observed; however, early plant growth advantages were. Our system for RKN management in corn provided positive economical returns in 1 out of 4 trials, and exhibited the potential to be applicable to producers in the Southeast.