ASSESSMENT OF RESISTANT COTTON VARIETIES AND TELONE II FOR MANAGEMENT OF NEMATODES IN GEORGIA J. M. Kichler University of Georgia Cooperative Extension Moultrie, GA R. C. Kemerait University of Georgia Cooperative Extension Tifton, GA

Abstract

Meloidogyne incognita is a widespread plant-parasitic nematode affecting cotton production in Georgia. Soil fumigation with 1,3-dichloropropen (Telone II) is an effective tool for management of nematodes affecting cotton. Additionally, varieties of cotton with increased resistance to the southern root-knot nematode have become available to farmers. The objective of this study was to assess the opportunity for cotton production in a field infested with Meloidogyne incognita where susceptible and partially resistant varieties were planted in plots either funigated with Telone I (3 gal/A) or untreated. The field experiment was established in Colquitt County, Georgia in 2014 to evaluate the impact of Telone II on resistant and susceptible cotton varieties. The field site was planted to peanut in 2013; however has long been planted to cotton and the southern root-knot nematode is a significant problem. A split plot design (4 replications) was deployed. The whole-plot treatment was variety; the subplot treatment was fumigation (or not0 with Telone II, 3 gal/A. Plots were planted one day following application of Telone II; no phytotoxicity was observed. Susceptible cotton varieties included DPL 1252 B2RF, PHY 499WRF, PHY 375 WRF and FM 1740 B2F. Resistant cotton varieties included DPL 1454 NR B2RF, ST 4946 GLB2, PHY 367 WRF and PHY 427 WRF. A blended seed treatment (85% PHY 427 WRF and 15% PHY 333 WRF) was also included. Ratings included soil nematode counts (J2/100cc soil), height measurements, and root gall damage. Plots were taken to yield. Root-knot nematode counts (J2/100cc) at 155 DAP generally showed a numeric increase in plots treated with Telone II, except for plots planted to PHY 367 WRF, PHY 427 WRF and the blended seed. Significant increases in end-of-season nematode counts were observed where PHY 499 WRF and FM 1740 B2F were planted to plots fumigated with Telone II. However, nematode counts were below the University of Georgia Extension economic threshold value (100 J2/100cc soil) for all treatments. Cotton planted to plots fumigated with Telone II were taller at 28 DAP then was cotton of the same variety planted in non-treated plots. Cotton from all varieties planted in Telone II-treated plots had numerical increases in yield as compared to seed planted in untreated plots. Such increases in yield were statistically significant ($p \le 0.10$) except for PHY 499 WRF, PHY 375 WRF and ST 4946 B2F. Cost analysis was conducted to assess profitability of applying Telone II in this study. Assumptions for this analysis included a cotton price of \$0.60 lb, and \$60.00 per acre for Telone II. Breakeven yield for this situation was 100 lbs. Varieties where lint increase with use of Telone II exceeded 100 lb/A included PHY 427 WRF, PHY 427.85 - PHY 333-15 blend and FM 1740 B2F. It is believed that because peanut, a non-host for M. incognita, was planted in field in 2013, the benefits of fumigation with Telone II were reduced. In summary, fumigation with Telone II numerically increased plant height and yield for all varieties. Nematode populations tended to be higher at the end of the season where Telone II was used. Planting nematode-resistant varieties reduced the damage to the root-system from nematodes and also reduced soil nematode counts, but did not insure and increase in yield over susceptible varieties in this field where nematode populations were described as "below economic threshold" at the end of the season.