NEMATICIDE TREATMENT EFFECTS ON RENIFORM NEMATODES IN COTTON Stephen J. Komar, Paul D. Wigley, Robert C. Kemerait, and William D. Shurley The University of Georgia Cooperative Extension Service Morgan, GA and Tifton, GA

Abstract

A split-plot experiment was conducted to evaluate reniform nematode *Rotylenchulus reniformis* control options in cotton. Main plot treatments included, 1,3- dichloropropene (Telone II) injected behind the sub-soil shank and no Telone application. Sub plot treatments included, 0xamyl (Vydate C-LV), two at planting rates (3.5 and 6 lbs) aldicarb (Temik 15G), and a split-application of Temik (6 lbs AP + 7 lbs at pinhead square). All treatments provided a numerical reduction in nematode population at early square. The addition of Telone II provided a significant reduction in nematode population in all treatments (P= 0.05). Nematode populations increased above treatment threshold levels mid-season in all treatments with the exception of two lowest rates of Temik during the 2001 season. Nematode levels were variable in the test field during the 2002 season. The addition of Telone II increased yields in all treatments by nearly 100 pounds per-acre during the 2001 season, with the greatest yields being recorded in the Telone plus Vydate and the Telone plus Temik (6 lbs AP + 7 lbs 45 DAP). Differences were observed in net returns per-acre in 2001 ranging from \$18 to \$90 over the control (Temik 3.5 lbs AP). No differences were observed among treatments in yield or net returns during the 2002 growing-season.

Introduction

Reniform nematode *Rotylenchulus reniformis* is a serious pathogen of cotton. Yield losses from this pest commonly are 10-25 % in Georgia, and have been recorded as high as 50 % in some areas. Reniform nematode infestations above The University of Georgia treatment threshold (250 nematodes/ 100 cm³ soil) have been recorded in Calhoun County, Georgia and several other counties across the state. Due to the importance of cotton production in the state and the current low price of the crop, economical and effective control of this pest is essential for profitable land use.

Materials and Methods

Experiments were conducted on the David Taylor farm in Morgan, Georgia during the 2001 and 2002 growing seasons to evaluate reniform nematode control options in cotton. The test field, a Norfolk sandy loam, was selected based on its previous history of reniform nematode pressure (> 1000 nematodes/100 cm³). Cotton (Stoneville 4892 BR) was planted on 8 May 2001and 28 May 2002. A split plot design was used with 3 replications. Main plot treatments included, 1-3- dichloropropene (Telone II) 3 gal/A injected before planting and no Telone application. Sub plot treatments included; oxamyl (Vydate C.L.V.) 17 oz/A at 2-3 leaf stage, aldicarb (Temik 15G) 3.5 lbs/A A.P., Temik 6 lbs/A A.P. and Temik (6 lbs/A A.P. + 7 lbs/A side-dressed 45 at pinhead square). Soil samples were taken for nematode assays at planting, early square, and mid-season. All plots were managed identically except for nematicide treatments. Plots were irrigated as needed. Cotton was harvested on 5 November 2001, and 26 December 2002. Yield was calculated at 37 % of seed cotton weight. It was assumed that the grower took the loan deficiency payment and sold the cotton on one week after harvest. A partial budgeting analysis was conducted taking into account only differences in nematicide treatment costs. Yield and income data were subjected to analysis of variance and means separated using Duncan's Multiple Range test (P= 0.05).

Results and Discussion

Reniform nematode pressure was heavy in the test field in 2001 with nearly double the treatment threshold (250 nematodes/100 cm³) recorded in all samples taken before planting. Nematode pressure was variable during the 2002 season . All nematicide treatments provided a numerical reduction in nematode population at pinhead square. The addition of Telone provided significantly greater control of nematodes in all treatments during the 2001 season. Numerical reductions in nematode populations were observed in Telone plots during the 2002 season. Nematode populations increased above treatment thresholds 75 days after planting during the 2001 season in all plots with the exception of the control (3.5 lbs Temik AP) and the next lowest treatment (6.0 lbs Temik AP). Mid-season rains prevented sampling in 2002. Yields were variable across treatments in 2001 with the greatest yield being recorded in the plots receiving Telone Plus Temik (6lbs AP + 7 lbs 45 DAP) and Telone Plus Vydate. Differences in net return were observed in 2001 ranging from an \$18 to \$90 benefit over the control (3.5 lbs Temik AP). Severe rains prevented timely harvest of the plots during the 2002 season. No differences were observed in yield or net-returns, however, numerical benefits were observed in some treatments