EFFECT OF ROTATION ON RENIFORM NEMATODE CONTROL IN COTTON

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Abstract

Cotton rotations have long been known to work extremely well on several types of pests. However, no work had been completed in association with reniform nematodes. Five crops, including cotton were included in the rotation study. Baseline information from 1994 with nematicide vs. non-nematicide treated plots indicated a 262 pound yield increase where a nematicide was used. The 1995 rotation data resulted in yield increases of 51 pounds following corn, 58 pounds following cotton treated with a nematicide, 195 pounds following soybeans, and 262 pounds following grain sorghum. These yields were taken following two major hurricanes.

Introduction

This rotation study was initiated in 1994 and developed to continue for four years. Work completed follows previous work on reniform nematodes that began in 1988. The location has an even distribution of reniform nematodes and is typical of the reniform fields in southwest Alabama.

Materials and Methods

The study was conducted in Huxford, AL in southwest Alabama. Approximately six acres was rented from the cotton producer. Land was initially prepared and fertilized by the grower. Plots consisted of eight rows 50 feet in length. Row spacing was 38 inches and the treatments were replicated eight times. The cotton variety was DES 119 while the soybean variety selected for the rotation (based on resistance to reniform) was Centennial. The crop was sprayed for insects on a timely basis by the grower and was cultivated and harvested by the Alabama Agricultural Experiment Station.

Results and Discussion

From previous work, nematicides were known to be effective on reniform nematodes. Initial data from 1994 shows this to be true (Table 1). Reniform nematode populations were held to relatively low levels behind a rotation crop but rebounded to extremely high levels following cotton (Table 2). Yields following all rotation crops were equal to or much better than those of continuous cotton with a nematicide (Table 3). However, it needs to be noted that conditions for nematicide uptake were not favorable at the time of planting and could have influenced data. Two major hurricanes were experienced in late season which could have influenced the results. To realize the full effect of this study, several years of information needs to be collected. Hopefully the study will be continued for the remaining two years to examine the long term effect of rotation on reniform nematodes.

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Table 1. Effect of Nematicides on Cotton Yields, Huxford, AL - 1994

Treatment	Seed Cotton(Lb/A)	Increase (LB/A)
Cotton - 7 lb. Temik	2280	672
Cotton - No Nematicide	1608	- - -

Table 2. Reniform Nematode Populations, Huxford, AL - 1995

Rotation (1994-1995)	Reniform/100cc	
	5/17/95	10/18/95
Corn/Corn	162	62
Corn/Corn	126	80
Corn/Cotton	69	1101
G.Sorghum/ G.Sorghum	183	1
G.Sorghum/ G.Sorghum	251	17
G.Sorghum/ Cotton	134	812
Bahia/Bahia	161	12
Bahia/Bahia	115	44
Soybean//Soybean	171	9
Soybean/Cotton	72	740
Cotton (Disyston)	584	569
Cotton (Temik)	380	404

Table 3. 1995 Rotation Yields, Huxford, AL - 1995

Previous Crop	Seed Cotton (Lb/A)	Lint (Lb/A)
Corn	1602	561
G.Sorghum	2143	750
Soybean	1972	690
Cotton	1473	516
Cotton (T)	1620	567
LSD (0.05)	203	
(0.01)	294	

Cotton - Treated with 5 LB/A Disyston in-furrow
Cotton(T) - Treated with 7 LB/A Temik in-furrow
Lint percent calculated at 35%

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