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GRAIN SORGHUM AS A TRAP CROP FOR THE CORN EARWORM IN COTTON

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Abstract

The ability of grain sorghum to serve as a trap crop for the corn earworm (CEW) in cotton was investigated in Mystic, GA in 2001. Three 150 ft x 12 row strips of sorghum (sorghum trap) and 3 strips cotton (cotton trap) were planted along a single edge of 3 cotton fields adjacent to corn. Corn earworm populations were monitored in the sorghum trap, in the cotton trap, in field cotton associated with the sorghum trap, in field cotton associated with the cotton trap, and three control fields with no trap crop, but still adjacent to corn. CEW eggs were much higher in the sorghum trap higher than in the cotton trap. CEW eggs were not different between trap cotton and field cotton associated with the traps. Also, CEW eggs were not different for field cotton associated with the sorghum trap and field cotton associated with the cotton trap. Control fields had higher CEW eggs than trap fields. These results demonstrated that grain sorghum was an effective trap crop for the CEW in cotton.

Introduction

Since *Bt* cotton can be susceptible to corn earworm, and corn earworms have developed resistance to pyrethroids in isolated locations in the southeast, the corn earworm can be a serious problem in cotton in Georgia. A trap crop which is highly attractive to a pest can be an effective control measure by becoming a sink for the pest. Stern et al. (1969) reported that strip-planting of alfalfa in cotton was a very effective means of keeping *Lygus* bugs out of cotton by trapping the insects in alfalfa. Grain sorghum is highly attractive to corn earworm moths, and planting a grain sorghum strip crop in cotton could provide a trap crop for the corn earworm. Trapping the corn earworm in a grain sorghum strip in cotton would be especially beneficial when corn is no longer available as a host for the corn earworm. This study was designed to determine if a strip crop of grain sorghum served as a preferred ovipositional site for the corn earworm over cotton.

Materials and Methods

The ability of grain sorghum to serve as a trap crop for the corn earworm (CEW) in cotton was investigated in Mystic, GA in 2001. Three 150 ft x 12 row strips of sorghum (sorghum trap) and 3 strips cotton (cotton trap) were planted along a single edge of 3 cotton fields adjacent to corn. Corn earworm populations were monitored in the sorghum trap, in the cotton trap, in field cotton associated with the sorghum trap, in field cotton associated with the cotton trap, and three control fields with no trap, but adjacent to corn. Data were analyzed using t-tests.

Results and Discussion

CEW eggs were much higher in the sorghum trap higher than in the cotton trap demonstrating that grain sorghum was an effective trap crop for the CEW in cotton (Table 1). CEW eggs were not different between trap cotton and field cotton associated with the traps, and CEW eggs were not different for field cotton associated with the sorghum trap and field cotton associated with the cotton trap. These results indicated that the sorghum was not attracting CEW moths to cotton. Control fields had higher CEW eggs than trap fields sometimes even reaching levels higher than the economic threshold. The sorghum trap in the trap fields protected the cotton so economic thresholds of CEW did not occur eliminating the need for insecticide applications for this pest in these fields.

In summary, grain sorghum was an effective a trap crop for the CEW in cotton when corn earworms migrated from corn.

References

Stern, V. M., A. Mueller, V. Sevacherian, and M. Way. 1969. *Lygus* bug control in cotton through alfalfa interplanting. Calif. Agric. 23: 8-10.

Table 1. CEW eggs in sorghum trap, cotton trap, field cotton associated with sorghum trap, field cotton associated with cotton trap, and cotton in control field with no sorghum trap.

		# CEW eggs/plant			% plants with CEW eggs			#plants/6 in.
Plot	**Crop**	**n**	**mean**	**SE**	**max. over time**	**mean**	**SE**	**of row (mean)**
Sorghum (S) Trap	S	8647	0.422	0.019	73.87	22.8	0.008	2.62
Cotton (C) Trap	C	1187	0.025	0.008	8.33	2.5	0.008	2.43
Field cotton-S	C	2974	0.021	0.005	10.94	2.1	0.005	1.31
Field cotton-C	C	2916	0.020	0.005	10.42	1.9	0.005	1.77
Control field (CF)	C	1251	0.047	0.012	35.71	4.4	0.007	1.17

Comparisons	**Comparing**	**Diff. mean**	**SE diff.**	**df**	**|*t*|**	**P**
C Trap vs Trap	CEW	-0.397	0.026	9834	15.5	0.0001
C Trap vs Field Cotton	eggs/plant	0.006	0.009	4103	0.7	0.4854
Field cotton-S vs Field Cotton-C		0.001	0.007	5890	0.2	0.8396
CF vs Trap Crop Fields		0.028	0.011	4167	2.6	0.0083
Cotton Trap vs S Trap	% plants with	-0.203	0.011	9834	18.3	0.0001
Cotton Trap vs Field Cotton	CEW eggs	0.0063	0.009	4103	0.7	0.4395
Field cotton-S vs Field Cotton-C		0.002	0.007	5890	0.3	0.7760
CF vs Trap Crop Fields		0.025	0.008	4167	3.2	0.0013
C Trap vs S Trap	CEW	-1.062	0.068	9834	15.5	0.0001
C Trap vs Field Cotton	eggs/plant	0.026	0.015	4103	1.7	0.0819
Field cotton-S vs Field Cotton-C	weighted by	0.003	0.010	5890	0.3	0.7348
CF vs Trap Crop Fields	plant density	0.028	0.013	4167	2.2	0.0303