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STINK BUG DISTRIBUTION BASED ON BLACK LIGHT TRAP CAPTURES ACROSS NORTH CAROLINA IN RELATION TO SURROUNDING AGRICULTURAL HOST PLANT RATIOS

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Abstract

Stink bug populations have begun to flourish and exploit cotton in North Carolina as a result of a reduction in the uses of synthetic insecticides on Bollgard® cotton varieties. Black light traps were utilized from mid July through the end of August to capture green stink bugs in agricultural environments. Trap capture numbers were analyzed against the acreage of surrounding crops to determine if a correlation exists. Based upon the results, no correlation could be determined. Black light trap captures at different times of the growing season may express correlations with various surrounding crops and should be investigated.

Introduction

The use of Bollgard® cotton varieties has resulted in a reduced use of synthetic insecticides allowing stink bugs to flourish and exploit cotton. In turn allowing stink bugs to increase their pest status on cotton (Greene and Herzog 1999, Leonard et al. 1999, Peters et al. 2004, Roberts 1999, and Willrich et al. 2004). Current information on the ecological movement of stink bugs is minimal within North Carolina agroecosystem habitats.

Reported here are results of a study to determine if black light trap captures of green stink bugs, *Acrosternum hilare* (Say), can be correlated to the acreage of surrounding agricultural crops.

Materials and Methods

Thirty-five black light traps were setup in agricultural production areas across North Carolina. Traps were setup near field edges in early to mid July and taken down near the end of August for an average of seven to eight weeks of sampling. Black light traps were checked every two to three days and green stink bug numbers were determined. During the growing season, crop areas surrounding the black light traps were mapped by hand and crop areas defined. Aerial maps of the black light trap locations were obtained using the TerraServer web site. The aerial maps were then imported into ArcMap® and surrounding fields were identified using the hand drawn maps. A 366 meter buffer was established around the black light trap and the acreage of each crop within the buffer was determined using ArcMap® tools. Data were square root transformed and analyzed using the Proc Mixed procedure in ANOVA.

Results

Several different crops were found to be contained within the black light trap buffers. These crops included: corn, cotton, pasture, peanut, soybean, tobacco, trees, and vegetables. Results indicated that there is no correlation between black light trap captures of green stink bugs and the acreage of surrounding crops (Table 1.)

Table 1. Correlation coefficients for crop acreage ratios based on green stink bug captures from black light traps across North Carolina, 2005.

Crop	Estimate	P-value
Corn	0.1651	0.1797
Cotton	0.1297	0.2967
Pasture	0.08162	0.5267
Peanut	0.04506	0.7297
Soybean	0.1397	0.2547
Tobacco	0.2590	0.1610

Trees	0.1179	0.3427
Vegetables	0.1241	0.3147

Significant at $P < 0.05$.

Discussion

Based on these findings, black light trap captures of green stink bugs during this time period of the growing season could not be correlated to the acreage of surrounding crops. It may, however, be possible to find correlations between black light trap captures and the acreage of surrounding crops at different time periods during the growing season and requires further investigation.

Acknowledgments

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