THRIPS RISK ASSESSMENT AND USE OF SUPPLEMENTAL FOLIAR INSECTICIDE APPLICATIONS

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Abstract

Data was summarized from field experiments conducted in Georgia which included a neonic seed treatment with and without a foliar insecticide application at the 1-leaf stage. In total 26 trials conducted from 2001 to 2014 were included in the data summary. Individual trials were assembled into thrips "Risk Groups" based on planting date and tillage practice. Cotton planted prior to May 10 in a conventionally tilled system was considered a high risk environment for thrips and cotton planted after May 10 and/or in a reduced tillage system was considered low risk for thrips. Thrips infestations were approximately five times higher in untreated plots in high risk trials compared with low risk trials. Yield responses to neonic seed treatments were also greater in high risk trials compared with low risk trials. There was no significant difference in yield when a foliar insecticide supplemented thrips control provided by the neonic seed treatment in the low risk trials. However, yields were significantly higher when a foliar insecticide was used to supplement a neonic seed treatment in high risk trials. These data demonstrate that the cultural practices planting date and tillage practice are viable predictors of thrips and the level of management which may be needed to preserve yield.

Introduction

Thrips, primarily tobacco thrips, *Franliniella fusca* (Hines), are predictable and economic insect pests of seedling cotton in Georgia and the southeastern US. Thrips injury symptoms range from minor leaf distortion, plant stunting, and loss of yield potential to loss of apical dominance and even stand loss in severe cases. Preventive insecticide treatments are used by most growers at planting for early season thrips control due to the predictability of thrips and the consistency of yield preservation. The most common preventive treatments include the systemic insecticides imidacloprid or thiamethoxam applied as a commercial seed treatment. Both imidacloprid and thiamethoxam are neonicotinoid insecticides and performance in Georgia has historically been similar when used as a seed treatment for thrips control; thus we will refer to these insecticides collectively as neonic seed treatments. However, supplemental foliar insecticide sprays may be needed in addition to preventive treatments in some environments to further preserve yield potential.

Numerous studies on thrips biology have examined the impact of cultural practices such as planting date and tillage on thrips infestations. In general cotton planted early experiences greater thrips infestations compared with later plantings. Additionally cotton growth may be hindered due to cool temperatures when cotton is planted early. Previous research and observation has shown that rapid seedling growth is a desirable component of a successful thrips management program. Tillage also has a significant effect on thrips; infestations are generally significantly lower in reduced tillage systems where cover crop residues remain on the soil surface at planting. A risk index of thrips infestations may be predicted for cotton planted based on the two cultural practices planting date and tillage. The objective of this study was to quantify the effect of a supplemental foliar insecticide spray when a neonic seed treatment is used in high and low risk thrips environments.

Materials and Methods

Data was summarized from field experiments conducted in Georgia which included a neonic seed treatment with and without a foliar insecticide application at the 1-leaf stage. In total 26 trials conducted from 2001 to 2014 were included in the data summary. Individual trials were assembled into "Risk Groups" based on planting date and tillage practice. Trials which were planted prior to May 10 in a conventional tillage system were placed in the high thrips risk group. Whereas trials planted after May 10 and/or in a reduced tillage system were placed in the low thrips risk group. Trial yields from the neonic seed treatment alone and the neonic seed treatment+foliar 1-leaf treatment were compared in each risk group using a paired t-test.

Results and Discussion

Nineteen trials were placed in the high thrips risk group and seven trials were placed in the low thrips risk group. Yields were numerically increased in 24 of 26 trials when a neonic seed treatment was used compared with no insecticide treatments (Figure 1). The average yield response was 279 lbs. lint per acre in high risk environments and 121 lbs. lint per acre in low risk environments. Thrips counts were approximately 5 times higher in high risk trials compared with low risk trials. Mean thrips per 5 plants at three weeks after planting were 9.17 immatures and 2.38 adults in low risk trials compared with 46.33 immatures and 9.38 adults in high risk trials.

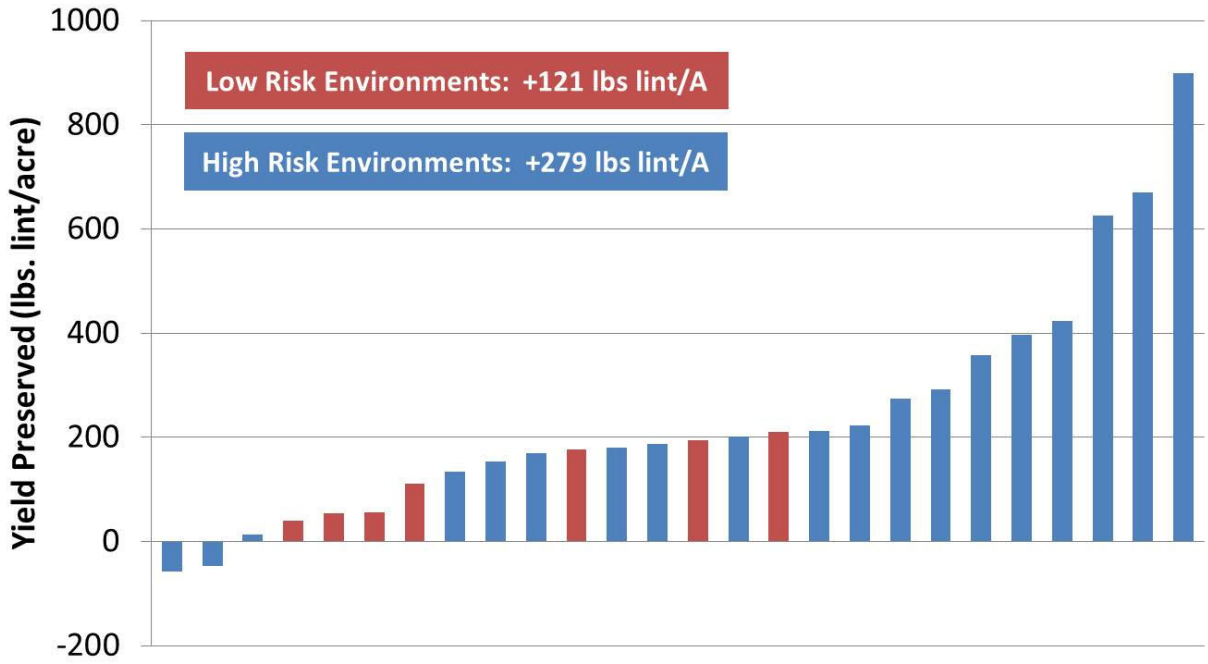

Figure 1. Yield preserved when neonic seed treatments compared with no insecticide treatments in low and high thrips risk environments; trials conducted in Georgia from 2001-2014.

Foliar insecticide (generally acephate at 0.18 lb ai/acre) was applied at the 1-leaf stage. On average the foliar insecticide was applied at 16 DAP with a range of 13-20 DAP. Figure 2 illustrates mean yields for the neonic seed treatment alone and neonic seed treatments+foliar in the low risk and high risk groups. Yields were not statistically different (prob (t) = 0.6043) for neonic seed treatments with and without a supplemental foliar spray in the low risk environment, 1335 and 1348 lbs. lint/acre respectively. Whereas, the neonic seed treatment+foliar treatment had significantly (prob (t) = 0.0038) higher yields compared with the neonic seed treatment alone in the high risk environment, 1462 and 1557 lbs. lint/acre respectively. These data suggest that thrips scouting should be a priority, especially on conventionally tilled cotton planted early.

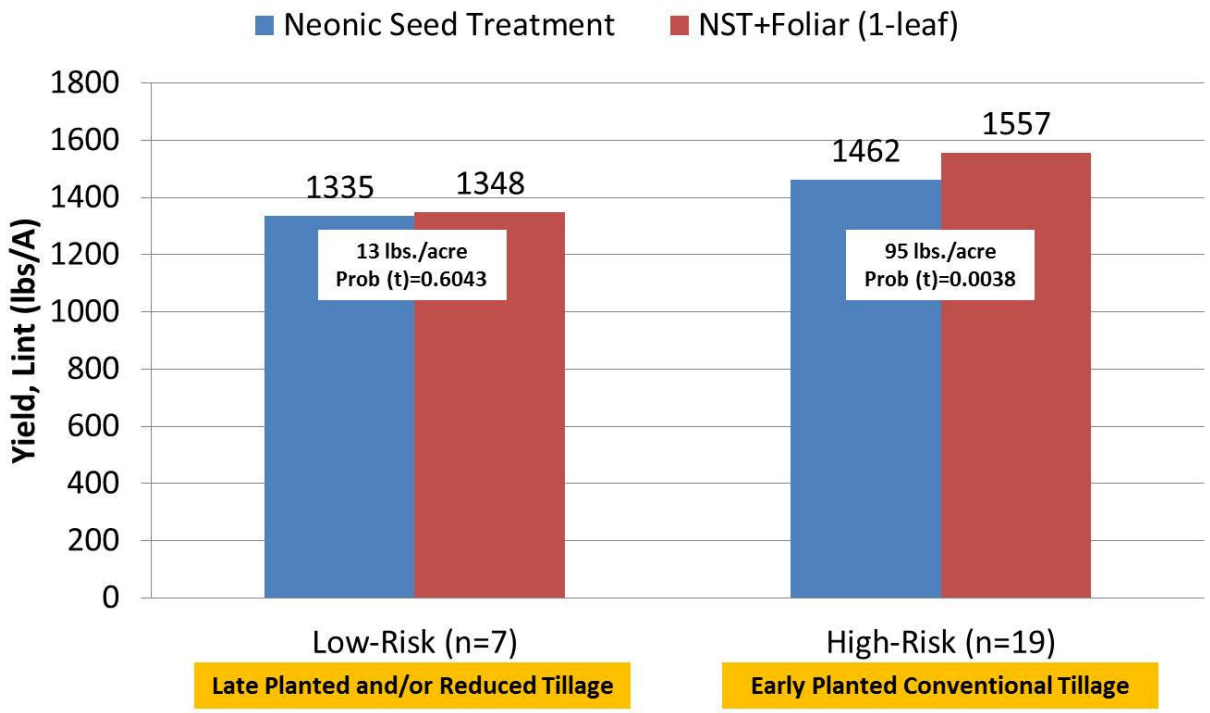

Figure 2. Mean yields for neonic seed treatments and neonic seed treatment+foliar treatments in low and high thrips risk environments; trials conducted in Georgia from 2001-2014.

Summary

Neonic seed treatments provided a consistent yield response. Planting date and tillage practice are two cultural practices contributing to thrips risk in seedling cotton. In this summary cotton planted prior to May 10 in a conventionally tilled system was considered a high risk environment for thrips and cotton planted after May 10 and/or in a reduced tillage system was considered low risk for thrips. Thrips infestations were approximately five times higher in untreated plots in high risk trials compared with low risk trials. Yield responses to neonic seed treatments were also greater in the high risk trials compared with low risk trials. There was no significant difference in yield when a foliar insecticide supplemented thrips control provided by the neonic seed treatment in the low risk trials. However, yields were significantly higher when a foliar insecticide was used to supplement a neonic seed treatment in high risk trials. These data demonstrate that the cultural practices planting date and tillage practice are viable predictors of thrips and the level of management which may be needed to preserve yield. Thrips scouting and management should be a priority, especially in high risk environments.

Acknowledgements

The authors would like to thank the Georgia Cotton Commission and cooperating industry partners for partially funding these studies.