IMPACT OF THREECORNERED ALFALFA HOPPER, *SPISSISTILUS FESTINUS*, FEEDING IN SEEDLING COTTON

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Abstract

Experiments were conducted in 2013 to determine the impact threecornered alfalfa hopper, *Spissistilus festinus*, have on cotton yield. Damaged and undamaged plants were randomly identified to create paired observations. Each plant had unique identifiers and height and nodes for each pair was monitored every two weeks. These data suggest that damaged plants only produced 50% of the yield of undamaged plants.

Introduction

The threecornered alfalfa hopper, *Spissistilus festinus*, is primarily a pest of soybeans. In the past few years damage from threecornered alfalfa hoppers in cotton has become a concern in some areas. In the past, damage was usually limited to field borders, but recently damage seems to be spread out across entire field areas where they are present. Cotton plants that have been injured from threecornered alfalfa hoppers will have a stunted appearance, leaf veins will become dark red, and the leaves will either be red or orange. There will also be a girdle or knot on the main stem, usually below the cotyledons. Injury from threecornered alfalfa hoppers can cause cotton plants to bend over and break or kill the plant outright, unlike soybean plants that are injured early from threecornered alfalfa hoppers. Soybeans are more prone to lodging later in the year, but if the plant does not lodge usually they produce normal yields. The yield response of damaged but surviving cotton plants is unknown, and was the objective of this research. A problem with threecornered alfalfa hoppers is they are difficult to scout for when cotton is small and usually damage is found long after the damage was done. Currently there is no published threshold in cotton. Treatments based on plant stand become apparent too late to be practical, so an early season threshold based on insect numbers or plant damage is needed. The focus of this research is to determine the impact threecornered alfalfa hoppers have on yield in cotton.

Materials and Methods

This research was conducted in 2013 at the R.R. Foil Plant and Soil Sciences Farm in Starkville, MS and Black Belt Branch Experiment Station in Brooksville, MS. Cotton fields were scouted at the three leaf stage for threecornered alfalfa hoppers to determine damaged plants. Damaged plants were identified with yellow flags. An undamaged plant was randomly chosen at least three plants away from the nearest damaged plant and marked with a blue flag to create a paired observation. The Starkville location had 88 damaged plants and the Brooksville location had 100 damaged plants. Each plant was uniquely labeled and height and nodes for each plant was recorded every two weeks. After cotton was defoliated, each plant was cut off at ground level and lint was hand harvested to determine yield per plant. Yield per acre was estimated based on stand counts taken at 4^{th} node.

Results and Discussion

Seedling cotton plants damaged by threecornered alfalfa hoppers only yielded 50% of the undamaged plant. Plants that were damaged appeared stunted and some died outright. This data suggest that in sever infestations yield loss could occur. In the future we will be evaluating percent damage levels across whole fields and whether or not damage is worse on field borders Future work will be done to determine if neighboring cotton plants do not compensate for threecornered alfalfa hopper plant injury, but this has not been tested. The conclusions are based on one year of data from two locations, so more data are needed before making definite conclusions.

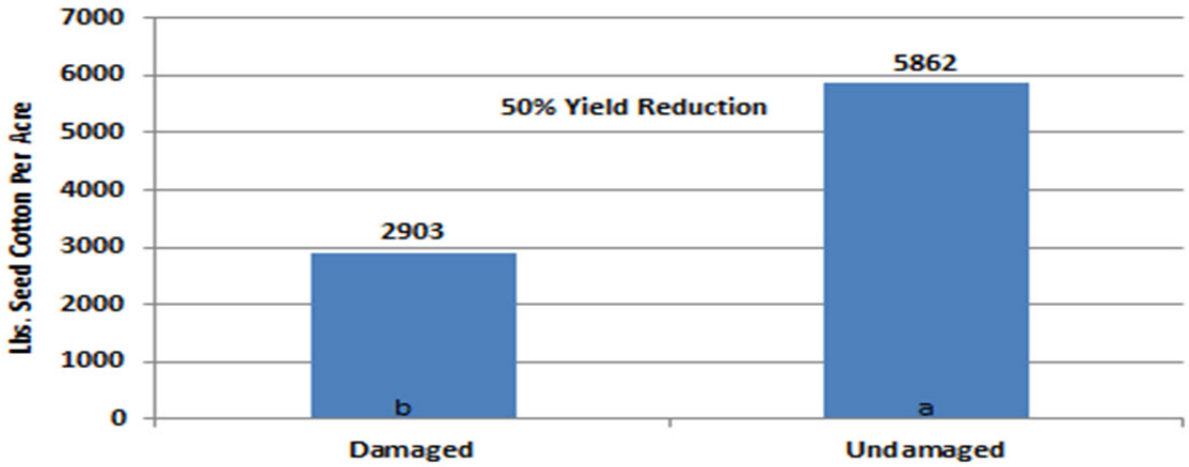

Figure 1: Seed Cotton Yield