LEAF-FOOTED BUG INJURY TO LATE SEASON COTTON Darwin Anderson Michael Brewer Charlene Farias Texas A&M AgriLife Research Corpus Christi, Texas

<u>Abstract</u>

Late season leaf-footed bug activity was detected in 2012 in a field test involving 3 water regimes, 2 varieties of cotton, and 2 late planting dates. Boll damage was significantly higher in bolls near the top of the plant (top crop bolls) of very late (April 30) planted cotton when compared to an April 12 planting. Despite this top crop damage, no differences in lint yield could be attributed to the leaf-footed bug damage. Lint yield differences were only associated with planting date (lint yields were significantly higher in the April 12 planted cotton compared to the April 30 planted cotton), and irrigation treatment (lint yields were significantly higher as water was increased across the three water regimes). Timely planted cotton with a normal boll load and adequate water during the growing season will likely be able to tolerate late season leaf-footed bug activity without negative yield effects when cut-out is set at 5 NAWF with boll maturity \geq 475 accumulated heat units per current Texas A&M AgriLife Extension recommendations.

Introduction

The presence of leaf-footed bugs (Fig. 1.) in South Texas cotton is sporadic and late occurring. For example, in 2010 leaf-footed bugs were present late season in only 4 of 25 surveyed fields. Three of these fields were followed in 2011 and 2012 with leaf-footed bugs not present in 2011 but present in 2012. In 2012, we observed movement of leaf-footed bugs into a late planted experimental field when the cotton was at cut-out (5 NAWF). No insecticide was applied and the population increased, including substantial egg-laying and nymphs occurring on the crop. Field observations indicated greater occurrence of leaf-footed bug on 1) late planted plots compared to the very late planted plots, 2) irrigated plots compared to the dryland plots, and 3) top crop bolls compared to the middle crop bolls. We chose to utilize this opportunity to evaluate damage to middle and top crop bolls and subsequent overall yield.





Nymph (Photo by J. Jackman)

Adult (Photo by B. Drees)

Fig. 1. Leaf-footed Bug, nymph(left) and adult(right). Leptoglossus phyllopus (Linnaeus) (Hemiptera: Coreidae)

Materials & Methods

The test was a split plot design with the main plot water (dryland, 75% ET Irrigation, & 100% ET Irrigation) and the split the combination of cultivar (Phytogenic 367 WRF and Stoneville 5458 B2RF) and planting date (late on April 12, 2012 and very late on April 30, 2012). Plot size was 4 rows (38 in.) by 50 feet with the inner 2 rows used for the collection of data and harvest. The test had 5 replications and was harvested on August 30, 2012 using a 2 row John Deere cotton picker and picked samples were ginned on a 10 saw Eagle laboratory gin. A damage rating of open bolls was collected using a five class locule damage scale equating the number of damaged locules directly to the scale: 0 = no locules damage, 1 = one locule damage for the middle bolls was taken on August 16, 2012 and for the top bolls on August 29, 2012 (the day prior to harvest).



Fig. 2. Open boll damage was scored using a five class locule damage scale. The scale was implemented for visual field assessment by equating the number of damaged locules directly to the scale: 0 = no locules damage, 1 = one locule damage, up to 4 damaged locules, and assuming damage affected at least a quarter of the locule.

Results

Boll Damage: Split Plot:

The 0-4 open boll damage ratings of the middle bolls indicated no increase in damage attributable due to leaf-footed bugs between the April 12 (late) and April 30 (very late) planting dates when averaged across the three water regimes while ratings of the top bolls did indicate an increase in damage due to the leaf-footed bugs between planting dates. Also, the increase in top boll damage was significantly higher for the Phytogen 367 WRF (PHY) but not significant for the Stoneville 5458 B2RF(STV)(Fig. 3.). The data indicates that the leaf-footed bugs damaged top crop bolls more on cotton planted on April 30 (very late) than on the cotton planted on April 12 (late). This result concurred with our visual observations of more leaf-footed bugs on the very late planted cotton in the field.





Main Plot:

The 0-4 open boll ratings across the three water regimes showed no differences in damage for the middle bolls with the increase in water, while the damage to top bolls increased as water was increased (significantly higher for the 100% ET irrigation regime) (Fig.4.). This data also concurs with our visual observation of preference by the leaf-footed bug to the cotton in the higher water regimes.



Fig. 4. Middle and top open boll damage ratings (0-4 scale) for the main plot treatment of water regimes. Tukey's means comparisons were conducted separately for the middle bolls (lower case letters) and the top bolls (upper case letters). Means were averaged across the cultivar and planting date combinations. Different letters indicate significant differences between means (P < 0.05).

Lint Yields: Split Plot:

No differences in lint yields could be attributed to the leaf-footed bug damage. The yields followed normal agronomic responses of cotton for the region. Lint yield for the April 12 planting date was significantly higher than the April 30 planting date (Fig. 5).



Fig 5. Lint yields (lbs./A) for the cultivar and planting date combinations. Tukey's means comparisons were conducted for the cultivar and planting date interactions (lower case letters above bars). Different letters indicate significant differences between means (P<0.05).

Main Plot:

The lint yields across water regimes also followed normal agronomic responses for the area: yields increased as water volume through irrigation is increased (Fig. 6.).



Fig. 6. Lint yields (lbs./A) for the main plot of water regimes. Means were averaged across the cultivar and planting date combinations. Tukey's means comparisons were conducted for the main plot of water treatments (lower case letters above bars). Different letters indicate significant differences between means (P<0.05).

Split and Main Plots:

Although not included in these proceedings it can be noted that the seed yield analysis revealed the same treatment effects.

Summary

Timely planted cotton with a normal boll load and adequate water during the growing season will likely be able to tolerate late season leaf-footed bug activity without negative yield effects when cut-out is set at 5 NAWF with boll maturity \geq 475 accumulated heat units per current Texas A&M AgriLife Extension recommendations.

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