

DIFFERENCES IN TARNISHED PLANT BUG INFESTATIONS IN COMMERCIALY GROWN COTTON VARIETIES

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Abstract

The tarnished plant bug (TPB) is one of the most important pests of cotton in Arkansas. A large-plot trial was conducted at the University of Arkansas Northeast Research and Extension Center to evaluate the attractiveness and infestation levels of TPB on different commercially available cotton varieties. TPB numbers were monitored throughout the season and yields were taken at the end of the season. ST4554B2RF, ST5458B2RF, ST4498B2RF and DP0935B2RF reached the mid-south treatment threshold of 3 TPB/5 row-feet only once. PHY375WRF reached the threshold twice and FM1740B2RF reached the threshold 4 times. FM1740B2RF was the only variety that had a significantly higher yield in the treated versus untreated plots at the end of the season.

Introduction

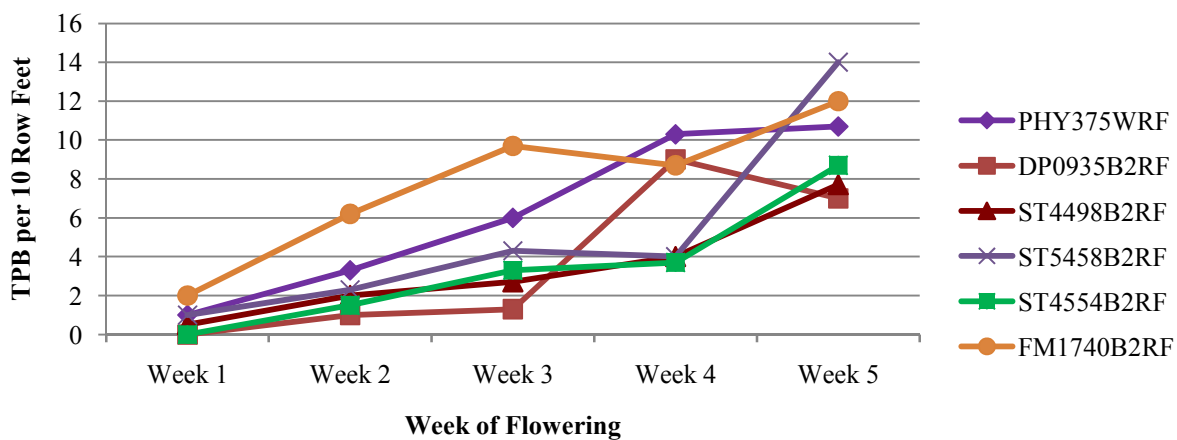
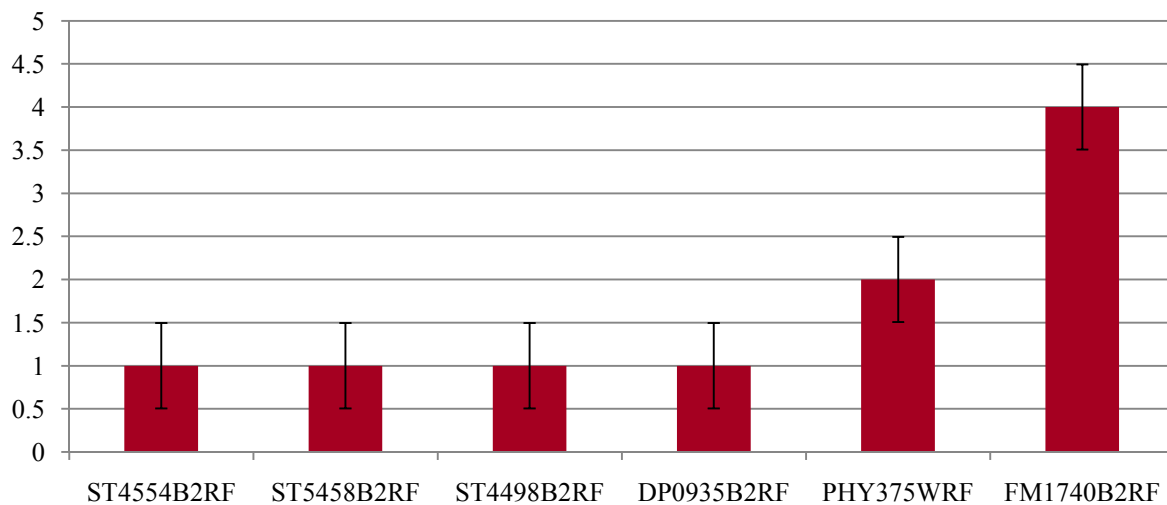
The tarnished plant bug (TPB) is one of the most important pests of cotton in Arkansas. From 2003 to 2009 it caused more yield losses than any other pest averaging a loss of over 50,000 bales in Arkansas (Williams 2009). Applying recommended insecticides when TPB reach treatment threshold is the most commonly used option to manage this pest (Studebaker 2010). However, increasing levels of resistance to insecticides are beginning to make some chemistries less effective. Therefore, it is important to evaluate other options for TPB management. Recent data from small plot studies has indicated that some commercially grown varieties may be less attractive or exhibit some level of resistance to TPB. A large block study was conducted in 2010 to evaluate the resistance of several varieties that exhibited low damage from TPB in small plot studies in previous years.

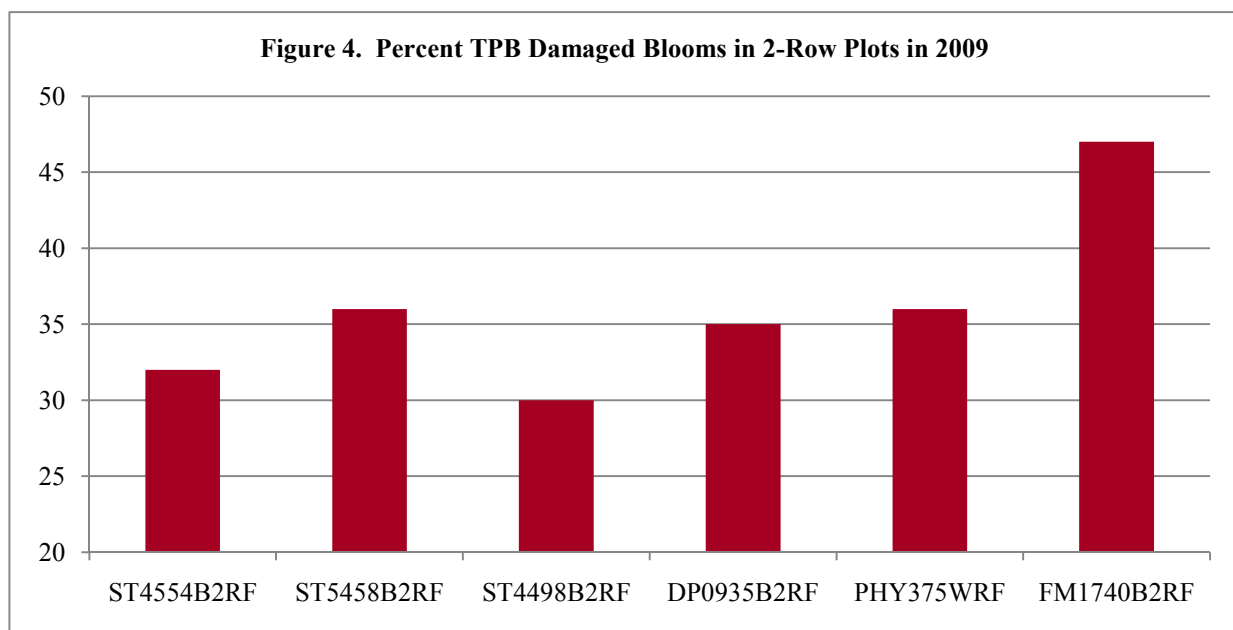
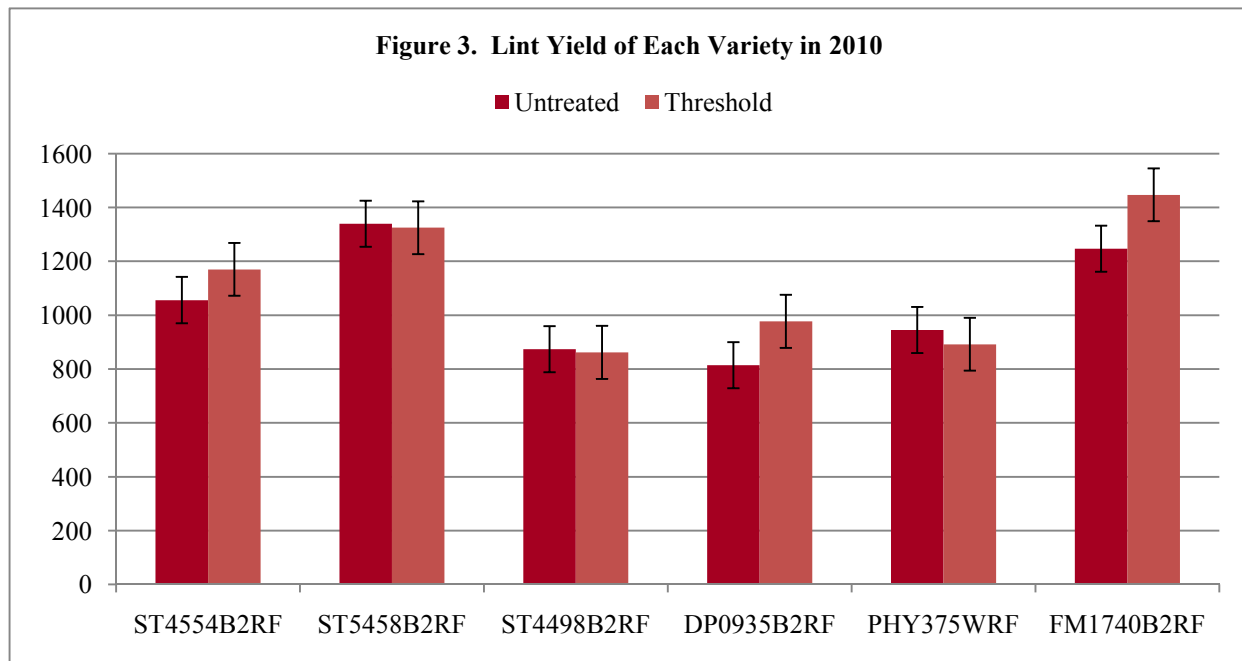
Materials and Methods

Trials were conducted at the Northeast Research and Extension Center, Keiser, AR. Plots were 24-rows by 90-ft long arranged in a randomized complete block design with 3-replications. Varieties showing low damage in small plots that were evaluated were; ST4554B2RF, ST5458B2RF, ST4498B2RF, PHY375WRF and DP0935B2RF. One variety exhibiting high damage in small plots, FM1740B2RF, was also evaluated as a check. Each variety had two treatment regimes; an untreated check and treated when TPB numbers reached 3/5 row-ft. Plots were sampled weekly. When TPB reached the treatment level of 3 bugs per 5-row feet, treatments were applied with a high clearance sprayer calibrated to deliver 10 gpa through two hollow cone nozzles per row. Acephate at 0.75 lbs ai/acre was applied when threshold was reached. Plots did not reach treatment level until after bloom. Yields were taken from the center 4-rows of each plot at the end of the season. All data were analyzed using Agricultural Research Manager (ARM) version 8 software (Gylling). Treatment means were separated at the $P=0.05$ alpha level.

Results and Discussion

TPB numbers throughout the season are shown in Figure 1. The number of times each variety reached a treatment threshold of 3 TPB/5 row-ft are shown in Figure 2. Yields from treated and untreated plots are shown in Figure 3.

Figure 1. TPB Density in Untreated Plots Throughout 2010 Growing Season**Figure 2. Number of Times Reaching TPB Treatment Threshold of 3 TPB per 5 Row Feet**



Summary

Differences in TPB populations were detected between varieties in large plots (Figure 1). These differences in TPB densities did correlate with previous years small plot measurements (Figure 4). Five of the varieties tested exhibited lower TPB damage to blooms in 2009 and also had lower populations in the large plot study in 2010. The variety with the highest amount of damage in 2009 also had higher levels of TPB earlier in the season in 2010. This variety also reached the treatment threshold of 3 TPB per 5 row feet 4 times in 2010, while the other varieties reached threshold 1 to 2 times (Figure 2).

Lower TPB populations in these varieties infers that they are less attractive to this pest until very late in the season. The small plot data does correlate well with the large plot studies. This should also translate to the field, giving growers and pest managers another option for managing TPB. By utilizing these varieties, growers could potentially reduce insecticide applications for TPB in half.

Acknowledgements

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References

Stuebaker, G. 2010. Insecticide recommendations for Arkansas. University of Arkansas Cooperative Extension Service Pub. MP144. 153 pages.

Williams, M. 2004. Cotton insect losses. <http://www.entomology.msstate.edu/resources/tips/cotton-losses>.