

Plant Bugs in the Mid-South

By: Severino Signa

USDA-ARS, Southern Insect Management Research Unit

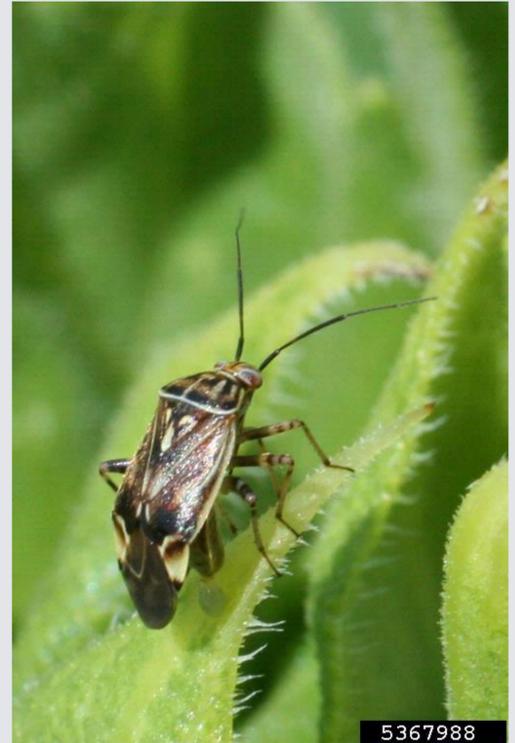
The tarnished plant bug, *Lygus lineolaris*, has become a dominant pest in cotton throughout the South. It attacks a wide range of several herbaceous plants; crops; and fruit trees. With that being said, the plant bug has reevaluated existing thresholds in production of cotton practices and economics. The plant bug made up ninety-four percent of sampled bugs during the flowering period across the region in 2007 (Musser et al. 2007). Before 1995, bollworms and budworms tore cotton to pieces and plant bugs were controlled by substances used to eliminate the bud and boll worms so therefore plant bugs were uncommon at this time. When Bt cotton expressing *Bacillus thuringiensis* was introduced in 1995, the bud and boll worms were reduced in populations also the boll weevil had been eradicated. Since then, the plant bug has become a primary target in today's research (Williams 2008).

Plant bugs start to feed and lay eggs on the pulvinus base of a leaf, terminal, vein of a leaf, and on the stem of plants in early spring. The eggs are small, slightly curved and are about 1mm long. The top of the egg where it meets the surface of the plant tissue is flattened and has an opening, which is where the nymph emerges in eight days. The immature nymph is yellowish green and also about 1mm long. As it develops into an older nymph it turns yellowish green to green, wingless, and as it matures it develops yellow, green, or black spots. A full-grown nymph has wing pads and is about 4 to 4.5 mm. The full-grown nymph then develops into an adult. The adult male is 4.90 to 5.95mm, while the adult female is 5.25 to 5.95 mm long. Their heads are yellowish-brown with black sub-median lines. Their abdomen section is yellowish to reddish brown (Capinera 2001).

The plant bug is one of the most damaging bugs known to transmit diseases into plants. Both the adult and immature nymphs feed on cotton during the flowering period, which is squares, flowers, and bolls. It occurs on the reproductive structure they insert their mouthparts into plant tissues, introduce toxic saliva at the feeding site, and extract juices from the plant. The terminal growth tends to turn yellow and reduce plant growth. Plant bugs preferably tend to feed on squares (Tugwell et al. 1976). When the square is pinhead square, it often leads to abscission in a few days. Feeding on larger squares may not result in abscission, but damage will definitely occur and tend to stain the square yellow and have brown or black anthers in the flower. On bolls, it causes a dark, sunken lesion on the outside of the boll and a pin-point sized black spot inside the boll (Pack and Tugwell). Feeding on bolls it can result in undeveloped locules, stained lint, or damaged seed within the boll.

Cotton is most susceptible to damage by plant bugs during the period from first square through the first few weeks of bloom. So therefore fields should be scouted carefully every three to four days during this period. Economic Threshold at pre-squaring is one or more plant bugs/ per ten feet; first two weeks of squaring-Drop cloth, one plant bug/ 6 feet; Visual, five bugs/ hundred terminals; Sweep net, eight bugs/ hundred sweeps; third week of squaring through bloom- Drop cloth, three bugs/ 6 feet; Visual, ten bugs/ hundred terminals; Sweep net, fifteen bugs/ hundred sweeps. Plants should retain eighty percent or more of first and second position fruiting sites on the upper five fruiting branches.

Tarnished plant bugs have become difficult to manage in recent years, and very few insecticides have provided an adequate control of this outburst. We must use strategies such as appropriate scouting methods, sound action thresholds, and insecticides to properly manage pest populations.



A tarnished plant bug adult. Photo © Bugwood

References:

- Capinera, J. L. 2001. Handbook of Vegetable Pests. Academic Press. San Diego. 729 pp.
- Greene, J. K., S. G. Turnipseed, M. J. Sullivan, and G. A. Herzog. 1999. Boll damage by southern green stink bug (Hemiptera: Pentatomidae) and tarnished plant bug (Hemiptera: Miridae) caged on transgenic *Bacillus thuringiensis* cotton. J. Econ. Entomol. 92: 941-944
- Layton, M. B. 2000. Biology and damage of the tarnished plant bug, *Lygus lineolaris*, in cotton. Southwest. Entomol. Suppl. 23: 7-20
- Pack, T. M., and P. Tugwell. 1976. Clouded and tarnished plant bugs on cotton: a comparison of injury symptoms and damage of fruit parts. Report Series 226, Arkansas Agricultural Experimental Station, Fayetteville, AR.
- South, D. B. 1991. Lygus bugs: a worldwide problem in conifer nurseries. In: Sutherland, J. R.; Glover, S. G., eds. Proceedings, 1st IUFRO Workshop on Diseases and Insects in Forest Nurseries. Info. Rep. BC-X-331. Victoria, British Columbia, Canada: Forestry Canada: 215-222.
- Tugwell, P., S. C. Young, B. A. Dumas, and J. R. Phillips. 1976. Plant bugs in cotton: importance of infestation time, types of cotton injury, and significance of wild hosts near cotton, Arkansas Agricultural Experiment Station Report. Report Series 227, University of Arkansas, Fayetteville, AR.
- Williams, M. R. 2008. Cotton insects losses. National Cotton Foundation. (<http://www.entomology.msstate.edu/resources/tips/cotton-losses/data/>).

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