



The University of Georgia
Cooperative Extension
College of Agricultural and Environmental Sciences

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COTTON PEST MANAGEMENT NEWSLETTER #4

COTTON SITUATION: The Georgia Weekly Crop Progress and Condition Report for the week ending July 5th listed the crop as 56 percent squaring and 10 percent setting bolls which are behind the 5 year averages of 69 percent squaring and 21 percent setting bolls. Much needed rainfall was received in many areas during the past week. Cotton is growing and developing rapidly where adequate moisture is available.

INSECT SITUATION: Stink bugs have been reported at treatable levels in some early planted fields. Increased corn earworm moth activity has been reported from several areas. A few reports of fall armyworm have also been received. Aphids can be found in many fields, but populations have been slow to build in most (but not all) fields. Plant bugs are spotty; however a few fields have been treated. Be on the lookout for spider mites. Thrips numbers are low and most seedling cotton is growing rapidly which decreases the severity of thrips injury.

Stink Bugs (Dynamic Threshold): Stink bug management should be a priority as cotton begins to bloom. Stink bugs prefer to feed on medium sized bolls approximately the diameter of a quarter (10-12 days of age). However, during the first week of bloom stink bugs will feed on smaller bolls. Locules of small bolls which are damaged by stink bugs often have a “jelly-like” area near the feeding site. Stink feeding on small bolls (dime sized) may result in boll shed.

During recent years, entomologists from the southeast have been participating in a regional project addressing stink bug management. This project was funded by the Georgia Cotton Commission, other state grower organizations from the southeast, and Cotton Incorporated. One objective of the project was to define periods of maximum and minimum susceptibility of cotton to stink bugs. A series of field experiments compared treatments where weekly insecticide applications were initiated at differing weeks of bloom. For example, treatment 1 included weekly applications beginning at first bloom (a total of 7-8 applications), treatment 2 included weekly applications initiated the second week of bloom (day 8 of bloom), treatment 3 included weekly applications initiated the third week of bloom (day 15 of bloom) and so forth. In these trials, first bloom was defined as 50 percent of the plants having at least one bloom. On average, yields were not increased when insecticide applications were used during the first or second week of bloom. This is likely due to the fact that a limited number of bolls are present during early bloom and in many situations stink bug numbers were low. Delaying treatment past the initiation of the third week of bloom (day 15 of bloom) did show a significant yield reduction when stink bugs were present at threshold levels. Cotton was most susceptible to yield loss during weeks 3, 4, 5, and possibly 6 of bloom. This should not be surprising in that weeks 3-5 of bloom are when the greatest numbers of stink bug susceptible bolls (bolls less than 25 days of age) are present. During late bloom, weeks 7 and 8, cotton becomes less susceptible as the

number of susceptible bolls is declining. Many of the bolls present later in the season are 25 days or older and are relatively safe from yield loss.



Scouting Stink Bugs:

- Sample medium sized bolls approximately the diameter of a quarter.
- Bolls of the correct size can be easily crushed between your forefinger and thumb.
- Examine the boll for internal signs of bug feeding.
- Internal damage is defined as callous growths or warts on the inner surface of the boll wall and/or stained lint. Undamaged boll walls will be smooth and creamy white in color (see image above).

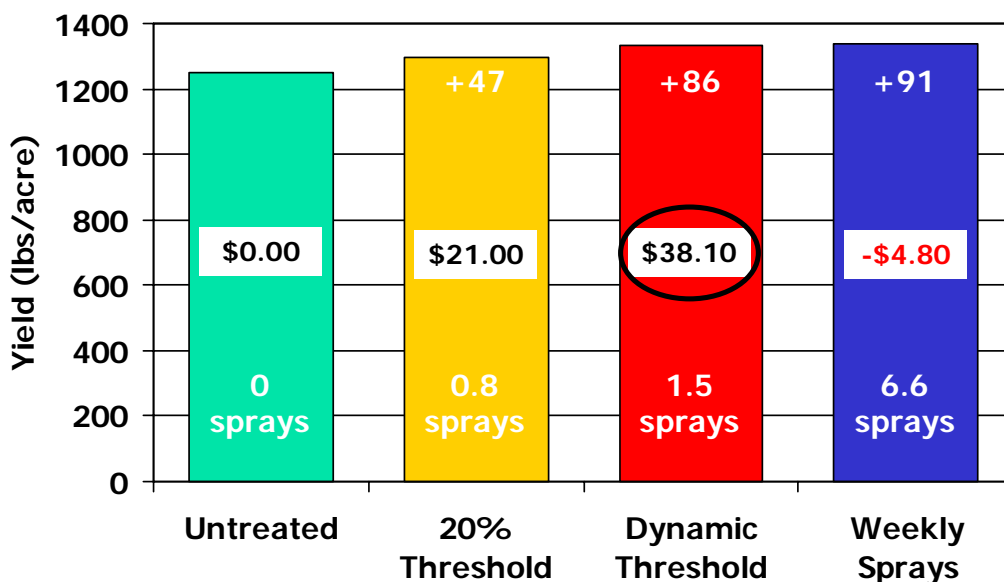
For several years we have recommended treatment of stink bugs when 20 percent of medium sized bolls (the diameter of a quarter) display internal signs of feeding. This threshold is static and remains constant season long. Intuitively we know the number of stink bug susceptible bolls per plant varies during the year. It seems reasonable that our threshold should vary based on the number of stink bug susceptible bolls per plant.

In the regional project we evaluated various thresholds compared with weekly insecticide applications and an untreated control. Static or constant thresholds evaluated included 10, 20, and 30 percent boll damage. Based on our susceptibility data, we also evaluated a **dynamic threshold** where allowable levels of boll damage change with week of bloom or the number of susceptible bolls present (see Table below). The dynamic threshold was raised during the first 2 weeks of bloom, lowered during weeks 3-5 of bloom when cotton is most susceptible to stink bugs, and raised during weeks 6-8 of bloom.

Week of Bloom	Dynamic Threshold
1	50 percent
2	30 percent
3	10 percent
4	10 percent
5	10 percent
6	30 percent
7	30 percent
8	50 percent

Results indicated that the dynamic threshold provided higher net returns (value of increased cotton yield minus the cost of insecticide and application) compared with other treatments. From 2006-2008 we conducted 14 trials in Georgia comparing the dynamic threshold to the 20 percent static threshold, untreated, and plots which were treated weekly beginning at bloom (see Figure below). During the last 3 years stink bug numbers have been relatively low, but our data indicates a net return of 38 dollars per acre when the dynamic threshold was used compared with a 21 dollar net return for the 20 percent static threshold.

Dynamic Threshold Trials Georgia (2006-2008, n=14)



Net = \$0.60/lb – \$9.00/appl

In summary, our data and complementary research indicate that when cotton is more aggressively protected during the 3rd, 4th, and 5th weeks of bloom, the economic returns are greater than those provided by the 20% threshold. The importance of controlling stink bugs during this critical window (weeks 3-5 of bloom) should be stressed to producers and consultants. Crop phenology and the changing susceptible boll load help explain why a dynamic threshold should provide increased protection from bugs. Additionally a dynamic threshold is effective because the impact of stink bugs early and late in the season is inherently lower. By following the dynamic threshold (or a close variation), cotton producers should be able to protect bolls from stink bug damage during critical periods of crop development and avoid unnecessary treatments during periods of low risk.

Corn Earworm: Corn earworm pheromone trap captures significantly increased at our trap location in Tifton. This spike in captures is most likely due to adults emerging from field corn grown nearby. We have received reports of increased CEW moth activity and egg lay in many

areas. Scouts should monitor blooming fields closely for CEW eggs and larvae. In Bollgard cottons, CEW escapes are often found in blooms, under dried bloom tags, or in small bolls. When scouting fields, be sure to monitor at least one bloom, one bloom tagged boll, and a small boll per plant. Treatment is recommended in Bt cotton when 8 larvae 1/4 inch in length are found per 100 plants. Pyrethroids should be used at medium to high rates for control of CEW. The two-gene Bt cottons Bollgard II and WideStrike offer improved control of CEW compared with Bollgard. However, the two-gene Bt cottons still need to be scouted for CEW and other caterpillar pests.



Small corn earworm feeding in white bloom, damaged boll and large larvae.

Fall Armyworm: We have received limited reports of FAW in cotton. However, this is a pest we should be observant for when scouting. Fall armyworm has been reported at moderate to high levels in some corn fields.

Plant Bugs: Plant bugs are a sporadic pest of cotton in Georgia. In most years only a small percentage of acres require treatment. But in most years, some fields do require treatment. Be sure scouts are monitoring square retention. Although we typically monitor a single fruiting position in the top of plants for retention counts, it is a good habit to periodically pull plants and evaluate square retention on the entire plant. Our goal is to retain at least 80 percent of first position squares at first bloom.

Aphids: To date we have received no reports of the naturally occurring fungus which causes aphid populations to crash. Aphid numbers have been slow to build in many fields whereas in others high populations are present. Before treating a field, be sure scouts look for numerous gray, fuzzy aphid cadavers which is indicative of the fungus. Once the fungus is observed in the field, we would expect aphids to crash in a week or less.

INSECT UPDATES: Check the **Cotton Insect Hotline (1-800-851-2847)** for updates on current insect conditions. The Cotton Pest Management Newsletter and additional cotton production information is also posted on the UGA Cotton Homepage at: <http://www.ugacotton.com>

Sincerely,

Phillip Roberts
Extension Entomologist

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