Texas Cooperative EXTENSION
The Texas A&M University System

# INSECTS AND WEEDS IN FOCUS

Web site: http://entowww.tamu.edu http://agfacts.tamu.edu/~rparker/

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## COTTON INSECT REPORT

Up until this point in the cotton season the **fleahopper** has been the most serious insect in the crop. As cotton reaches mid-bloom other insects should be considered to include stink bugs, bollworm/budworm, and possibly fall armyworm.

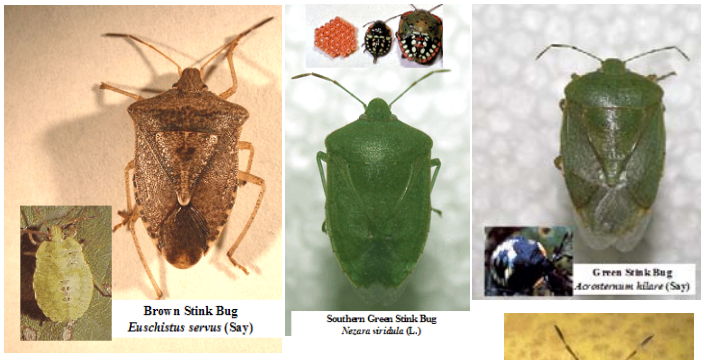


**Figure1.** Stink bug species.


Lesser brown stink bug *Euschistus quadrator*

The predominate stink bug species in the southern Coastal Bend appears to be *Euschistus quadrator* (**lesser brown stink bug**), and the larger species *Euschistus servus* (**brown stink bug**) although a few **green stink bugs** have been observed. There is some evidence that the heavier populations of stink bugs are in the western Coastal Bend. The most precise way to determine treatment needs is to (1) be able to readily find stink bugs at inspection sites and (2) find that 20% of the bolls the diameter of a quarter have evidence of internal stink bug feeding (callous growth in the internal boll wall and/or stained lint). Bolls of this age complement should be inspected each time as it has been found to represent the best index on which to make treatment decisions. There are some states that use a lower "evidence of internal feeding" on which to initiate treatment, but these locations also have heavier populations of Lygus bugs. However, I think it would be appropriate to prepare for stink bug treatment and not wait another week when 15% evidence of internal feeding is found. Stink bugs are often clumped near field margins. Spot treatment provides effective control when this situation exists. Second through fifth instar stink bug nymphs and adults can damage bolls. Fourth and fifth instar stink bug nymphs can cause the same level of damage as adults. Feeding on bolls may cause boll shed and/or seed damage, lint staining, lint rot, and yield reduction (see Figure 2 for damage examples).

**Figure 2.** Stink bug evidence of internal feeding, stained lint and lint damage.

So far this season **bollworm/budworm** infestations in cotton have been lower than in past years. The cotton growth stage and time of year is at a point that these insects might increase. Highest numbers would be expected in non-Bt cotton which was treated recently for other cotton insects. One thing that might help reduce their numbers is the large number of **pirate bugs**, **lacewing larvae**, and **big-eyed bugs** that are moving into cotton from sorghum.

The problems associated with insecticides controlling **cotton aphid** earlier in the season are not occurring at this time nor has the cotton aphid exhibited resistance to these insecticides in laboratory tests. I would **never** treat for cotton aphid without re-evaluation 48 hours after finding an alarming number on leaves (50-100 per leaf). We have observed many cases where cotton aphid numbers had begun to decline rapidly shortly after reaching the alarm point. RDP

## BIDRIN LABEL CHANGES

The following information was taken from AMVAC Company correspondence.

Bidrin insecticide for cotton has recently completed the reregistration process. All existing product in the distribution channel may be used as labeled. When newly manufactured product is shipped in the future, product with both "old" and "new" labels will be in retail locations for grower purchase. The specific label on the container should be followed. This will create some confusion.

A key change on the "new" label is that Bidrin cannot be used between pinhead square and first bloom. This will limit use for fleahopper control (product bearing the "old" label may be used during this period). AMVAC is working towards a possible supplemental label to address this situation for fleahopper control in future seasons, but it will not be available for the 2007 season.

Additional information on AMVAC Chemical Corp. may be found at www.amvac-chemical.com.

Several significant changes are in the newly approved label. Mixers and loaders must now use a closed handling system that meets the requirements listed in the Worker Protection Standards. The restricted-entry interval (REI) has been increased to 6 days. The overall seasonal maximum use rate has been reduced to 1.2 lbs ai/ac with the following conditions:

> Only a single application of up to 0.2 lbs ai/ac can be applied from emergence to pre-square cotton. An additional 1.0 lb ai/ac can be applied from the "first bloom" stage of cotton until 30 days prior to harvest. The rates for individual applications during this late-season period range from 0.25 lb ai/ac to 0.5 lb ai/ac. There is a minimum interval of 14 days between applications. The newly approved label continues to allow Bidrin to be applied by ground-driven sprayers or by aircraft. RDP

## EPA APPROVES NATURAL REFUGE FOR BOLLGARD II COTTON

To reduce the likelihood that insects will become resistant to Bt (Bacillus thuringiensis) plant-incorporated protectant (PIP), the Agency has approved the use of alternative crop plants and weeds -- a natural refuge -- instead of a structured non-Bt cotton refuge for Bollgard II (Registered Trademark) cotton. Careful scientific review has shown that insect resistance management can be accomplished by using only alternative crops and weeds in combination with plantings of Bollgard II cotton from Texas to the Mid-Atlantic. Previously, farmers planting this cotton were required to cultivate a certain percentage of non-Bt cotton and specifically deploy it relatively close to the Bt cotton fields to reduce the likelihood that Bt resistance would develop.

Refuges are critical because non-Bt cotton will produce susceptible insects that can mate with any potential resistant insects to reduce resistance. The current structured refuge requirements for Bollgard II cotton will remain in place for pink bollworm resistance management in the trans-Pecos area of Texas (excluding the following counties: Brewster, Crane, Crockett, Culberson, El Paso, Hudspeth, Jeff Davis, Loving, Pecos, Presidio, Reeves, Terrell, Val Verde, Ward, and Winkler), Arizona, New Mexico, and California.

The Agency's approval comes after extensive analyses and peer review of Monsanto Company's 2006 natural refuge proposal for Bollgard II cotton. EPA concluded that scientific evidence showed using the natural refuge with Bollgard II cotton would be effective for areas where tobacco budworm and cotton bollworm were primary pests. The Agency will reassess the effectiveness of the natural refuge within five years. The Bollgard II cotton, a registered product of Monsanto Company, contains two different PIPs, Cry2Ab2 and Cry1Ac Bt proteins. These two insecticidal proteins are effective in controlling insect pests that include tobacco budworm, cotton bollworm, pink bollworm, loopers, and armyworms. Use of Bollgard II cotton, with its two distinct Bt proteins, in conjunction with the use of natural refuge, will enhance cotton insect resistance management. More on plant-incorporated protectants is available on EPA's Web site at http://www.epa.gov/oppbppd1/biopesticides/pips/index.htm. RDP

Rice stink bug

## SORGHUM APPROACHING HARD DOUGH & REDUCED INSECTS

Conchuela stink bug

Leaffooted bug

In some areas numbers of pest insects in sorghum have been lower than at any time in many years, but in other areas **rice stink bug, conchuela stink bug**, and few other stink bug species were very heavy. The rice stink bug made up the large numbers present, and they continued to move into sorghum from grasses that had matured. Two insecticide treatments were required in many of these fields. In some cases where treatments

were not made, total destruction of heads occurred. Another seed feeding true bug present, generally in lower numbers, has been the **leaffooted bug**.

**Sorghum midge** should be scouted for in late blooming sorghum, especially if that sorghum is near 3-4 week older sorghum. **Headworms (corn earworm, fall armyworm)** are being found in some areas in enough numbers to cause economic damage (see the newsletter dated May 17, 2007 for treatment thresholds). Another insect reported in a very young field of sorghum was a **flea beetle** present in whorls in high enough numbers to destroy the plant. Again these beetles have only been reported in high numbers on pre-heading sorghum. RDP

## SPECIAL 2,4-D WARNING

If you used 2,4-D in your spray machine last season extra effort should be made to clean it out, even if you have already applied many products without effecting cotton. There are certain chemicals which will dislodge 2,4-D from internal spray parts especially hoses. Products that are known to do this include certain foliar fertilizers, many plant growth stimulates, and plant growth regulators. RDP

## FALL ARMYWORM IN PASTURES

**Fall armyworm** infestations exceeding the treatment threshold of 3 per square foot have been reported from Victoria County. They are likely to be present in other regions as well. This warning may be late for some locations. Scout for these caterpillars by looking deep into the grass canopy all the way to the soil surface, and try to detect the insect before they reach the last larval instar. They consume about 85% of their total food intake in about a four day period in the last instar. Sprayers equipped with hollow-cone nozzles and total spray volume of 5-7 gallons/acre at 40 psi provide most effective control. I do not recommend flat fan nozzles, but if they are used much more volumes of water might help. Insecticides include Tracer, malathion, Lannate, and carbaryl (Sevin). Refer to labels for specific instructions and waiting periods for grazing and harvest. RDP

## STORED CORN INSECT CONTROL TEST RESULTS

The objective of the study was to evaluate insecticides applied to corn as it was placed in storage at use rates that cost no more than $0.04 per bushel. Grain managers had asked for evaluation of products at a lowered cost and requested a target 12 month protection period. Therefore, the Actellic was applied below the specified label rate, and when Diacon II was added, other insecticide rates were reduced to maintain the $0.04 per bushel cost. The cost of Spinosad had to be estimated since it is not yet in the marketplace. It will not be available until all international agreements have been obtained. **Note that the Spinosad dry formulation was not effective but the liquid was very effective.** Similar results with the dry verses liquid formulations were obtained in a previous study. Large amounts of data were obtained from the study; only a summary table of losses due to weight change and quality is provided (Table 1). It is not unusual to observe more damage in non-effective insecticide treatments compared with no treatment (Spinosad dry formulation and Diacon II). The Diacon II only affects immature insects and is not available to rice weevil grubs since the eggs are laid inside kernels. None of the grain was fumigated after the test was underway, but if fumigation was based on one insect per quart sample it would have been done first in month 5 for the Spinosad dry and nontreated, month 6 for Diacon II, month 7 for Actellic, month 12 for Spinosad liquid, and month 13 for Actellic + Diacon II and Spinosad + Diacon II. RDP

Table 1. Percentage loss in $ value at months post-storage of corn due to quality & weight change, Nueces County, 2006-07.

| Treatment | Rate/ 1000 bu (oz) | % loss in grain value by storage month | | | |
|---|---|---|---|---|---|
| | | 8 | 10 | 12 | 14 |
| Spinosad 0.5% (dry) | 179.20 | 10.8 a | 16.7 a | 27.9 a | 50.5 a |
| Actellic 5E | 6.83 | 1.3 b | 2.8 c | 2.6 c | 4.9 c |
| Actellic 5E + Diacon II | 3.86 + 3.5 | 1.5 b | 1.7 c | 1.4 c | 5.4 c |
| Spinosad 0.75 lb | 9.6 | 0.5 b | 0.8 c | 1.7 c | 5.0 c |
| Spinosad 0.75 lb + Diacon II | 5.43 + 3.5 | 1.6 b | 1.9 c | 0.7 c | 5.0 c |
| Diacon II | 8.07 | 8.0 a | 12.3 ab | 17.6 ab | 41.8 ab |
| Nontreated | | 7.9 a | 10.0 a | 15.8 b | 30.7 b |

Means in a column followed by the same letter are not significantly different by ANOVA.

[a] Some weight loss due to grain moisture reduction during storage.

## INTERESTING INSECTS

We have used this before, but it is an interesting trivia question.

Certain male bees and wasps have no father but do have a grandfather. How can this be? Their sex is determined by egg fertilization. Fertilized eggs develop into females and unfertilized eggs usually develop into males. RDP

# GET GRAIN STORAGE FACILITIES READY

Well maintained storage facilities & surroundings

Grain storage facilities are likely to fill to capacity this season, and the grain may be in storage for a longer period than in the past few years. Given the situation, preparation of storage facilities and handling of grain to keep it in good condition should be a major consideration before harvest. Sanitation to include cleaning of storage facilities, augers, harvest equipment, transport trucks, dump pits, and areas surrounding the storage location should be completed before harvest. An empty bin insecticide such as Tempo should be applied after bins are cleaned. Since augers often contain residual grain, possibly the first few hundred pounds augered this season should not be placed into storage. After cleaning the storage facilities, repair and seal all holes to prevent water leaks and loss of fumigant if needed later. Don't forget to inspect the area below the duct work between the aeration fan and the bin wall. It is also a good idea to treat grain as it is placed into storage if it will be there longer than six months. Insecticides include Actellic (corn and sorghum), Storcide (sorghum and other grain types but not corn), or diatomaceous earth (Insecto, Protect-It, Insecolo, etc). Diacon II, an insect growth regulator, should be applied with Actellic and possibly Storcide to pick up lesser grain borer. The diatomaceous earth treatments will result in loss of bushel weight, grain that is difficult to auger, and tends to wear equipment.

Some protection can be obtained by treating the first few loads and the last few loads that are placed in storage. The least that should be done is a top surface treatment as outlined on the various insecticide labels. The top surface in a grain bin should be leveled by coring and other means; it is false economy to use the peak for extra storage space. Once grain is in storage it should be monitored for hot spots and insects. In our studies, insects heated the grain more than 14° F above that where a grain protectant had been applied. Grain with low numbers of insects is cheaper to aerate, is easier to unload from bins, does not cake on bin walls as bad, smells better, and brings a higher price.

I know of a situation where grain buyers looked first to purchase grain from a certain source due to the fact that the grain manager carried out all the above practices to maintain high quality clean grain. RDP

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