



INSECTS AND WEEDS IN FOCUS

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COASTAL BEND COTTON INSECT REPORT



Area sorghum producers are well into harvest and the last thing needed was more rain. But, more rain we receive. Kleberg and San Patricio County weather stations all reported approximately 1" of rain over the weekend. Nueces County weather stations report from about 0.5" of rain in central parts of the county to 1.5" between Corpus Christi and Chapman Ranch. Hopefully, this rain will not delay the grain harvest more than a day or so. Most cotton in the Coastal Bend has matured to the point that rain will not do much to improve lint weight or quality. What we'd like to see from here out is nice clear days with 90 degree heat. Within the next week or so we should start seeing some corn harvested and defoliants going out on the cotton crop.

Kleberg County. Many fields contain open bolls in Kleberg County. Some defoliants were scheduled for late last week or early this week. Every field in the county is at least holding mature bolls. **Aphids** continue to be largely nonexistent. **Bollworm** numbers were lighter across the county than reported in last week's newsletter. This week on 1,975 cotton plants in 22 fields we found a grand total of 55 bollworm eggs and 72 bollworms (down from 74 and 100, respectively). The greatest density of eggs and worms found was 9% in a field east of Ricardo and 12% in a field north of Kingsville, respectively. The most worm damaged squares found was 14% in a field southeast of Ricardo. This same field had 2% eggs and 4% worms. Probably 80% of the fields in Kleberg County are about out of danger from

bollworms. Producers with less mature fields are really going to have to keep a close watch on their fields as we would expect your fields to begin taking the brunt of the worm pressure. As of yet we have had no definitive reports of **tobacco budworm** activity anywhere in the Coastal Bend. However, the next week or so will be a prime period for budworms to appear. The next few weeks we will be collecting eggs and identifying them as bollworms or budworms. We continue to see a few late-season pests including **saltmarsh caterpillars** (0-2%), **lygus bugs** (0-14%), and **beet armyworm** (0-1%).

One late-season pest we are seeing a lot of are **cotton leafperforators**. So far in Kleberg County this pest has been localized west of Ricardo and varies in that area from field to field, very heavy to none. The adult leafperforator is a small (2/5" to 1/2"), slender, usually white moth with black markings on the forewings. The larva, reaching a maximum length of 1/2", is a dull amber green color with 2 rows of black spots and distinct white projections on its back. The pupa is a cocoon (1/2" long) of silk-like material often found arranged longitudinally on the stalks of the cotton. The life cycle and history of this insect is very unusual. After hatching from the egg, early instar larvae act as leaf miners. The fourth instar larva becomes a free-feeding caterpillar skeletonizing leaves. Between the 4th and 5th instars, perforators have a characteristic horseshoe-shaped resting stage. This stage is in the form of a small grayish horseshoe found on the underside of leaves. When this resting stage is over, the 5th instar larvae continues to feed freely. As pupation nears 5th instar larvae drops to the ground, move along the ground to the base of nearby plants, and constructs its distinctive white cocoon. Damage by cotton leafperforators, if occurring early enough, interferes with normal boll maturation. Severe infestation halt normal growth and respiration of the cotton plant, thereby stopping the boll maturation process. Very heavy populations are often associated with multiple insecticide applications, however infestations usually occur late in the season when the crop is already mature. To date, we have found no fields in the Coastal Bend in which cotton leafperforator has occurred so early as to warrant insecticide applications for them.

Nueces County. We are starting to see some open bolls in Nueces County, but several fields are still not to the

mature boll stage. **Cotton bollworm** egg numbers were down a little in the county this week compared to the previous week's report, but worms were up slightly. This week we found a grand total of 62 bollworm eggs and 60 worms on 1,050 plants in 9 fields (124 eggs and 45 worms reported last week). A few fields in our IPM Program were well within the spray threshold. A single field near Petronila had the greatest density of eggs, worms, and worm damaged squares this week in Nueces County. These numbers were 18%, 17%, and 15%, respectively. Fields with the greatest worm pressure this week seemed to be in the Petronila/Driscoll/Bishop area. Late-season pests we are seeing in the county include **lygus bug** (0-9%), **beet armyworm** (0-2%), and **cabbage looper** (0-4%). There were no **cotton leafperforators** to report.

San Patricio County. Lots of open bolls were observed in San Patricio County this week and some producers are preparing to put out defoliant. Like Nueces County, **cotton bollworm** egg numbers are way down this week but worms are up slightly. This week we found a grand total of 28 bollworm eggs and 33 worms on 800 cotton plants in 10 fields (77 eggs and 27 worms reported last week). The most eggs and worms reported was 9% and 7% respectively from a field near Coastal Plains Gin. The greatest density of worm damaged squares was 10% from a field at West Sinton. IPM Program fields in San Patricio County are very mature, most with open bolls. Consequently, fewer and fewer bollworms are likely to be found in these fields. Late-season pests include **lygus bug** (0-8%), **cabbage looper** (0-4%), **beet armyworm** (0-4%), and **cotton leafperforator** (light). Despite finding perforators very light in IPM fields, some fields in the county are very, very heavily infested. It appears that those fields that have been sprayed regularly by the Boll Weevil Program are most likely to be heavily infested. If you have such a field, please be aware of the potential occurrence of cotton leafperforators. Two such fields between Gregory and Portland appear to have been sprayed with herbicide (its all brown), but this is the result of severe perforator infestation. At this time we have very little scientific information regarding cotton leafperforator damage and its effect. For example, we do not presently know how early leaf perforators must infest a field to cause yield or quality loss. We hope to learn more about this pest this year.

Finally, 13 fields were dropped from the scouting and monitoring programs this week (1 dropped last week). We will continue to drop fields from the program as they mature to approximately 10% open bolls. EDB

WHEN TO TERMINATE COTTON INSECTICIDE TREATMENTS

Evidence is mounting throughout the Cotton Belt that treatments for boll weevil and bollworm/budworm can be terminated when the field averages 5 nodes above white flower (NAWF) + 350 accumulated heat units (DD60's). In the case of the bollworm/budworm, it would assume low numbers of 3rd instar larvae present at the cutoff point (NAWF=5 + 350 heat units). Dr. John Benedict's, TAES Entomologist, data over a two year period demonstrated the same finding.

Several papers were published on the subject in the 1999 Proceedings Beltwide Cotton Conferences. A paper by Kelly J. Bryant et al. titled "Economic Evaluation of Insecticide Termination by COTMAN", pp 298-299, will serve here as an example of the results: "The COTMAN system suggests that insecticide treatments after NAWF = 5 plus 350 heat units are no longer protecting bolls that likely contribute to harvested yield and hence are uneconomical." Their data supported the COTMAN termination strategy: "Mean yields were statistically different in only 3 of 32 cases. Across all years and locations, yield when terminating insecticide applications as recommended by COTMAN averaged 829.3 lb/acre while yields receiving full season applications averaged 830.52 lb/acre. The number of applications saved by terminating based on the COTMAN recommendations averaged 1.66 reducing insect control costs by \$19.33/acre. These results indicate that insecticide treatments after NAWF = 5 plus 350 heat units are uneconomical in most cases."

RDP

HEAT UNITS FOR COTTON - CORPUS CHRISTI

Date	Daily H.U. ¹	Acc. H.U. ¹	Date	Daily H.U. ¹	Acc. H.U. ¹
Mar	-	250.7 ²	6/17	20.8	1599.5
Apr	-	428.3 ²	6/18	19.3	1618.8
May	-	565.1 ²	6/19	19.3	1638.1
6/1	21.7	1265.8	6/20	17.0	1655.1
6/2	20.9	1286.7	6/21	18.3	1673.4
6/3	21.5	1308.2	6/22	20.6	1694.0
6/4	22.0	1330.2	6/23	21.1	1715.1
6/5	22.6	1352.8	6/24	21.5	1736.6
6/6	21.9	1374.7	6/25	22.4	1759.0
6/7	21.0	1395.7	6/26	23.2	1782.2
6/8	19.7	1415.4	6/27	23.9	1806.1
6/9	20.6	1436.0	6/28	23.3	1829.4
6/10	20.8	1456.8	6/29	22.2	1851.6
6/11	22.4	1479.2	6/30	22.4	1874.0
6/12	22.4	1501.6	7/1	22.8	1896.8
6/13	21.1	1523.7	7/2	22.4	1919.2
6/14	18.1	1541.8	7/3	20.8	1940.0
6/15	18.7	1560.5	7/4	17.6	1957.6
6/16	18.2	1578.7			

¹ H.U. = heat units. Accu. H.U.= accumulated heat units

² Monthly accumulation

STINK BUG DAMAGE IN COTTON

Stink bugs in cotton were discussed in the June 7, 1999 issue of this newsletter. Since then the 1999 Proceedings of the Beltwide Cotton Conferences have been received that contain several papers dealing with stink bugs, primarily the southern green stink bug (SGSB), Green and Herzog (University of Georgia), reported that 5th instar SGSB actually caused more internal boll damage than adults and younger nymphs, and that damage decreased as bolls increased from 4-21 days from white bloom; damage at and after 18 days of age was negligible. RDP

BOLL AGE & TARNISHED PLANT BUG INJURY
1999 BELTWISE CONFERENCE PROCEEDINGS

Horn et al., Mississippi State University, in a two year study designed to determine influence of boll age on susceptibility to tarnished plant bug, found that bolls that had accumulated 250 heat units were relatively safe from injury. Russell et al., Louisiana State University, concluded that boll abscission rates for infested bolls remained higher than the non-infested controls until bolls accumulated approximately 300 heat units or, in their case, 13.3 day old bolls (from white flowers).

Howell and Reed, Mississippi State University, studied the effects of 5 adjuvants (Buffer ES, DeFoamer, Kinetic HV, Hyperactive, Soydex) added to 5 insecticides (Provado, Bidrin, Karate, Thiodan, Orthene) for control of tarnished plant bugs. No statistical differences were found between insecticide and insecticide mixed with an adjuvant. There was a trend across insecticides for the organo-silicone based spreader to reduce percent mortality and for the other adjuvants to slightly increase mortality. RDP

INTERESTING INSECTS



Cicadas were prominent insects in ancient cultures, especially in ancient Greece. Cicadas are very numerous in the Mediterranean and sing almost incessantly during summer days. It is no surprise, therefore, that cicadas show up so often in Greek art, writing, and mythology. The cicada's life cycle was first described by Aristotle in the *Historia Animalium* (History of Animals).

The nymph emerges from the ground after a long period of time, shedding its old skin, making it an appropriate symbol for immortality among the ancient Greeks. The cicada was even engraved on some Greek coins! One Greek myth tells the story of Tithonus, who fell in love with the goddess of the dawn. In return for his love, the goddess gave him the gift of immortality. Unfortunately, Tithonus continued to get older and smaller, and eventually he turned into a cicada.

Insects make frequent appearances in the Bible. One hundred and twenty references to insects and their invertebrate relatives are contained in this literature. Most biblical references chronicle the negative aspects of insects, such as damage to crops, possessions, and people. Of the ten plagues of Egypt, six were insects and two were flies. However, not all references are negative. Solomon used examples from the insect world to enhance his teaching. To lazy idlers, he suggests in Proverbs 6:6 "Go to the ant, you sluggard; consider its ways and be wise!" (NIV). Also, John the Baptist dined upon locust and wild honey while wandering in the wilderness. RDP

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