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# FOCUS on Entomology

For South Plains Agriculture

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## COTTON INSECTS

**Weather this year has had a significant impact on the insect situation.** Dry, hot conditions encouraged rapid "dry down" of wheat which "pushed" thrips into neighboring young cotton fields. But recent rains have "hammered" thrips infestations reducing their threat at least temporarily. This of course is true only of those areas that received rain and strong winds. Both false chinch bugs and grasshoppers have moved into field margins as their other hosts deteriorated in the face of the continuing drought in some areas. The really good news is that our winter weather helped the already successful boll weevil eradication program reduce numbers of boll weevils to such low levels that this year's program will have to use a lower trap trigger to target insecticide applications otherwise very little spraying would occur. More on this later in the newsletter.

**Thrips management has been tough this year** with heavy movement out of winter wheat and other hosts occurring in many areas. Both dry conditions and heavy rains coupled with past cool temperatures set this crop up for a real thrips problem. Dry conditions make activation of soil-applied insecticides a challenge. Watering up cotton under these conditions can also leach these chemicals out of the root zone area temporarily as seeds germinate. Heavy rains can also cause this problem. But even so, the past cool temperatures significantly slowed cotton development while only slightly affecting the degradation rate on the systemic insecticides used. The bottom line? Most at-planting thrips control practices (granular insecticides and seed treatments) did not last long enough to cover the vulnerable period up to the 5$^{th}$ true leaf stage, at least under heavy thrips movement pressure. Did these at-planting applications provide any benefit? Yes they did! The reduced thrips control achieved this year still more than paid for these insecticide treatments.

Unfortunately, for any one or more of the above reasons, foliar applications have been needed more often than usual as additions to the at-planting insecticide treatment. In some cases as many as 2 foliar applications have been needed. Untreated fields have needed three foliar applications for full protection. My experience with foliar insecticides is that most are timed later than they should based on visible damage evaluations rather than thrips counts. There is still some benefit to be had with the delayed applications but often as much as 50% of the potential benefit is lost. Any

foliar application following either a first foliar application or an at-planting insecticide application should target only those fields that meet two criteria. The first is our threshold criterion of one thrips per true leaf present. The second would be the presence of immature, wingless thrips indicating reproduction. After all, with constant movement of thrips adults into certain fields, there can always be enough thrips present at the time of scouting to result in a treatment decision. But these adults may not be around or alive long enough to cause significant damage.

For those of you that planted late, especially the weather related replant decisions, you probably didn't need a seed treatment of Temik for thrips control. Generally more favorable cotton growing weather and lower thrips numbers greet these late emerging plant stands. You should still scout this cotton for possible over-the-top insecticide needs.

**Grasshoppers have been observed infesting field margins** of some cotton fields south and west of Lubbock in numbers that should cause some concern. Several species have been identified including adults of the differential, redlegged and twostriped grasshopper and the nymphs of the wingless jumbo or lubber grasshopper. Most problem situations have been field margins adjacent to wheat, CRP, range land or weedy areas such as fence rows and ditches. Grasshoppers have also been a cotton problem in some terminated wheat fields**.**

While these infestations are more of a problem this year, 2002 is certainly not the worst grasshopper year we have experienced since I have been here. The year was 1979 when grasshoppers about "ate us up" in some areas. I remember driving into some range land northwest of here with a county extension agent who refused to leave the pickup until we departed. Grasshoppers covered the ground as far as you could see and their noise reminded me of the locust plagues in Africa. So as bad as it may seem to some people, it could be worse. But there is still time for worse hopper problems to develop. The 1979 infestation problem peaked in July.

Treatment for grasshopper infested-cotton fields or areas of fields is justified when one lubber hopper is found on average per 3 row feet or two per square yard of vegetation around the field margin. For other species, we use twenty or more per square yard in crop margins or 10 or more per 3 row feet in the field as treatment guidelines. This is for smaller species of hoppers. Controlling grasshoppers early, especially when they are small is most effective. The labeled synthetic pyrethroids are all probably very effective. A recent test by extension IPM agents Scott Russell and Joe Kirk Newbrough indicated that Karate Z, Asana and Capture were effective in reducing grasshopper numbers but Lorsban was not. ULV malathion is also an option, especially where range land is involved in the treatment. Dimilin is very effective where most of the grasshoppers are not yet adults. Remember that adult control is much more difficult than control of nymphs.

While many folks that are controlling grasshoppers at this time have opted for the relatively cheap and effective pyrethroids, there is a downside to their use. Pyrethroids can increase later aphid problems. Pyrethroids also effectively

kill and prevent re-colonization of beneficial insects for a longer period than most other insecticides. And---there are resistance issues as well. These pyrethroids are still very effective on bollworms and some other pests as well. In fact, their broad spectrum effectiveness could end up exposing non-target insects unnecessarily, resulting in the increased chance of resistance. Consider using a different class of insecticide. OP's like Bidrin work well. So does methyl parathion or Penncap-M. These are toxic materials and must be carefully used in accordance to the label.

**False chinch bugs have been reported to be a problem** in a limited number of instances. This is what you can expect in a generally droughty year (ya I know some areas around here got mega inches of rain recently). This tiny black bug has several wild hosts including tansymustard. When these weeds "dry down" this insect moves to greener pastures. When large enough numbers invade the field margin of cotton and "suck the sap" out of seedlings, stand loss is inevitable. We do not have a threshold for this potential pest so a treatment call is going to have to be up to you. Your Bidrin or Orthene applications for thrips should do the trick for controlling these bugs. Incidentally, false chinch bugs have never been observed to damage squares or cause reduced square set.

**Many earlier planted fields are squaring** or approaching squaring at this time. Late April planted fields could have as many as 5 squares, pinhead size or larger present. These plants would have somewhere between 8-10 true leaves. If your field has plants with 5 true leaves, you need to start checking for square retention and insects that could potentially remove squares. Both cotton fleahoppers and Lygus bugs (either the western tarnished plant bug or Pale legume bug) can be the culprits if square retention drops below acceptable levels. Right now our acceptable level of square set is pegged at 90% after the first week of squaring, 85% after two weeks of squaring and 75% after three weeks of squaring. Recent Cotton Incorporated research we are involved in at AGCARES at Lamesa has indicated that these square retention target levels may be too aggressive, at least during the 1st two weeks of squaring. In these studies, manual removal of early squares did not decrease yield but instead, increased yield.

**We have been using a tool called COTMAN for monitoring cotton** growth and progress. It was initially developed by the University of Arkansas, mainly from funding provided by Cotton Incorporated. Its validation and evolution continues as more research and extension scientists across the belt continue to "tweak" it in the many projects funded each year by CI. This is a computer-based tool which tracks square retention and plant stress during the early part of the season. Later it is used to determine when the crop is safe from damage from several insect pests and when the crop is ready for a harvest aid treatment. We will be talking about this tool as the season progresses, how we are using it and what it is telling us in the various tests we are conducting across the area.

Fleahopper numbers of 25 or more per 100 terminals inspected would be needed in conjunction with the reduced square retention to justify treatment. If Lygus bugs are present, only one adult or nymph need be present per 3 row feet examined (usually with a drop cloth) to justify a treatment in response to reduced square set. Lygus bugs are much larger than fleahoppers---1/4 inch in size as adults versus 1/8th inch long for adult fleahoppers. Adult fleahoppers are usually pale green in color while nymphs can almost be white to pale green, depending upon when they had their last meal. They are not winged like adults. One day old fleahoppers are extremely small! Lygus bug

adults have a light colored triangle or heart shaped area on their thorax (back). They can vary in color from pale green to yellow-brown with reddish brown to black markings. Immature Lygus have red tipped antennae. Older nymphs have black spots going down their back.

Where do all these plant bugs come from? Both fleahoppers and plant bugs have several weed and cultivated hosts. Yellow sweetclover, prairie sunflower, evening primrose, tumble mustard, flixweed (tansymustard), lance leaf sage and silver leaf nightshade (white weed) are some of the weed hosts for one or both of these insects. Alfalfa in particular is an important source of plant bugs in this area (both cultivated and roadside weeds). Also, later planted and squaring cotton often is infested from earlier planted cotton fields.

Dr. Megha Parajulee, new Lubbock Experiment Station cotton entomologist, is conducting a survey of potential weed hosts for Lygus bugs this year with sample sites across the High Plains area. He is particularly interested in host sequencing, that is, the movement of Lygus from one host to another through time as one host becomes unsuitable and another more suitable. Eventually this information could lead to a better forecasting ability for Lygus problem years and eventually identify areas and even cotton fields that may have a higher risk of Lygus infestations because of their proximity to alternate hosts. Thus far he has sampled in April, prior to cotton planting, and May, as cotton emerged. Mustards initially had the highest numbers of bugs but alfalfa soon became an important host as mustards senesced and alfalfa began blooming. Yellow sweetclover has now become an important host too. Surprisingly, more Lygus have been found in the northern counties versus the central and southern counties surveyed.

Numbers of adult fleahopper and Lygus bugs are being found in squaring cotton at levels presently below our suggested treatment levels. Nymphs, or immatures (wingless) plant bugs have not been found yet but probably will be picked up next week as reproduction occurs. We check for fleahoppers by examining the terminal area of individual plants. Adults can readily fly off as you approach a plant, especially if you cast a shadow on their plant. Nymphs and adults can "hunker down" in the terminal whorl or run down the cotton stalk. Some other insects can be mistaken for fleahoppers and even small, immature plant bugs. These include leafhoppers, aphids several of the bug predators including minute pirate bugs and big-eyed bugs, and other look-a-like plant bugs that have no or minimal impact on square retention.

Sampling for Lygus bugs at this time of the season is best done with a drop cloth. This consists of a white to off-white 36X42 inch cloth (for 40" row spacing) with strips or dowels of wood stapled to the two short sides of the cloth. Carefully unroll and place the drop cloth between two rows at the sample site selected and vigorously shake 18 inches of

plants from each row to the center of the cloth. This represents 3 row feet. Count adults first as they will fly away before you get through looking for nymphs. Then count nymphs. Do this in several areas of the field and derive an average number per 3 row feet.

Fleahoppers damage only pinhead-sized squares while Lygus bugs can damage all sizes of squares, blooms and small bolls. Evidence of damage can be a "blasted" square, a tiny scar where the square has been shed after damage, or no obvious visible damage if the square was attacked 1-3 days prior to inspection. These squares are damaged when these bugs inset their mouthparts into the square and remove plant juices.

There are many insecticides that can adequately control fleahopper and Lygus bugs although higher rates are usually needed for the Lygus bugs. These include: Orthene and Address, the pyrethroids, Lorsban (fleahoppers only), Bidrin, Dimate and Dimethoate, Provado and Trimax, Steward (fleahoppers only), Lannate, methyl parathion, Penncap-M, Parathion (Lygus only), Metasystox-R (fleahopper only), Centric (fleahopper only) and Vydate. Check their labels for appropriate rates and precautions. Also check for listings of insecticides and management recommendations for cotton insects in west Texas.

**A few bollworms and beet armyworm eggs and larvae have been reported** but their numbers have thus far been inconsequential. Several IPM agents are running traps for these caterpillar moths and should be consulted for more local information. Dr. Megha Parajulee is also trapping moths at sites in Gaines, Lubbock and Hale counties. The following are the weekly numbers per trap for the period ending June 12:

| Location | Bollworm | Budworm | Beet armyworm |
|---|---|---|---|
| Gaines | 213.4 | 5.3 | 69.4 |
| Lubbock | 1009.7 | 5.0 | 27.7 |
| Hale | 161.1 | 7.9 | 70.5 |

Bollworm moth numbers significantly increased this past week, especially in Lubbock County. There has been very little budworm moth activity during the 11 week trapping period. Beet armyworm moth catches were down in both Lubbock and Hale counties and about the same as last week in Gaines County.

The Texas Boll Weevil Eradication Foundation beet armyworm trapping effort indicates that their numbers are fairly low for this time of year (last week) averaging 18 per trap week in the Northern High Plains zone, 8 per trap in the Northwest Plains zone, 35 per trap in the Southern High Plains zone, 83 per trap in the Western High Plains zone and 11 per trap in the Permian Basin zone. Usually we capture several hundred per trap in problem years. If droughty conditions persist in spite of recent rains, we could still be at risk.

**Boll weevil trapping is picking up greatly reduced numbers** of weevils, even in west Texas eradication zones that started with last fall's diapause program. Per trap accumulative averages of weevil numbers caught during the previous 8 weeks by the Texas Boll Weevil Eradication Foundation are shown below:

| Zone | 2002 | 2001 | 2000 |
|---|---|---|---|
| Northwest Plains | 0.0003 | 0.051 | 0.200 |
| Western High Plains | 0.001 | 0.0445 | 0.964 |
| Permian Basin | 0.00013 | 0.035 | 0.254 |
| Northern High Plains | 0.009 | ------- | ------- |
| Southern High Plains | 0.003 | ------- | ------- |

The GRID trapping program conducted by Plains Cotton Growers in conjunction with Texas Cooperative Extension has only picked up one weevil in about 900 traps during the last 2 weeks. This weevil was trapped near the King Mesa Gin in Dawson County. Most of the weevil captures by the Foundation have been concentrated near towns and fields adjacent to the best overwintering habitat.

The two newest zones way ahead of schedule with such low numbers. Spraying began as cotton approached squaring and trap numbers met trigger criteria of one weevil per field. All zones in our area are using this trigger, even the newest zones. Without a lower trigger, the foundation would not treat enough to maintain pressure on the weevil population and make acceptable progress toward eradication. Even with this lowered trigger, I would be greatly surprised if weekly sprayed acreage was very high. In fact so far this year, sprayed acreage is extremely low.

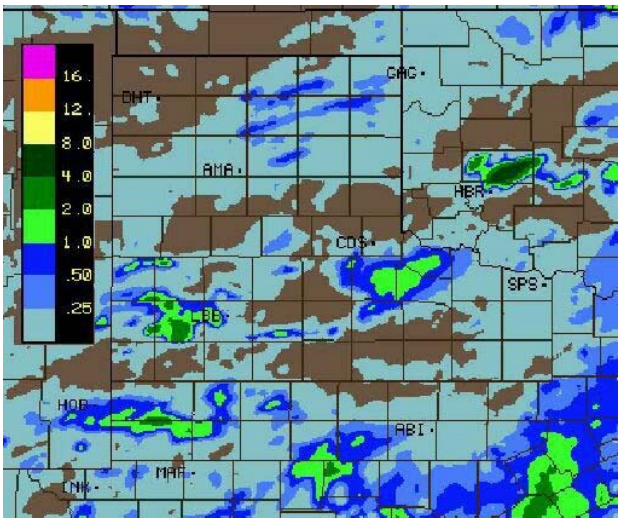
Accumulative acreage sprayed for boll weevils through June 9, 2002:

| Zone | Accumulative acres sprayed |
|---|---|
| Northwest Plains | 0 |
| Western High Plains | 0 |
| Permian Basin | 0 |
| Northern High Plains | 57.6 |
| Southern High Plains | 1,552.6 |

Sprayed acreage will increase as more fields reach the pinhead-size square stage but overall acreage will be lower than normally observed in programs entering their first full season year. This means that minimal impact would be made on our beneficial insects. While a few beet armyworms have been found and small colonies of aphids can be found on young cotton, there is little indication at this time that there is much of a risk of creating secondary pest problems with this year's program. **JFL**

## COTTON AGRONOMY

Weather patterns continue to challenge producers across the region. Some areas have received badly needed rainfall while other areas are still dry. Unfortunately, it has not been unusual to obtain hail and/or high winds with the rain. Severe storms tracked across several central counties on the 8th, 9th, 11th, and 12th, producing high winds, blowing sand, hail, and some rainfall. Northern Lubbock County experienced two back-to-back storms on two days. Rainfall amounts from recent evening thunderstorms, which fired up and tracked across the region, have been very helpful in some places. The continuing pounding of some areas has resulted in a difficult situation.



Weekly rainfall amounts for the Texas High Plains area ending June 12, 2002. The legend is accumulated inches. Modified from WSI Corporation, Estimated Precipitation Chart.

Stand losses are still being pondered as we attempt to estimate damages from the June 4th storm. Estimates of losses in Lubbock County are at least 40,000 acres, Hockley County about 20,000 acres, Garza and Lynn counties at about 14,000 acres. Crosby County losses have been estimated at 20,000 acres, while Hale and Floyd counties totaled about 50,000 acres. This totals over 140,000 acres lost from the June 4th storms.

A recent phone survey of Extension agents across the area, indicated that around 40,000 acres total have been severely damaged or lost in Hockley County. Perhaps as many as 30 center pivots were turned over in Cochran and Hockley counties. Lubbock County's acreage losses are now perhaps 60,000 or higher. High winds hit Gaines County on the 9th and knocked out perhaps 5,000 acres and turned over several center pivot systems. Deaf Smith County has lost around 8,000 acres. Reports from Terry County indicated that approximately 10,000 acres were destroyed on June 12. High winds were reported in Yoakum County associated with the storm system also on the 12th. With these additional losses over the last few days, perhaps the High Plains cotton acreage lost to recent weather may be near 200,000 acres.

The good news is that some badly needed rainfall has been reported across much of the area. According to the National Weather Service Web site the following amounts have been received from June 5th through the 13th (as of 7 am) at the following official recording stations:

| Location | Total amount (inches) |
|---|---|
| Abernathy | 4.60 |
| Brownfield | 1.03 |
| Crosbyton | 0.87 |
| Denver City | 0.45 |
| Dimmitt | 1.95 |
| Floydada | 2.28 |
| Friona | 0.34 |
| Hereford | 0.80 |
| Lamesa | 0.00 |
| Levelland | 3.25 |
| Littlefield | 1.27 |
| Lubbock | 3.03 |
| Morton | 0.45 |
| Muleshoe | 0.00 |
| Olton | 0.00 |
| Plainview | 0.60 |
| Post | 0.23 |
| Seminole | 0.71 |
| Snyder | 0.02 |
| Tahoka | 1.66 |
| Tulia | 0.27 |

Our biggest concern now is for drought effects in the counties, which represent our largest concentration of dryland production. Reports from agents and my observations are that 50% of Terry County's dryland is not emerged, perhaps 75% for Gaines County, 40% for Cochran County and 60% for Dawson County. It appears that we are headed for a substantial dryland abandonment in the counties south of Lubbock, which may still approach some 500,000 acres.

Replanting of "knocked-out" cotton is probably out of the question for most producers in the High Plains region, so any further cotton crop losses will "chip away" at our harvested acres potential.

Heat unit (DD60) accumulation for the first two weeks of June is picking up. At Lubbock we have recorded a total of 211 from June 1 to 12, and the long-term average is 185.

**Roundup ready window closing in many fields.** Almost all cotton that was planted up to May 15 and had reasonable development is reaching the Roundup over-the-top window closure. Stay on point and get those fields sprayed in order to reduce yield loss potential from late applications. **RB**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