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For South Plains Agriculture

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A Technician I position has opened up at the Lubbock Center under cotton entomology research and technical support. Go to http://greatjobs.tamu.edu for more information.

NEWSLETTER CONTRIBUTORS

James F. Leser, Extension Entomologist
Randy Boman, Extension Agronomist
Terry Wheeler, Research Plant Pathologist

COTTON INSECTS

The insect situation in High plains cotton is still relatively quiet although bollworm and aphid activity may be ramping up. With increased canopy closure, high humidity and moderate temperatures, both of these pests will survive and reproduce better. Predicted rain showers over the weekend will also help these pests and increase our risk. But much of the earlier planted crop is cutting out and soon will have difficulty supporting bollworms. Pink bollworm larvae could be increasing in fields to the south and southwest but there are no reports of spraying at this time. Lygus bugs remain a low level pest risk.

The bollworm situation may be changing this week. Reports of increased activity and threshold infestations to the south of us may indicate the start of long-range moth movement from the South Texas and Uvalde areas. I have had reports of increased spraying in Dawson County and there has been more activity in the Southern Rolling Plains and St. Lawrence area for the last couple of weeks. The increase in infestation levels due to the influx of new moths wouldn't be the only concern. There could be some pyrethroid resistance issues as well.

Thus far, the bulk of our southern High Plains acreage has infestations of a more chronic nature with only a few requiring treatment to halt the damage that has been accumulating over the last week or two. Infestation levels are all over the place and significant numbers are widely scattered. Don't fall into the trap of spraying sub-threshold levels (below 10,000 1-3 day old larvae per acre) just because someone else sprayed. They may have had a legitimate problem field----or maybe not. That does not necessarily mean you do. Each field has its own unique problems and history. Scout to make sure. And while on the topic of scouting---this is not hunting for worms!! This will greatly inflate your estimate. You inspect randomly selected individual plants for eggs and worms.

These plants represent a cross section of your field. If you find the worm responsible for the damage on the plant you are inspecting but it is on an adjacent plant---YOU DO NOT COUNT IT! See our insect management guide for more ideas on how to scout cotton.

Bloom tag larvae

If you are scouting Bollgard cotton varieties (and you do need to scout these varieties) then you need to pay particular attention to blooms and "bloom tags". These are locations where survival will be the highest.

Once cotton plants average 3 or fewer nodes above white flower, square production is ending and plants are shedding squares and small bolls. This creates a situation where small bollworms have great difficulty establishing infestations. Most infestations from this point on will be in the later planted, lusher fields with more "horsepower".

The bollworm situation north of Lubbock may soon change too. The bollworms (earworms) in corn have pretty much left corn ears and pupated in the soil. Moths will be coming out over the next week or so. These are the ones we must watch out for to protect our northern cotton fields.

Pink bollworm trap catches have increased again as of last week in many counties (see chart). But we still are not seeing the same problems developing as we did in 2004 when more acreage was sprayed and several fields received double-digit applications. This week's trap catches are up some more in selected counties to the south. We are in the middle of a rosetted bloom survey that allows us early detection of pink bollworm infestations. None were found in Cochran, Hockley, Lubbock, Parmer, Bailey or Gaines counties. But rosetted blooms were found in Glasscock (2.0%), Upton (2.7%), and Reagan (2.5%) counties. Our next field generation of moths should have appeared around August 6 in the San Angelo area, August 10 in the Midland area and by August 28 in the Lubbock area. (See Plains Cotton Growers "Pink Bollworm Information").

Consultants are cracking bolls and looking for pink bollworm infestations. So far little if any spraying is going on. For more pink bollworm information see Pink Bollworm Management Tips I in the Crop Production Guide Series of FOCUS and Pink Bollworm Management In Texas.

Most fields have a few aphids, mainly in terminals and a few in squares and blooms. But until they start moving down the plant and to the undersides of middle to lower leaves, they pose no problems. There are those few fields where aphids have moved lower and are increasing in number. Once this happens you will need to track their numbers per leaf on a representative sample of fully expanded top and middle mainstem leaves.

Curled leaves - aphid damage

Our nominal threshold for treatment is 50 per leaf on average. Experience shows that most folks underestimate aphid numbers, probably not seeing the very small nymphs. Once there is enough honeydew and aphids to attract their attention, aphid numbers have often climbed above 100 per leaf. Occasionally aphid infestations will develop in spots in fields, ever

changing as natural enemies play catch-up. These situations can often be ignored.

Infestations that slowly approach the threshold and stay at or below this level for many days usually can also be ignored. It is those situations where aphid numbers rapidly increase through the 50 per leaf threshold that concern is warranted. You still have a few days to react as long as the infestation was discovered at around 50 per leaf rather than 100-500 per leaf. As long as small bolls are present that have enough time to mature and produce a harvestable boll, aphids will need to be controlled for yield protection. Intruder is the blue ribbon insecticide for this pest. But Centric, Trimax and Bidrin are good materials too.

Beet armyworm and Lygus bug numbers remain mostly below threshold. There could be a field or two that develop problems but these will be few and far between. Surveys conducted through Dr. Megha Parajulee's research program at Lubbock continue to show 2005 as a low Lygus bug year. This situation could change later but for now, this year has been blessed with virtually no problems from these pests. For more information on our Lygus bug research program visit the Ag News and Public Affairs website.

For more management information on west Texas cotton insects, including a list of recommended insecticides, go to: Managing Cotton Insects in the High Plains, Rolling Plains and Trans Pecos Areas of Texas 2005 (E-6) and Suggested Insecticides for Managing Cotton Insects in the High Plains, Rolling Plains and Trans Pecos Areas of Texas 2005 (E-6A).

Boll weevil trap catches increased again in the Permian Basin, Western High Plains, Southern High Plains and St. Lawrence eradication zones. But accumulative sprayed acreage is still below 300,000 at this point in the year. Trap catches have increased significantly in the Valley and South Texas programs as their crop finishes up and bolls pop open. The Northern Blacklands zone started spraying last week. This is the last remaining zone in Texas and in fact the nation to join the eradication effort.

Average number of boll weevils caught per trap inspection and sprayed acreage through August 7. Number of boll weevils caught for the week ending August 7, 2005.

High Plains Zone	2005	2004	Sprayed acres	Total weevils caught this week
Permian Basin	0.0245	0.0076	165,967	142
Western High Plains	0.00002	0.00001	8,514	3
Southern High Plains	0.00004	0.00004	18,934	4
Northern High Plains	0	0.00001	0	0
Northwest Plains	0	0	0	0
Panhandle	0	NA	0	0
St. Lawrence	0.2496	NA	56,650	794

New pesticides for cotton. Bayer did get the new miticide, **Oberon** registered through EPA as a foliar application on cotton, corn and many vegetable crops to control not only mites but also whiteflies and psyllids. It represents a new chemical class and a new mode of action. Oberon is reported to be highly effective against all stages of spider mites. It can be used both in preventative and remedial situations. Arizona has tested it but I am not aware of data from Texas.

Diamond was registered recently by Crompton Crop Protection and is reported to control plant bugs, stink bugs. fleahoppers, bollworms, tobacco budworms, several species of

armyworms and loopers. It is also labeled for suppression of whiteflies and thrips. I had a question about its fit for our Lygus problems in west Texas a few weeks ago and queried Dr. Larry Godfrey, Arizona extension entomologist about its effectiveness. He stated, "Diamond provides moderate to good control of *Lygus hesperus* nymphs (~60-75%). For us, unfortunately we have very few nymphs in our cotton during the most critical times; we could be 80% adults during these times, so Diamond really does not have a fit." Diamond does not have activity on Lygus bug adults. I would say our west Texas situation is similar to Arizona's. I have no idea about its effectiveness against the other listed pests.

Kitten Fertilizer & Supply continues to market **Aphid Pruf**. It is registered as an insecticide for control of aphids with EPA **only because it contains garlic**, a material recognized and registered as an insecticide in other formulations by EPA. The mode of action described in their promotional literature is not registered with EPA. My tests have always failed to show any activity against our aphids in cotton.

Remember, always read the official label before using any pesticide. **JFL**

COTTON AGRONOMY

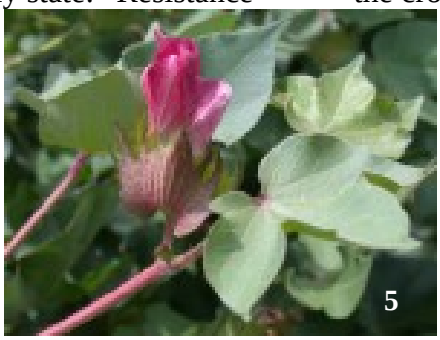
Considerable much welcomed rainfall has recently been obtained across much of the region. While I was away, substantial rainfall painted many High Plains counties. Based on what I have been told and observed from rainfall distribution on the Texas Tech University Mesonet network, locations Bailey, Castro, Swisher, Lamb, Hale, Floyd, Crosby, Lubbock, Hockley, Cochran, Yoakum, Terry, Lynn, Dawson, and parts of Gaines counties apparently received from 1 to 2 inches, and more according to some reports. This is great news for our dryland producers and our irrigated producers will certainly be able to save some scarce input dollars on expensive pumping this year.

Overall, July was slightly above normal for precipitation at Lubbock. All of this came with somewhat of a price tag as far as temperatures go. In July, we ended up about 2% below our long-term average for the month due to extremely cool temperatures late in the month. As we are progressing through August, due to below normal temperatures, we are now about 14% below normal heat unit accumulation for the first 10 days of the month. For the entire growing season for a May 1 planting date, we are now about 3% above normal. However, due to extremely cool conditions that first week of May 2005, not much cotton was planted and we have observed that we have "late cotton" in many areas. If we contrast that to 2004, we really got into the swing of cotton planting in the first week of May. Overall, if we compare the heat unit accumulation for 2004 and 2005, we can see that earlier in the season of 2004, we had accumulated more heat units, and this year we were definitely cooler. If we compare heat unit accumulation after July 1 to August 10, the two years are eerily similar.
We are hitting cutout in many fields, while some late-planted ones are just beginning to bloom. Typically, based on long-term data, our last effective bloom dates are now beginning to come into play, especially in our northern counties.

With all of our standing acres (about 3.3-3.4 million?), we are still set up for a big crop, and many believe we are headed for a very big crop in 2005. Last year the season ended on a very cool note, and we had a decent to good irrigated crop, but excellent dryland yields in many fields. Considerable immature fiber (low micronaire) was noted in about one-third of the bales produced. I wonder how this year will finish?

Announcement of "probable glyphosate resistance in Palmer pigweed". While I was away, there was some stressful news released by the University of Georgia and Monsanto

concerning "probable glyphosate resistant" Palmer amaranth. The University of Georgia news release states the following: "Currently, we are investigating control problems involving Palmer amaranth (Palmer pigweed) in Roundup Ready cotton at specific sites in Central Georgia. Field histories, plant/seed collections, greenhouse experiments, and field studies, indicate probable glyphosate resistance in Palmer pigweed. Additional work regarding species verification and the heritability of the trait are needed to provide confirmation of resistance for the scientific and regulatory communities. The problem does not appear to be widespread, but we are evaluating weed response in fields in the vicinity of the identified sites to better understand the situation." They additionally state: "Resistance should not be confused with other herbicide performance failures. Among the factors that can reduce weed control with glyphosate are issues linked to environmental effects, sprayer calibration, application procedures, spray coverage, herbicide rate, and weed size. Weed size is particularly critical. We suspect that as pigweed (even susceptible plants) initiate reproductive growth, response to glyphosate may decline considerably, making separation of susceptible and resistance types more difficult this late in the growing season and calendar year."



University of Georgia and Monsanto scientists are currently scrutinizing this population of pigweed. The best resistance management approaches include using multiple weed control methods in the field (including diverse herbicide chemistries and modes of action) and making sure that all applications are made according to herbicide labels (including rates). An excellent publication by Dr. Paul Baumann (statewide Extension weed scientist) is available concerning weed resistance. At this time in our region, although there is cause for concern, I don't believe there is cause for alarm. We typically have continued the use of several preplant incorporated, preemergence and post-emergence herbicides, and in many cases still use some cultivation. It is my understanding that the grower in this particular situation in Georgia relied exclusively on glyphosate for weed control. We will be hearing more about this in the future as the dust begins to settle on this situation.

Late-season weed control with glyphosate in Roundup Ready cotton. We have been getting some calls concerning the use of Roundup (or other glyphosate materials) over-the-top to kill some late-season weeds. Roundup WeatherMax/OriginalMax can be applied over-the-top per label directions once the crop has reached 20 percent open bolls. Up to a maximum of 44 oz per acre of Roundup WeatherMax/OriginalMax can be applied at least 7 days prior to harvest. If producers choose to treat fields that are not at 20 percent open bolls, they should recognize that they are on the "salvage" portion of the Roundup label. The "salvage treatment" is limited to 22 oz/acre of Roundup WeatherMax/OriginalMax sprayed over-the-top of cotton plants and weeds. Based on data from previous field projects, in some years we obtained slight, but statistically significant yield losses when applying the salvage label rate of glyphosate near cutout. However, we noted about a 30% yield decrease from such an application in a trial at Halfway in 2004 (applied August 5th). I suspect that was due to last year's cooler growing season. Plant condition, as affected by environmental factors, appears to influence potential yield loss. Remember, unless your field is at 20 percent open bolls you are on the "salvage label." **RB**

VERTICILLIUM WILT

Verticillium wilt of cotton is becoming a moderate problem in some fields. This disease, which is caused by the fungus *Verticillium dahliae*, is not as severe as it was in 2004, but

is causing significant damage in some fields. Once cotton begins flowering, wilt symptoms due to *Verticillium dahliae* can be found. If the stem is cracked, then brown streaking in the vascular system is found. Cooler weather causes more severe symptoms. Plant symptoms can be identical for both Verticillium and Fusarium wilt at this time of the year.

If your field does NOT have root-knot nematode galls, then you probably have Verticillium wilt. However, if you have root-knot nematode galling in your field, then the wilt could be caused by EITHER *Verticillium* or *Fusarium*. It is IMPORTANT to distinguish between the two diseases, because MANAGEMENT for both diseases is primarily by choosing a less susceptible variety. However, the varieties that are more resistant to Verticillium wilt may be quite susceptible to Fusarium wilt, and visa-versa. If there is a question as to which type of wilt is present, it is better to send in a sample to confirm the pathogen.

Verticillium wilt symptoms

Plains Cotton Growers are sponsoring variety testing in Verticillium wilt fields. We are currently rating varieties at four different locations: Lubbock, Muleshoe, Lamesa, and Colorado City. The test in Lamesa has the greatest symptom development at this time so only those results are presented in the table. Generally, the earlier that plants develop symptoms, the more severe the damage. However, some varieties may tolerate wilt better than other varieties. Yield differences will be presented during winter meetings.

Management questions?

1. Variety: Choice is very important, although no variety is immune to the disease. We hope to have some variety recommendations by this winter.
2. Irrigation: Disease is generally worse in the wettest area of the field, however, once the pathogen builds up in the soil, any part of the field can be affected.
3. Crop rotation: *Verticillium dahliae* lives for many years in the soil even when a host plant is not present. Crop rotation may slow down the buildup of *Verticillium dahliae*, but once there are high levels in the soil, then crop rotation will not help manage the disease.
4. Cultivation: I believe that minimizing wounds to the roots may help in a small way, but under high disease pressure, it will not be sufficient.
5. In-season applications: I know of no fungicides or nutrient additives that will help with this disease.
6. Soil fumigation: Soil treatment with metham sodium (Vapam or Busan 1020) is effective against Verticillium wilt in vegetable production. I am not sure what rates would be cost-effective for cotton. This is an area that needs more work. **TW**

Brownstreaking in vascular system

Incidence of plants with Verticillium wilt on August 8, 2005 in Lamesa.

Variety	% Wilt[a]
Stoneville 4575BR	48 a
DeltaPine 488BR	39 ab
Americot 821R	39 ab
DeltaPine 449BR	38 ab
Beltwide Cotton Genetics 30R	37 abc
Deltapine 445BR	37 a-d
Associated Farmers Delinting 3602R	36 a-d
DeltaPine 5415RR	36 a-d
Americot 262R	35 a-e
Beltwide Cotton Genetics 28R	35 a-e
Stoneville 5303R	34 a-e
Stoneville 5599BR	33 a-e
DeltaPine 434RR	33 a-e
DeltaPine 555BR	32 a-e
NextGen 2448R	31 a-e
DeltaPine 5690RR	30 a-e
DeltaPine 424B2R	30 a-e
Stoneville 4686R	28 a-e
DeltaPine 494RR	28 a-e
Stoneville 6636BR	28 a-e
Beltwide Cotton Genetics 50R	28 a-e
Deltapine 455BR	28 a-e
Phytogen 410R	26 a-e
DeltaPine 444BR	26 a-e
Stoneville 5242BR	23 b-e
FiberMax 989BR	22 b-e
NextGen 3969R	22 b-e
Phytogen 470WR	21 b-e
All-Tex Atlas RR	20 b-e
Paymaster 2266RR	20 b-e
FiberMax 989RR	18 b-e
Paymaster 2379RR	17 b-e
FiberMax 960B2R	16 b-e
FiberMax 989B2R	15 cde
FiberMax 960BR	14 de
FiberMax 960RR	13 e

[a]Varieties with a different letter have significantly different levels of Verticillium wilt.

COTTON INSECT PHOTO CREDITS

1. Smith, Ron. Auburn University. Image UGA 1858026.
2. Cranmer, Andy. Texas Cooperative Extension.
3. Smith, Ron. Auburn University. Image UGA 1858079.
4. Clemson University. Image 1233021. http://www.ipmimages.org
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James F. Leser, Editor
Michelle Coffman, Associate Editor & Graphic Designer

For more information call or e-mail:
806-746-6101 or m-coffman@tamu.edu