

FOCUS on Entomology

For South Plains Agriculture

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August 23, 2002

COTTON INSECTS

Cotton continues to be stressed by limited moisture conditions in spite of scattered teasing rains. Temperatures in the 90's have really made much of the dryland and limited irrigated crop go down hill fast. It wouldn't surprise me if our High Plains yield fell to 2.8 million bales or so before it is all over. Much of the above cotton went into the current period with an over commitment to vegetative growth and fruit in response to earlier favorable conditions. When timely rains failed to materialize, this crop went south. Massive shedding has taken place with this crop cutting out and opening bolls at an alarming rate. The irrigated crop with good water has the potential for very good yields.

What relevance to pest management does all this have? It should mean that much of our crop is at or approaching the safety zone from insect damage. While aphid infestations are at bothersome levels in many instances, their impact on yield is mostly inconsequential at this time. Next on the work list would be the sticky cotton issue. Most caterpillar pests are now having a more difficult time establishing in much of this crop and pose a greatly diminished threat to our yields. This would also hold true for Lygus bugs too. Bolls still need protection from the recently arrived migration of pink bollworms in the Gaines County area. So in summary---we appear to be on the fast track toward shutting down our pest control operations and thinking about harvest aids.

Bollworm egg lays have continued now for

many weeks in several areas and reached epic proportions last week when moths moved out of area corn and fanned out across the area. It was not uncommon to find 150,000 to 350,000 eggs per acre. Survival has dropped off dramatically in the last several days allowing us to tolerate high egg or small larvae numbers without pulling the trigger. When control decisions are based on small larvae; a threshold of 20,000 per acre should be used now. If you wait until larvae are well established (3/8" or larger), then I would still use the 10,000 per acre threshold. When square numbers plummet and small bolls are shed following cutout and/or moisture stress, young bollworms have a difficult time surviving and gaining sufficient size to penetrate tougher bolls. The pyrethroids are still the best option here in spite of the aphid-flaring threat. Right now we need cheap and effective treatments not more expensive and beneficial insect-friendly materials.

Don't forget that Bollgard varieties will provide some measure of protection from bollworms, less for beet armyworms and very little for fall armyworms. Older Bollgard cotton isn't as effective as younger cotton. If you are in Gaines County, I have some good news for you. Pink bollworms will not make it on Bollgard cottons.

There has been some question about the presence of tobacco budworms in our area. I guess this is because there have been control problems in some fields. Thus far we have not identified any budworms in the mix of surviving caterpillars following pyrethroid applications. They have been all bollworms. I would suggest looking at coverage issues, rates and nature of the infestation (age of larvae and their distribution) as causes for poor pyrethroid performance.

Fall armyworms arrived in the High Plains area last week with infestations increasing in intensity through this week. Egg laying activity by moths has been high in the Lubbock area and relentless. Caterpillar counts have been high with small larvae sometimes being found behind the calyx of bolls. Try getting insecticide to this area! This pest lays eggs in fairly large masses (usually larger than beet armyworm egg masses). There is generally less leaf feeding associated with this species. Caterpillars have less body hairs than bollworms and have an inverted "Y" on their



head. This distinctive characteristic is not evident on early instar larvae.

Fall armyworms (FAW) can eat a lot of fruit so

don't get caught underestimating their damage potential. Bollgard cottons will not help you with this pest. Pyrethroids in general are not real great against FAW. Capture and Karate appear to be the best. I would use higher rates if you select a pyrethroid. Intrepid has looked really good at 6.0 ounces per acre. I really like this product for armyworm control in general. It will be hard to beat. Intrepid does not control bollworms

Beet armyworms continue to add to the mix of "worms" in cotton. Texas Boll Weevil Eradication Foundation traps indicate that moth activity has increased only in the Southern and Northern High Plains zones. Egg numbers appear to be lower than last week but we still have a number of fields with treatable levels or have treatable levels of a mix of caterpillars such as bollworms and beet armyworms or fall armyworms together. Chemical selection will be important here. You must pick the one or two best insecticides to give you the biggest "bang for your buck". Cash is getting short to nonexistent out there necessitating frugality without total abandonment of yield-threatening situations. Intrepid rules for beet armyworm control. Other materials would include Steward, Tracer and Denim. Remember that as cotton passes cutout, beet armyworms tend to feed more on boll bracts, boll walls and leaves and therefore become less of a yield threat.

Aphid infestations have become very unstable lately. We have watched infestations in many fields increase rapidly and spread out from the terminal area and from fruit to the lower leaves (sometimes in response to earlier pyrethroid applications) only to have them "crash" a few days later. We have had great difficulty in trying to establish our second insecticide screening trial for aphids where issues about residual control are important. Even our first test didn't maintain aphid numbers out to a week. Even though lady beetles and lacewing larvae are more plentiful now, their presence does not explain most of these sudden crashes. What this does mean though is that we are at or near the end for the need to spray aphids for yield protection.

Aphids affect yield by reducing boll size. We have yet to establish a good relationship between boll size reduction due to aphids and shorter fiber length, reduced micronaire or a reduction in seed number. All this would leave would be the number of fibers per seed. We are presently looking at this hypothesis. If a reduction in fibers per seed is responsible for most of the aphid-induced yield loss then most of our fields are clearly past the yield threatening stage. The only thing left would be concern for sticky cotton if these aphids persist as bolls begin to open. It is too early to tell whether this problem will materialize. I would not consider spraying aphids before boll opening as a preventative. There is too much uncertainty involved in this approach.

Lygus bugs have remained a non-issue for most area cotton fields. But for some fields, their numbers have recently increased to threshold levels. It will now become a race for these fields between increasing damage and safeness of yield-contributing bolls. Lygus numbers will continue to rise in some of these instances and will require treatment. Our best shot under pressure would probably be a pyrethroid. Orthene or Address has also proven to be effective under lesser pressure. **Pink bollworm moths are increasing in area traps to troublesome levels**, mostly in the southern counties. Management of the pink bollworm can be tough during periods of migration. These migrations occur in the latter part of the season as bolls are maturing. "Pinkies" can enter fairly old bolls. Once bolls are "rock hard", they will be safe. This may take 30 days or more following bloom. This could be as much as 600-650 heat units following NAWF=5 (cutout).

Producers and consultants have two management choices. They can either take the proactive approach and spray based on pheromone trap catches or they can wait until a larval infestation is established and spray when 10-15% of the quarter-sized bolls examined are infested.

If following the trap approach, use the sticky trap. There is an oil trap as well but sticky traps are more readily available and are what the Texas Boll Weevil Eradication Foundation is using. When trap catches reach 50 or more per day, spray the field in question (<u>A handout</u> <u>provided at the Gaines County Farm Tour gave</u> 50 per week as the threshold. This was an error on my part.) Check traps again in about 4 days. If trap catches are still at 50 or above, treat the field again 5-7 days following the previous application. Continue this process until you are satisfied that the top crop you are trying to make is fairly "safe".

Sticky traps (Delta Style Traps) and pheromone can be purchased from Iselin & Associates in Arizona (602-897-2051), Trece Incorporated in California (408-758-0204) or Great Lakes IPM in Michigan (989-268-5693).

Use any of the pyrethroids for pinkie control. Apply these at dusk when moths are flying. These insecticides are adulticides, i.e., they kill moths not caterpillars. After all, the worms are buried in bolls upon egg hatch. How often you retreat when called for depends upon the residual activity of the application. You can enhance the residual activity by using higher rates and/or using cottonseed oil in the application. The need for protection from pinkie damage could last as long as into mid-September.

Now a little about their biology. Pink bollworm problems usually don't develop until late in the year. Earlier square feeding is seldom enough to warrant concern. Our area usually has little problem with this pest because of colder winters, stripper harvest and acid delinting. With more fields planted in picker varieties, I would expect more problems from this pest. Bollgard cottons are almost immune to pinkies. Survival is close to zero on these plants.

Small pinkie larvae are almost white and don't turn their namesake pink color until later. This



pigmentation occurs in transverse bands across the body. Pinkie eggs can be laid in several locations including on stems, squares and even in the terminal. Most eggs however are laid near or under the calyx of the

Pink bollworm larvae

boll. Eggs are laid singly. Eggs hatch in 4-5 days depending upon the temperature. Larvae tunnel into and feed on the developing flower in a square or the seed in a boll. Development takes about 12 days. They will usually leave the fruit and pupate in the soil. They emerge as moths a little over a week later.

Infested blooms often have silken threads tying petals together resulting in the characteristic rosetted blooms (looks like a pinwheel). Bolls are the preferred egg laying sites. Tunneling larvae pass through the lint to the developing seed. This burrowing will stain the lint. Their damage results in a reduction in fiber, seed



Pink bollworm damage

weight and seed oil content. Exit holes created when mature larvae leave to pupate can allow entry of boll-rotting organisms.

The boll weevil eradication program has continued to

prevent weevil increases in fields and in traps even though adult weevils have begun to move between fields much more now that the crop as a whole has cut out. In fact, weekly trap catches generally fell a little across the five High Plains eradication zones.

Accumulative trap catches for the five zones remain at incredibly low levels. What is really amazing to me is the comparison of accumulative trap catch figures for the Northwest Plains, Western Plains and Permian Basin zones in 2000 to those of the Southern High Plains and Northern High Plains zones in 2002. This would be a comparison of each of these programs first full season eradication years. By this time of the season, the first three zones were averaging over 100 times more weevils caught for the year compared to the two new zones this year. Pretty remarkable results can happen when you combine an effective program with colder winters and droughty weather.

Average number of boll weevils per trap per week accumulated over 16 weeks. (Week ending August 18,2002)

Zone	2002	2001	2000
NWP	0.00015	0.008	0.122
WHP	0.0004	0.013	0.399
PB	0.0001	0.015	0.414
NHP	0.004		
SHP	0.002		

The modified triggers used for spraying weevils have remained in force this past week for the entire Southern High Plains Zone and the one work unit in the southwest corner of the Northern High Plains Zone. This week all areas will be using the original trigger of one weevil caught per field and treatment being applied to that entire field and the adjacent field if any. I know there are still some potential problems with pests such as aphids, fall armyworms and beet armyworms but their threat has lessened over the last several days while the weevil threat is increasing. It is time for the program to become more aggressive as weevils fan out across the area looking for a diminishing food supply.

Sprayed acreage has not changed much this past week, continuing the trend of successfully keeping weevil numbers down and more importantly, keeping the number of infested fields to a minimum. **JFL**

Acres sprayed this past program week (ending August 18, 2002) and accumulative acres sprayed to this date.

Zone	Week	Accumulative	Acres in
	ending		zone
	8/18		
NWP	841	9,309	483,254
WHP	1,839	44,383	694,012
PB	217	12,806	481,213
NHP	14,225	136,301	443,332
SHP	12,662	296,401	1,099,712

SORGHUM AND PEANUT INSECTS

For the second week in a row I am mostly away from the office, so my comments will be brief. And since others have already covered my information in their recent weekly newsletters, I am taking the liberty to "borrow" their information.

Sorghum: Greg Cronholm, IPM Agent for Hale and Swisher counties has summarized the news on the Section 18 for the use of Capture in seed sorghum. "The Texas Department of

Agriculture issued a crisis exemption for the use of bifenthrin (Capture 2EC) to control Banks grass mites on seed sorghum in 40 High Plains counties. Some seed sorghum female lines have been sensitive (foliage burn) to dimethoate and Comite, which have been used for mite control in commercial sorghum. Potential mite resistance problems to Capture have been reported the past few years from counties north of Amarillo in corn. Historically we have been able to achieve higher levels of mite control in sorghum compared to corn, which is probably a factor related to coverage. This is why dimethoate has been effectively used in sorghum and rarely used in corn as a stand-alone treatment. For specifics on the use of Capture in seed production sorghum, contact your closest Extension Agent - IPM, Extension Entomologist, aerial applicator or Texas Department of Agriculture (http://www.agr.state.tx.us)."

As you have read in Jim Leser's cotton section, fall armyworms are abundant. Sorghum is at risk because the fall armyworm and the corn earworm comprise the headworm complex. Here are the economic thresholds for treatment of grain sorghum.

Per	Market value of crop (\$ per acre)							
acre	100	125	175	200	225	250	275	300
control								
cost (\$)								
(+)	Number of headworms per head							
6	1.5	1.2	1.0	0.9	0.7	0.6	0.6	0.5
8	2.0	1.6	1.3	1.1	0.9	0.8	0.8	0.7
10	2.5	2.0	1.6	1.4	1.1	1.1	1.0	0.9
12	3.0	2.4	1.9	1.7	1.5	1.4	1.2	1.1

Of course many fields now have high numbers of beneficial insects, so if a field is near the threshold, give some consideration to the potential of "beneficials" before deciding to spray.

Scout peanuts now! Borrowing from Kerry Siders, IPM Agent for Hockley and Cochran counties; "Peanuts need to be scouted immediately for worms. Remember 6-8 per row foot may cause significant amount of damage to warrant treatment. I have noted problems mainly on later planted fields. Also, keep close watch for late leaf spot and rots to pods (see Dr. Wheeler's article). The weather is conducive for concern to prevent these disease problems."

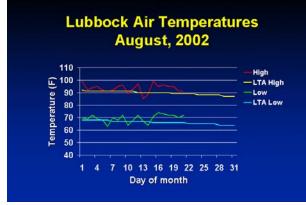
Be sure to follow your local pest situation in one of the county pest management newsletters. These are listed on the FOCUS homepage:

(http://lubbock.tamu.edu/ipm/AgWeb/newsletters/F ocus2002/index.html). **RPP**

COTTON AGRONOMY

Overview. During the month of August, our temperatures have been considerably above normal. We are running nearly 60 DD60s above normal for the first three weeks of August. I wonder where this growing season will take us in September? Seasonal total heat

unit accumulation has been about 1925 for Lubbock for a May 1 planting, based on National Weather Service data, which is



considerably above the 1818 DD60s for the 30year long-term average. Some significant regional rainfall has occurred over the last few days and some spotty showers have provided welcomed relief for some fields. Many fields close to the New Mexico border have had very good rainfall. Some have received from just a few tenths to a couple of inches or so. Daily crop water use values as determined by the Reference ET Network have been averaging about 0.25 to 0.30 inches per day across the area for the last several days. We have a very good crop out there in lots of places and if we get another September like the last few, we are looking at some great yields where water is not limiting.

Moisture Stress. For the last couple of weeks or so, fruit shed has been underway in many dryland fields and some irrigated ones that can't keep up with crop moisture demands. The recent rainfall in some areas will certainly help, but some fields were beyond saving and will experience low yield. Normally a boll will be retained once it reaches 10-14 days after bloom. Even though the boll may still be retained by the plant, it will likely be smaller due to moisture stress. It will also have shorter fiber length. Many deficit irrigated pivot fields have soil profiles that are getting depleted of moisture. We would like to target the soil profile to be nearly depleted as we enter harvest aid season. One should keep the field with reduced stress at least until the final bloom to be taken to the gin becomes about a 10-14 day old boll. This will reduce the likelihood of

small bolls shedding due to water stress.

Fiber length is generally determined during the first 25 days or so in the life of the boll. This indicates that small amounts of irrigation should be applied to carry the boll through the important length development phase. After that, late bolls can handle considerable stress. For a boll set on August 10th, it is

apparent that the field should have reduced amounts of water stress probably at least through the end of the month, unless rainfall is obtained to offset irrigation needs. Otherwise moisture stress could limit quality of the uppermost bolls. A rod probe or other tool may be useful in determining the amount of moisture remaining in profiles in fields.

Countdown after cutout. Some fields are perhaps as much as 2 weeks ahead of normal in terms of development, based on the fruit load adjustment to available moisture. We have developed a table that indicates where we are as of August 21. It is based on actual Lubbock 2002 heat units from August 1 through 21, and from that point forward, it uses the 30-year long-term average for each day. For example, the table shows that for a field that reached cutout (here defined as 5 Nodes Above White Flower) on August 1, a bloom/boll on that date was able to obtain 350 heat units by about August 18. The 450 total was encountered by August 24. For cutout on August 10, we should obtain 350 heat units by August 27, and 450 heat units by September 2. This table also indicates the likelihood of obtaining maturity of late season bolls. I will spend more time next week discussing some of these issues.

DD60 heat unit events based on date of cutout (5 NAWF) and actual Lubbock August 1-21, 2002 temperatures with subsequent long-term average values for the remainder of the season.

	Date When Crop Achieved Cutout (5 NAWF)					
DD60 Heat Unit Accumu- lation	Aug 1	Aug 5	Aug 10	Aug 15	Aug 20	Aug 25
+350 HU (safe from Lygus bugs)	Aug. 18	Aug. 21	Aug. 27	Sept. 2	Sept. 11	Sept. 19
+ 450 HU (safe from bollworm egg lay)	Aug. 21	Aug. 27	Sept. 2	Sept. 9	Sept. 20	Oct. 1
Total HU through Sept. 30	947	857	753	660	538	446
Total HU through Oct. 15	1034	944	840	747	625	533
Total HU through Oct. 31	1079	989	885	792	670	578

Late season weed control with Roundup.

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 UltraMax can be applied

over-the-top per label directions once the crop has reached 20 percent open bolls. Up to a maximum of 1.6 quarts per acre of Roundup UltraMax 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 UltraMax label. The "salvage treatment" is limited to 26 oz/acre of Roundup UltraMax 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 Roundup near 4 NAWF (see 2000 and 2001 yield slides). Plant condition, as affected by environmental factors, appears to influence potential yield loss. I doubt if there would be any problems going later than that, but remember, unless your field is at 20 percent open bolls you are on the "salvage label."

Roundup UltraMax can also be applied as a harvest aid material to conventional cotton specifically to target weed problems and/or to reduce regrowth potential. Effective silverleaf nightshade (or whiteweed) control can be observed in the following season with application of 26-52 ounces per acre of Roundup UltraMax when weeds are in the green-berry stage. Control of severe weed infestations may be increased by the higher rate. Research has shown that reductions in weed populations of up to 97 percent can be obtained from such an application. Applications made in September should target cotton that is 50-80 percent open. After October 1, cotton can be treated when 30 percent of the bolls are open. Regrowth in Roundup Ready cotton varieties will not be controlled by Roundup Ultra application. Roundup UltraMax also should not be applied to fields grown for seed production since viability and/or vigor of seed will likely be reduced.

2002 High Plains Cotton Harvest Aid Guide.

The High Plains Cotton Harvest Aid Guide is being updated with only minor changes to the

<u>2001 model</u> and will include some new information. It should be available by the end of next week. **RB**

Plains Cotton Improvement/Cotton Incorporated Systems Trial Tours.

Upcoming meetings will be held at the Plains Cotton Improvement Program/Cotton Incorporated irrigated cotton systems trial locations across the area. These trials provide producers a great opportunity to observe many new commercial varieties side-by-side with our High Plains standards.

August 30, 2002 9:00 a.m. - Muleshoe James Brown Farm Turnrow Meeting

Topics covered will include: COTMAN plant mapping observations of varieties, a discussion of planted varieties and an insect situation update by Monti Vandiver, Extension Agent-IPM for Parmer/Bailey Counties.

Go 7 miles north on 214 from Muleshoe, turn west, go 5 miles west and turn north on County Road DD 1400.

This trial has a total of 13 varieties, which include 7 Roundup Ready or Bollgard/Roundup Ready stacked, 2 BXN, and 4 conventional varieties.

Paymaster 2167RR	Fibermax BXN 5024
Paymaster 2266RR	Stoneville BXN 16
Paymaster 2326RR	Fibermax 819
Paymaster 2344BG/RR	Fibermax 958
Sure-grow 215BG/RR	Syngenta 2165C
Stoneville 2454R	Syngenta 2108SS
Stoneville 3539BR	

August 30, 2002 2:00 p.m. - Blanco Canyon Area Appling Farms Turnrow Meeting

Topics covered will include: COTMAN plant mapping observations of varieties, a discussion of planted varieties and an insect situation update by Steve Davis, Extension Agent-IPM for Crosby/Floyd Counties.

Take 193 east of Cone about 9 miles to bottom of the canyon. Go 1 mile east past stop sign and turn back north on CR 215. Go 1 mile north -Appling Farms Headquarters is on west side and pivot is on east side. The plots are on the west 2 of the pivot.

This trial has a total of 13 varieties, which include 8 Roundup Ready or Bollgard/Roundup Ready stacked and 5 conventional varieties.

Paymaster 2266RR Paymaster 2326RR Paymaster 2280BG/RR Sure-grow 215BG/RR Paymaster 2344BG/RR Stoneville 2454R All-Tex AtlasRR Fibermax 989RR Fibermax 958 Fibermax 966 Syngenta 2165C AFD Raider 271 Paymaster HS26

September 18 Yoakum County Crop Tour 8:30 a.m. Tokio - Rickey Bearden Farm

Along with other topics covered during the Yoakum County Crop Tour, the stop at this site will include: COTMAN plant mapping observations of varieties, a discussion of planted varieties and an insect situation update by Scott Russell, Extension Agent-IPM for Terry/Yoakum Counties.

Take 380 west from Brownfield or east from Plains. Turn north at the Tokio Coop Gin on 1780. Go 1 mile north and the pivot is on the west side.

This trial has a total of 15 varieties, which include 10 Roundup Ready or Bollgard/Roundup Ready stacked and 5 conventional varieties.

Paymaster 2266RR	All-Tex AtlasRR
Paymaster 2326RR	Fibermax 989BG/RR
Paymaster 2280BG/RR	Paymaster HS26
Paymaster 2344BG/RR	Fibermax 989
Sure-grow 215BG/RR	Fibermax 958
Deltapine 555BG/RR	AFD Raider 271
Stoneville 2454R	AFD 2050
Stoneville 3539BR	

PEANUT DISEASES

Management of Pythium Pod Rot of

Peanuts: Samples continue to pour into the Lubbock Center with *Pythium* pod rot. This disease is characterized by a black rot of the pods, usually resulting in no kernal in the shell. This disease may become worse under high irrigation conditions. In 2001 at the Western Peanut Growers Research Farm, three irrigation rates were tested on an area with low initial levels of *Pythium* pod rot. By harvest, the areas under 50, 75, and 100 % ET (evapotranspiration) averaged 2, 8, and 10 % pod rot, respectively. Management of pod rot is by:1) crop rotation away from peanut, before a pod rot problem has built up, 2) irrigation management, and 3) fungicide applications.

There are only two labeled products with *Pythium* activity; Abound and Ridomil Gold. Ridomil Gold is much more effective against *Pythium* then Abound, however, Ridomil has

no activity against other pod-rotting fungi. Abound provides protection against other pod rotting fungi like Rhizoctoni solani and Sclerotium rolfsii (white mold). If either of these products are used then it is critical that they are applied



they are applied *Pythium* pod rot according to their labels, or control may be compromised.

Abound fungicide should be used at its highest labeled rate (24.6 fl. oz./acre) as a preventative (i.e. before pod rot is found). In problem fields, it should be applied on the foliage, 60 and 90 days after planting. Applications may be made by ground, air or chemigation. If Abound is applied through a center pivot system, use the least amount of water required for proper distribution and coverage (½ acre-inch or less). You may need to let the field dry out for several days after an application to get maximum benefit.

There are several formulations of Ridomil Gold including EC and GR. The EC formulation should be applied at a rate of $\frac{1}{2}$ -1 pint per acre through an overhead irrigation system. It is not recommended to put this material out with an airplane or ground rig for pod rot control. Use $\frac{1}{4}$ acre-inch of water for a center pivot system. The reason that an airplane or ground rig is not recommended may have to do with the speed that the product is taken up by the plant. It may be taken up in as short a time as 3 hours (personal communication with Charles Grymes of Syngenta). The GR formulation can be used at early pegging, and is applied on the ground in an 8-12" band (13 oz/1,000 linear feet). Irrigation should follow the application. Do not apply Ridomil Gold GR to wet foliage as phytoxicity and poor control may result.

These recommendations are taken from the Syngenta Sample Label Reference Guide 2002, Syngenta Crop Protection, Inc. Greensboro, NC 27419-8300.

In summary, if producers are just now discovering a Pythium pod rot problem, they should be applying Ridomil Gold EC in their center pivot systems in 1/4" of water. They should not be applying the product by ground rig or airplane. Abound has poor curative action, and will not provide as good control as Ridomil Gold EC (when applied correctly). **TW**

NEWSLETTER CONTRIBUTORS

James F. Leser, Extension Entomologist, Lubbock Pat Porter, Extension Entomologist, Lubbock Randy Boman, Extension Agronomist, Lubbock Terry Wheeler, Research Plant Pathologist, Lubbock Focus on Entomology is published by Texas Cooperative Extension Route 3, Box 213AA Lubbock, TX 79403

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

Editor: James F. Leser Web Site Layout: Michelle Coffman

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