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IN THIS ISSUE

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COTTON INSECTS

Our continued hot and dry weather has cotton rapidly spiraling down the pathway toward open boll. Many fields, including irrigated ones have cut out and are shedding squares and small bolls, adjusting to available resources. With fewer and fewer fields left to support many of our late season insect problems, the pest situation is becoming highly variable. It is becoming increasingly important to recognize those fields that remain vulnerable to insect attack and yield losses. Spend your time in these fields rather than inspecting all your fields regardless of their ability to support developing insect problems.

Caterpillar problems continue mainly in June planted cotton under irrigation. The bollworm egg lay is diminished from last week for the most part with only a few hot spots remaining. Most of this egg lay is found in late-planted fields. Even if moths lay eggs in May cotton, there usually is insufficient small fruit to support their initial development. These infestations “crash”. Even in June-planted cotton there is a rapidly diminishing return on your insecticide investment in controlling bollworms because most of the bolls that they are feeding upon will not mature sufficiently to make it to the stripper basket. Yield supporting bolls are now mostly safe (with 450 or more heat units since bloom) from damage. Remember that surface grazing is not important. When scouting fields with few remaining squares, make sure you look carefully in white flowers, pink blooms and underneath stuck blooms. Bollworms can be pretty stealthy at times.

Bollworm larva under bloom tag

Beet armyworms remain a problem for a few fields but most infestations are failing to last more than a few days. Once cotton has reached "hard" cutout, beet armyworm feeding moves away from penetrating squares and bolls to leaf feeding, bract feeding and calex feeding.

Late season BAW feeding damage

Unless beet armyworm numbers are very high (above 20,000 to 30,000 per acre) or they are obviously penetrating bolls, I would no longer concern myself with this pest. I have included a table listing the effects of various insecticides and Bollgard technology on several caterpillar species**.**

Caterpillar Control Rating

Insecticide	Bollworm	Budworm	Beet armyworm	Fall armyworm
Pyrethroids	Good +	Poor -	Poor -	Fair
Tracer	Fair	Good	Good -	Fair +
Denim	Fair	Fair +	Good	Fair +
Steward	Fair +	Good -	Good	Fair +
Intrepid	Poor +	Poor +	Good +	Good -
Bollgard	Fair	Good +	Poor +	Poor +
Bollgard II	Good	Good +	Good	Good

Source: 2002 National Cotton IPM Seminar Participants

Lygus bugs are still lurching in some fields but their damage to bolls has been surprisingly low. Black, sunken lesions can be found more frequently on bolls in some fields but many of these have not penetrated the boll wall. Without this penetration, the boll will develop normally with no effect on yield or fiber quality. Make sure you inspect the inside of the boll wall for warts, developing lint for stains and seed for damage to determine if the boll can be counted as damaged. Superficial boll wall damage is unimportant.

External/internal boll damage from lygus

Bandedwinged whiteflies are also popping in more visible numbers lately. We had some problems with this pest moving out of maturing sunflower fields late in the 2001 season and causing problems in cotton. For the most part, we rarely see an infestation of this pest warranting concern or treatment.

The aphid situation is highly variable with increasing populations more common in fields treated earlier with a pyrethroid for bollworm control. Some untreated fields are the exception and also have increasing aphid numbers. Most fields are approaching a maturity level where aphids will probably have little impact on yield or fiber quality. Most concern from here on out is whether there will be enough aphids around when cotton opens to cause a stick cotton problem. Surely we will get some much needed rain showers in September and October to wash away any of these potential problems. We are due our share of rain anyway. It is an unusual year when these late rains do not occur. If a treatment is on the horizon remember that the yield protection threshold is 50 or more aphids per leaf and the sticky cotton prevention threshold is less than 11 aphids per leaf. I have included a table listing some pertinent information of our current aphicides.

Aphid infestation on leaf

Do note that Furadan 4F is not available at this time. It is neither registered nor been granted a section 18 exemption for use in Texas. Do not expect to see this insecticide this year. Alternatives such as Intruder, Centric and Trimax are all performing very well across the state. Therefore, Furadan is not needed. Besides, I can tell you that some of the newer

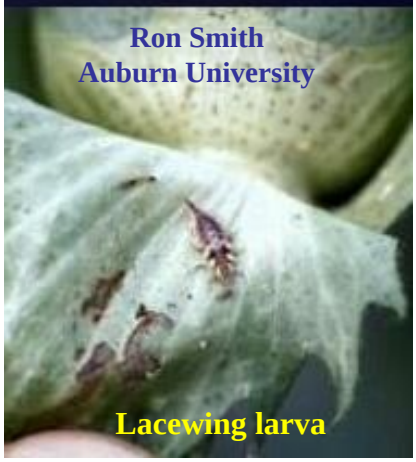
aphicides are better than Furadan in level of control and residual activity.

2003 Cotton Aphid Insecticide Comparison Ratings

Insecticide	Aphid Control	Predator Impact	Safety Rating
Intruder	Excellent +	Relatively Soft	Caution
Centric	Excellent	Relatively Soft	Caution
Provado/Trimax	Good	Relatively Soft	Caution
Fulfill	Fair	Soft	Caution
Furadan*	Good +	Harsh	Danger
Bidrin	Good	Harsh	Danger
Lannate	Fair	Harsh	Danger

Source: Dr. James F. Leser, Professor and Extension Entomologist, Lubbock, TX
* Not currently labeled and not available in 2003 under Section 18 exemption.

Our "friendlies" have maintained a high visible profile for much of the season. I believe that they have often made the difference between treatment and no treatment decisions in many fields for both caterpillar pests and aphids. The most common ones I have observed recently have been the minute pirate bug, green lacewing larvae and assassin bugs. I have included a couple of pictures of these predators for your viewing.



The boll weevil situation is heating up in the Permian Basin Zone. Otherwise it is all quiet on the western front of the eradication program in Texas. Trap catches in the Permian Basin Zone jumped from 54 to 176 last week. For the week ending August 25th in 2002, The Foundation caught 112 weevils. By September 15th, the weekly total had jumped to over 4,000 weevils caught. So far this year, the total weevils caught in the five High Plains zones has been 1680 through August 24. Of this total, 1599 (95.2%) were caught in the Permian Basin Zone. Clearly we are all holding our breath to see what happens in the following weeks. If weevil numbers do not make the leap to real high numbers, this should send a signal that the eradication program is getting on top of the situation. Otherwise, we have a problem. **JFL**

Boll weevil

Average accumulative number of boll weevils caught per trap through the week ending August 24.

Zone	2003	2002	2001	2000
Northwest Plains	0.00001	0.0001	0.0081	0.1286
Western High Plains	0.00001	0.0004	0.0146	0.4243
Permian Basin	0.0017	0.0002	0.0121	0.3768
Northern High Plains	0.00004	0.0035	-------	-------
Southern High Plains	0.00003	0.0021	-------	-------

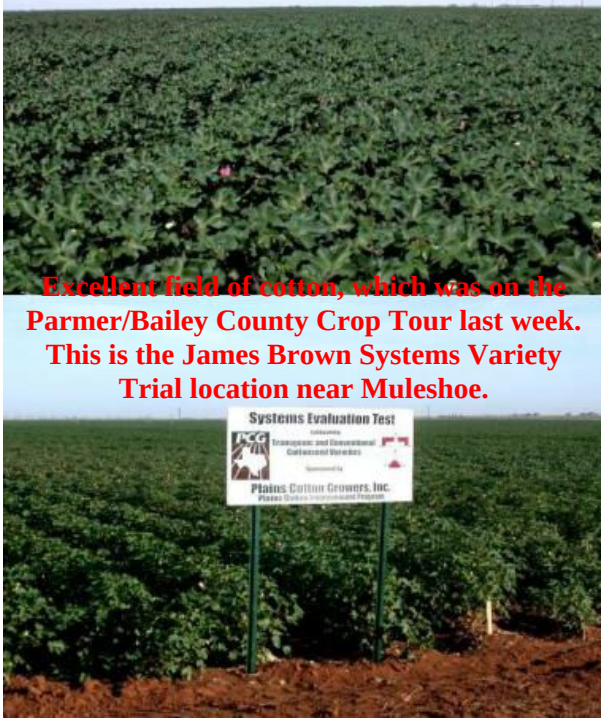
Total number of boll weevils trapped the week ending August 24, 2003 Texas High Plains.

Zone	Number of traps checked	Total number boll weevils
Northwest Plains	39,123	0
Western High Plains	79,685	0
Permian Basin	88,126	176
Northern High Plains	65,756	0
Southern High Plains	148,146	1

COTTON AGRONOMY

The High Plains crop continues down the "home stretch." Many fields are pretty well finished up in terms of blooming. The continued dry conditions have devastated yield potential in most dryland fields and have stretched the irrigation capacity in many irrigated fields. We hear that many well capacities are dropping off considerably. However, where irrigation water is adequate, fields remain in excellent condition in spite of the drought. After inspecting Lubbock rainfall records from 1911-2002 in a great publication assembled by Erica Irlbeck at the High Plains Underground Water District, it is readily apparent that the July-August 2003 rainfall is the lowest for that two month period ever recorded (a trace for July and 0.12 inches thus far for August). Even with the above average 4 inches or so we received in June, we are now over 5.5 inches below the long-term average for January-August.

Excellent field of cotton, which was on the Gaines County Crop Tour last week. It is FiberMax 989BR.



Excellent field of cotton, which was on the Parmer/Bailey County Crop Tour last week. This is the James Brown Systems Variety Trial location near Muleshoe.

Finishing irrigation. Once we get into September, the fields with good boll loads will probably use about 0.20 inches of water per day, or about 1.4 inches per week. The value of continued center pivot irrigation after bolls begin to open is probably questionable, unless high temperatures and high reference ET is encountered and the field has a depleted soil profile and late boll load. Generally, we can observe about 2-5 percent boll opening per day once bolls begin to open. This implies that if the last irrigation is made at a few percent open bolls, then it should take about 10 days to reach

30-60 percent open bolls. With the depleted soil profiles in the many fields that have missed the rainfall, the rate of boll opening may be on the high side this year if temperatures remain above average and the skies are open.

Countdown after cutout. Some hot fields cut out early this year due to the fruit load adjusting to available moisture. Other earlier higher yielding fields that missed the bad weather have recently reached cutout (here defined as NAWF=5). We have developed a table that indicates where we are as of August 26. It is based on actual Lubbock 2003 heat units from August 1 through 26, 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 on August 1, a bloom that day was able to obtain 250 heat units by about August 10. For the 450 total, it occurred on August 20. This boll should obtain good maturity (850 heat units) about September 15. For cutout at August 10, we obtained 250 heat units by August 22, and should hit 450 heat units by September 3. Using the long-term average temperatures to project later heat units, the 850 total should be encountered around October 20. This table also indicates the likelihood of obtaining maturity of late set bolls.

DD60 heat unit events based on date of cutout (5 NAWF) and actual Lubbock August 1-26, 2003 temperatures with subsequent long-term average values for the remainder of the season.

DD60 Heat Unit Accumulation	Date When Crop Achieved Cutout (5 NAWF)					
	Aug 1	Aug 5	Aug 10	Aug 15	Aug 20	Aug 25
+250 HU (safe from lygus)	Aug 10	Aug 16	Aug 22	Aug 28	Sept 4	Sept 10
+ 450 HU (safe from bollworm egg lay)	Aug 20	Aug 26	Sept 3	Sept 11	Sept 21	Oct 1
+ 850 HU (mature boll)	Sept 15	Sept 27	Oct 20	n/a	n/a	n/a
Total HU through Sept. 30	993	878	746	661	555	450
Total HU through Oct. 15	1080	965	833	748	642	537
Total HU through Oct. 31	1125	1010	878	793	687	582

2003 High Plains Cotton Harvest Aid Guide. The "harvest aid run" will be upon us before we know it. The 2003 High Plains Cotton Harvest Aid Guide has been updated with only minor changes to the 2002 model. Changes include ET 0.2EC, a new product from Nichino America, has been registered for use in cotton as a harvest aid in 2003. It belongs to a new chemical class (protoporphyrinogen oxidase inhibitor or POP). ET 0.2EC causes disruption of cell membranes, which in turn triggers increased ethylene in leaves. High Plains small plot research trials have indicated that ET 0.2EC at rates of 1.5 to 2 oz/acre can be an effective defoliant, but we still lack significant experience with this product. ET 0.2EC can be tank mixed with other products such as CottonQuik, Prep, Finish 6 Pro, Def/Folex, Ginstar, and Gramoxone Max. A 0.5 percent volume/volume crop oil concentrate is suggested for the spray mixture. Also, it is my understanding that only existing stocks of Griffin's Boa brand paraquat (2.5 lb/gallon) material will be sold this year. Syngenta's paraquat brand - Cyclone Max (3 lb/gallon material) will now be sold under the trade name Gramoxone Max (same 3 lb/gallon formulation). An updated price list was not available when FOCUS went to press. It should be available next week and posted on the Center web page where it will replace the 2002 price list.

Estimating lint yields. Dr. Will McCarty, Extension Cotton Specialist at Mississippi State University has developed an excellent publication on yield estimation. It is available here: http://msucares.com/crops/cotton/images/estimating_yield.pdf

Basically it indicates that it takes about 155,700 normal (High Plains average of 4.0 g seedcotton/boll = 1.4 g lint assuming a "picked lint percent" for seedcotton of 35%) bolls are required to produce a 480 lb bale of cotton. This is equivalent to about 325 bolls/lb of lint. For 40-inch rows this calculates to 11.9 bolls per row-ft for a one bale/acre yield (155,700 bolls/13,068 row-ft/acre for 40-inch rows). This is very close to the "one boll per inch = one bale per acre" number that many folks use to estimate yields in 40-inch rows.

To help determine a "worst case scenario" I checked the report from our 1998 High Plains Cotton Survey we conducted for Plains Cotton Growers, which was submitted to USDA-RMA. One of the worst locations (in terms of boll size and lint yield) was the Lamesa dryland replicated variety test site. It averaged about 480 bolls/lb of lint across several varieties. This implies that it would take about 230,500 bolls/acre of that size (about 2.7 g seedcotton/boll) to produce a 480 lb bale of cotton. This works out to about 17.6 bolls per row-ft for a one bale per acre yield. It is possible that the numbers could be worse, but I still think this may be a good number to use for a worst-case scenario. The highest number of bolls/lb of lint for dryland samples in the survey was just over 600. This translates to

288,000 bolls/bale, or 22 bolls/row-ft in 40-inch rows.

Seminar On Roundup and weed resistance. Monsanto representative Doug Sammons will present information on Roundup and weed resistance on Thursday, September 4 at 1:30 PM. The seminar will be held at the USDA Plant Stress Laboratory at Lubbock. This should be an excellent opportunity for everyone to learn more about the basis of glyphosate tolerance in our Roundup Ready varieties and also to hear about the potential for weed resistance to glyphosate herbicides. **RB**

FORAGE GRAIN PLANTING DECISIONS

Seed quality for planting. As a minimum target, Texas Cooperative Extension recommends that all wheat for planting, whether for grazing or forage, should have a minimum test weight of 58 lbs. per bushel and a minimum germination of 85%. There is potentially a high amount of wheat seed on the market for fall 2003 that will have low test weight if it is harvested in 2003. Don't hesitate to ask if you can borrow a sample of wheat for testing if you are looking at using saved seed. If a seller is reluctant to let you do that then buy your seed elsewhere.

Oklahoma State University research indicates that seed quality has a significant effect on grain yield and especially on fall forage production for grazing. The profitability of livestock grazing on small grains is dependent on receiving substantial forage production in the fall. OSU compared over 30 seed sources for Jagger, a popular dual purpose wheat, and found that fall forage yields were highest with certified seed, followed by farmer-saved seed, and then with elevator run seed. The latter had lower test weight, and all samples did not meet the standard for minimum desired germination. Large seed and good germination enable quicker stand establishment in the fall hence more forage yield! It is worth choosing good seed quality even if it costs you $1-2 per acre more.

Fall planting dates for forage. With rain chances increasing this weekend, numerous producers could start planting by early next week. My target planting date for wheat forage production in the northwest South Plains is the first week of September provided that we have cooled down somewhat. If the forecast were for more hot weather in the 90's then I would wait a few days. Dryland production must have seeding moisture. As a rule of thumb, stands planted about October 1 in some years may not generate enough forage to produce significant fall grazing.

Pre-plant phosphorus fertility. Winter small grain usually responds well to P fertility as it is essential in driving forage production. This is particularly important in dryland fields where immobile P, whether residual or from fertilizer, may not be available in the top 2-4" when soils are dry. Knifing P fertilizer 6-8" deep into the soil ahead of wheat seeding will substantially increase wheat forage yields in the Rolling Plains. We believe that the same results can be achieved in the Texas South Plains. Broadcast P fertilizer can increase yields, too, but the results are less consistent. For more information on banding P fertilizer for wheat forage production consult the wheat and small grains section at the following site: http://lubbock.tamu.edu.

Wheat varieties for forage production. Growers who intend to graze out wheat and would like a beardless (awnless) variety may consider Lockett, Longhorn, TAM 109, WeatherMaster (WinMaster, WinTex), or the old generic 'Russian' beardless. There are several derivatives of Russian beardless available, but it is probably more important to pick high quality seed than variety based on initial testing of wheat varieties for forage yield.

Lockett is a Texas A&M release bred as a grazing wheat. It has a broad leaf and medium-late maturity. This variety tillers well, but sometimes short awns of 3/8 to 1/2" may develop. It may lodge some especially under high inputs. Longhorn is adapted primarily for dryland production or grazing. Like Lockett, medium-late maturity extends the grazing season. There is some tolerance to wheat streak mosaic and leaf rust. Fair grain yields are obtainable. This variety has a long coleoptile, which allows emergence from lower soil depths and improves stand establishment on poor soils or seedbeds.

TAM 109 is a beardless variety similar to TAM 101. It is very short under dryland conditions. WeatherMaster is maintained by Abilene Ag. Supply. An older derivative of Russian Beardless, this variety does not tiller as well as other wheat's, and forage yields are consistently lower than Lockett.

'Russian beardless' is a generic wheat that is not a registered variety, and varies from place to place. It has less pillaring. Growers are encouraged to plant seed of specified varieties rather than generics (or bin run seed) where the variety is not known.

I would like to be able to recommend a specific variety of wheat for grazing, but it increasingly appears that seed quality and timely planting (first few days of September around Dimmitt, mid-September southeast of Lubbock) are keys to forage yields. Wheat needs to establish quickly. No other factor is more important to forage yields, especially in the fall. The irony is that since there appears to be no exceptional wheat variety for grazing relative to others, the silver lining is that we pay more attention to management.

Wheat varieties for dual purpose grazing and grain production include Jagger, TAM 202, and perhaps Longhorn, Custer, Dumas, and Cutter.

Seeding rate. In the Texas South Plains we have traditionally recommended about 45 lbs./A dryland and 90 lbs./A for irrigated production. Increasing evidence, much from OSU, suggests that it is hard to plant too much wheat seed for forage production. I now suggest that producers target a minimum of 60 lbs./A on dryland and 120 lbs./A for irrigated wheat grazing. OSU results suggest that even higher forage yields may be achieved at seeding rates above these. For plantings that occur after October 1 where forage is intended, seeding rates must increase to account for reduced tillering. Plantings after October 1 are not assured of offering any significant fall grazing, a key to success in a small grains grazing system.

Texas Cooperative Extension picks for dryland and irrigated grain varieties will appear in next week's FOCUS. **CT**

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