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IN THIS ISSUE

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COTTON INSECTS

Hot, dry weather has all but slammed the door on pests for the year. While spotty, very localized rains have popped up in recent days across the High Plains, most cotton fields have yet to see any helpful rainfall amounts. I would say we are probably 2-3 weeks ahead of schedule for the crop to be finished. This means that very few fields will remain vulnerable to pest problems during the coming weeks.

While bollworms continue to be found in many fields, their numbers have not reached treatable levels of 10,000 ¼” or smaller caterpillars per acre on conventional cotton or 5,000 3/8” or larger caterpillars per acre for both conventional and Bt cottons. Eggs keep dribbling in to some fields but high temperatures, dry conditions and the help of some natural enemies have generally kept larval numbers at 2,000 per acre or less. At these levels, even chronic infestations resulting from “nickel and dime” egg lays are not worth spraying. You don’t see spray planes flying much these days.

3-day old bollworm larvae

The only fields left with enough “horsepower” to attract significant egg lays and foster high survival would be those drip and sprinkler irrigated fields with plants averaging 7 or more nodes above white flower. Dryland and row-watered fields are pretty much out of the picture as far as pest problems this year. Most cotton that has reached NAWF=5 will crash by next week.

No aphid or beet armyworm problems have been observed so far this year. With limited spraying by both producers and the Texas Boll Weevil Eradication Foundation program, there has been little disturbance of our existing natural enemies. The trouble is that “beneficials” are not holding up well

Aphids & lady beetle predator

in the heat and in fields with a very limited food supply.

Aphids can be found in most fields but their numbers are low and very scattered. There can be some plants with actively growing colonies and higher numbers but these plants are few and far between. Earlier in the season, two states in the Southeast requested and were granted limited use of Furadan 4F for aphid control when the neonicitinoids failed to give adequate control in a few fields. I don't see this as an issue for Texas. The neonicitinoid class of insecticides (especially Intruder) has always performed well for aphid control.

The threat of beet armyworms is always there under present weather conditions but there are no indications at this time that we should see any significant increase in activity from this pest. But remember that problems with armyworms and loopers can develop quite late in the season.

Early instar BAW feeding

Pink bollworm trap catches are a fraction of last year's. I remain unaware of any fields requiring treatment this year. The only counties with any traps catching one or more moths per night were Terry, Yoakum, Dawson, Gaines, Hockley, Glasscock, Reagan, Upton, Bailey, Runnels and Tom Green. Only Reagan and Upton counties out of the 21 counties surveyed had one or more traps catching over 5 per night (the threshold for treating fields prior to first flower). This indicates very low activity for the region this year.

Pinkie larvae

No more moths have emerged from our overwintering cage study since July 14. Only 15 moths have been counted this year compared to 87 last year. The pink bollworm problem that arose in 1991 may have run its course in the northern counties. But the counties south of the Caprock still need to be concerned and stay vigilant.

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 2006 (E-6) and Suggested Insecticides for Managing Cotton Insects in the High Plains, Rolling Plains and Trans Pecos Areas of Texas 2006 (E-6A).

Boll weevil trap catches are way down compared to last year. For the entire west Texas area (11 zones) only 407 weevils had been caught through July 23 versus 51,389 last year. There have been no weevils caught in New Mexico in 2006. The only zones with more spraying this year than last year are the Northern Blacklands and Lower Rio Grande Valley zones. This is probably because their diapause programs started late last year. The St. Lawrence zone sprayed acreage so far this year is only 2.4% of last year's sprayed program acreage. Dry, hot weather may have hurt our crop but it has also greatly helped the eradication program eliminate the boll weevil as an economic pest in most of Texas. **JFL**

Average number of boll weevils caught per trap inspection and sprayed acreage through July 23. Number of boll weevils caught for the week ending July 23, 2006.

High Plains Zone	2005	2006	Sprayed acres	Total weevils caught this week
Permian Basin	0.0300	0.0004	15,390	1
Western High Plains	0.00001	0.00002	299	0
Southern High Plains	0.00004	0	0	0
Northern High Plains	0	0	0	0
Northwest Plains	0	0	0	0
Panhandle	0	NA	0	0
St. Lawrence	0.3202	0.001	7,262	23

Average number of boll weevils caught per trap inspection and sprayed acreage through July 30. Number of boll weevils caught for the week ending July 30, 2006.

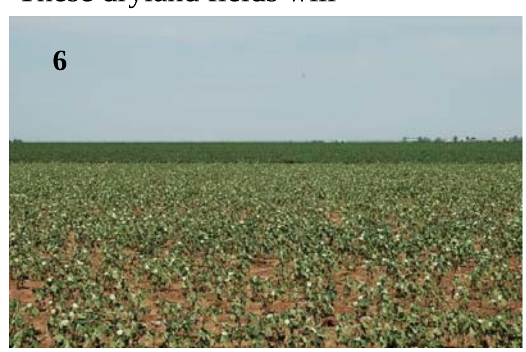
High Plains Zone	2005	2006	Sprayed acres	Total weevils caught this week
Permian Basin	0.0273	0.0003	15,742	1
Western High Plains	0.00001	0.00002	299	0
Southern High Plains	0.00003	0	0	0
Northern High Plains	0	0	0	0
Northwest Plains	0	0	0	0
Panhandle	0	0	0	0
St. Lawrence	0.2872	0.001	8,231	7

COTTON AGRONOMY

Crop situation. Over the last two weeks, occasional and sometimes substantial spotty rainfall has been obtained across some areas of the High Plains. However, most areas continue significant drought stressed conditions and the 2006 meltdown continues. Above normal temperatures were noted for most of July. We are currently about 22% above normal for heat unit accumulation from May 1 at Lubbock. We are just at 1,800 DD60s and could begin to see some open cotton over the next few days in some fields. In fact, Dr. Wayne Keeling, Lubbock Systems Agronomist, indicated that he did observe an open boll in "volunteer" cotton at the AG-CARES facility at Lamesa this week.

Current crop loss, predominantly due to drought, has now totaled 970,000 acres, which is very close to the 1 million acres previously estimated. The entire state of Texas has lost about 1.5 million acres thus far. This loss will likely continue to rise. Based on my observations and Extension agent updates and newsletters from across the region, the 2006 crop is in dire straits in most areas. IPM agents continue to report rapid cutout in many lower capacity irrigated fields.

Most surviving dryland cotton has received no rainfall, entered bloom and then bloomed out the top rapidly. These dryland fields will mature rather quickly due to extremely low yield potential. Dryland producers can also expect all bolls with a potential to contribute to the ultimate yield to be set quickly. Drought stressed plants will adjust the yield based on



Dryland vs. pivot irrigated field

soil moisture, then the final harvestable bolls should be able to be determined within a few days.

Continued extreme moisture stress will also adversely affect final boll size. Some dryland fields were initially established with good stand uniformity, but due to high temperatures and no

Dryland field in northern Lynn Co.

rainfall, yield prospects are now dismal. Other dryland fields had just enough variable stand emergence that producers were not able to get these fields adjusted for crop insurance. As this situation develops, it appears that a boll count deviation for crop yield adjustment, such as the ones issued by USDA-Risk Management Agency in the High Plains in 1998 and in South Texas in 2001, might come into play.

Crop ET requirements have now maxed out with advent of peak bloom and the lack of rainfall in most areas is having a significant impact. Fields with high irrigation capacity continue to perform as expected. Over the past week, I have observed some optimum-irrigated fields with 8 Nodes Above White Flower (NAWF). For a discussion and description of NAWF see the last FOCUS issue. These fields will obviously be able to produce high yields this year. However, many fields with low to moderate irrigation capacity have entered or will quickly enter cutout.

Crosby Co. drip irrigated field

The Extension systems variety trial at Blanco averaged 5.0 NAWF across all varieties last week and this week was at 2.7, which indicates hard cutout. Fruit shed is underway and the plants will adjust the fruit load to the available moisture. At Plains, some rainfall was obtained and substantial irrigation has been applied. This trial was about 5 NAWF across all varieties last week and is currently at similar NAWF this week.

LEPA irrigated field blooming out the top

Because of our prevailing conditions, this will be one of the faster maturing crops we have had in several years, and a stark turnaround compared to 2004 and 2005. If the heat units keep rolling in at the current rate and we have no rainfall, we will likely initiate the harvest aid run by early to mid-September in the earliest maturing fields.

Late season irrigation issues. The 2006 growing season has been one of many challenges. Lack of rainfall has devastated our dryland crop and has made profitability of our irrigated crop difficult. Many fields have virtually no soil profile moisture, except in the irrigation zone, at this time. Many fields are now entering cutout. Some have crashed hard, and others are on the way down. This implies a lower yield than we may desire. It also indicates that this crop will mature much faster than what we have experienced in recent years.

Fruit shed is underway in some fields that can't keep up with crop moisture demands. Normally a boll will be retained once it reaches 10-14 days after bloom. Even though the plant retains this boll, it will likely be smaller and have shorter fiber length due to moisture stress. Many deficit irrigated pivot fields have soil profiles that are depleted of moisture. We would like to target the soil profile to be nearly depleted as we enter harvest aid season.

One should attempt to reduce moisture stress in a field 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 fiber 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. 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 the soil profile of fields. Water holding capacities of major High Plains soils are found in Table 1.

Table 1. Average available water holding capacities for typical High Plains soils[1].

Soil series	Dominant texture	Available water holding capacity, inches/foot
Amarillo fine sandy loam	sandy clay loam	1.8
Amarillo loamy fine sand	sandy clay loam	1.7
Arvana fine sandy loam	sandy clay loam	1.8
Brownfield fine sand	sandy clay loam	1.4
Portales fine sandy loam	sandy clay loam	1.6
Acuff loam	sandy clay loam	1.9
Olton loam	clay loam	2.0
Estacado clay loam	clay loam	1.6
Pullman clay loam	clay	1.8
Miles fine sandy loam	sandy clay loam	1.8
Ulysses clay loam	clay loam	1.6
Mansker loam	clay loam	1.8
Lofton clay loam	clay	1.9

[1]Data from High Plains Underground Water Conservation District Number 1 and NRCS.

When using the COTMAN expert system program developed by the University of Arkansas, various investigators across the Cotton Belt have noted that irrigation termination at about 500-600 DD60 heat units past cutout (here defined as NAWF=5 on a steep decline) has been reasonable. One low-yielding trial (about a bale/acre) conducted by IPM agents Tommy Doederlein and Brant Baugh at the AG-CARES facility at Lamesa in 2003 indicated 600 DD60s optimized yield and net returns from irrigation. Most of these studies published in the Beltwide Cotton Conference Proceedings lacked information on soil profile moisture status in the trials at the time the irrigation was terminated. I suggest producers use this as a guide, not as the gospel. With center pivots, low amounts of irrigation can be applied if the cotton is severely stressed after initial termination. Due to depleted profiles, many fields will likely reach wilting quickly this year once irrigation is interrupted. If the amount of wilting is unsuitable for the boll load, then the pivot can be passed over the field to apply an additional increment of water.

As we move into the boll opening growth stage of cotton, the crop coefficient decreases from about 1.0 at first open boll to about 0.8 at 30 percent open bolls and decreases rapidly after that. That implies that once we get to the boll opening phase, if reference ET is averaging 0.25 inches per day, the crop will use about 1.4 inches per week (0.25 x 0.8 x 7 days). For information on the amount of irrigation available/week for varying irrigation capacities provided by Jim Bordovsky, TAES Irrigation Engineer, see Table 2.

The value of continued center pivot irrigation after bolls begin to open is probably questionable, unless record high temperatures and high reference ET are encountered and the field has a depleted moisture profile and a late boll load. Generally, we 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 many fields that have missed the rainfall, the rate of boll opening will likely be on the high side this year. **RB**

Table 2. Limited cotton irrigation for a ¼ mile center pivot on 120 acres.

GPM for circle	GPM per acre	LEPA Inches per day limit (at 95% efficiency)	Percent deficit replacement (at 0.24 inches per day water use)	LEPA Inches per week limit (at 95% efficiency)	Spray Inches per week limit (at 85% efficiency)
180	1.5	0.07	32	0.53	0.48
240	2.0	0.10	42	0.70	0.63
300	2.5	0.12	50	0.84	0.79
360	3.0	0.15	63	1.05	0.94
420	3.5	0.17	71	1.19	1.10
480	4.0	0.20	83	1.40	1.26
540	4.5	0.23	96	1.61	1.42
600	5.0	0.25	104	1.75	1.55

PEANUT DISEASES

Fungicide options for peanut disease control. Fungal diseases can occur in all peanut fields and are responsible for some loss every year; however, the degree of loss is dependent upon several factors, including management and environmental conditions. Peanut plants are susceptible to infection by several foliar and soilborne pathogens.

Leptosphaerulina leaf spot or **pepper spot** is the primary foliar disease in our western production region. Pepper spot appears as small (<1/16 inch), dark brown to black lesions that are scattered over the leaf surface. This disease is most prevalent after the canopy fully develops, and may cause rapid defoliation if left unmanaged. Several products, including multi-purpose fungicides used for control of other diseases show activity against pepper spot (Foliar Disease Table).

Although less common above the Caprock than in other areas of the state, **peanut leaf spot** (early and/or late) also may be observed in irrigated fields. The initial symptoms of this leaf spot include small, pinpoint, yellow specks on the leaves. As the disease progresses, circular lesions (about the size of a pencil eraser or smaller) develop on the upper leaf surface. The color of the lesion on the lower leaf surface can often be used to distinguish the two. Early leaf spot is typically tan to reddish tan, whereas, late leaf spot have a dark black appearance. As with pepper spot, several fungicides are labeled for control of leaf spot (Foliar Disease Table), and may be incorporated into a spray program for other disease problems.

In addition to the aforementioned foliar diseases, there are several soilborne pathogens that incite disease. Soilborne pathogens are capable of infecting a wide range of field crops and weeds. In addition, these organisms are able to survive on plant debris in the soil, and produce specialized structures that allow them to survive for extremely long periods of time. The most prevalent soilborne diseases include sclerotinia blight, botrytis blight, southern blight, and the pod rot complex in the western production region.

Sclerotinia blight is a devastating disease that can result in significant yield losses if left unmanaged. Disease development is dependent upon environmental conditions. Infections occur under cool to moderate air temperatures (65-70 °F), and high soil moisture or relative humidity (95-100%). The fungus directly infects peanut plants and all tissues (stems, leaves, pegs, and pods) are susceptible to infection. The first symptom associated with sclerotinia blight includes wilted stems or limbs. When the fungus is actively growing, tufts of white fungal growth can be seen growing on affected plant parts. Advanced symptoms of the disease include bleached, shredded areas. Dark, black, irregular shaped structures (sclerotia) form on or within infected tissues. Effective fungicide options are limited; however, two products are currently labeled for sclerotinia control (Soilborne Disease Table).

Botrytis blight is a late season disease that also favors cool, wet conditions. This disease is predominately found in areas of west Texas. Many of the signs and symptoms associated with botrytis blight resemble those of sclerotinia blight; however, the tufts of fungal growth turn a light gray color over time. Additional differences may be observed if favorable environmental conditions are experienced. The fungicides used to control botrytis blight differ from those required to control sclerotinia (Soilborne Disease Table); therefore, microscopic evaluations of fungal structures may be required to distinguish between the two diseases.

Southern blight or stem rot can be found in all peanut production areas throughout the world. This fungus is capable of infecting more than 200 plant species, and may also persist in the soil for long periods of time. The fungus typically attacks the plant crown and kills the entire plant. The disease progresses down the row and may also attack pegs directly affecting yields. The first symptom of this disease includes the wilting of main stems or lateral branches. Dense, white fungal growth is often present at the soil line or on infected tissues. Growth of the fungus is most rapid under warm, moist conditions. Following death of the plant round sclerotia are produced on plant parts and the soil surface. These structures are initially white, but turn brown in time. There are currently several fungicides available for control of southern blight (Soilborne Disease Table). Because of a similarity of features, southern blight is easily confused with sclerotinia blight. Proper diagnosis is required to distinguish between the two diseases, and will impact which fungicide(s) should be used.

Although several soilborne fungi have been associated with the peanut pod rot complex in other peanut production areas of the world, there are two major pathogens (**Pythium** and **Rhizoctonia**) associated with the diseases in West Texas. The initial symptoms of **pod rot** are slight browning and extensive water soaking on the pods. As the pods are degraded, they appear watery and have a brown to black appearance. Peg infections may also occur, resulting in pods being shed in the soil when peanuts are inverted. Often times both Pythium and Rhizoctonia are associated with the disease, thus making control difficult. Fungicide options are fairly limited, especially if Pythium is the primary pod rotting pathogen (Soilborne Disease Table).

Optimal disease control is achieved through an integrated approach consisting of management options and cultural practices such as crop rotation, irrigation strategy, variety selection, and the use of fungicides. There are five factors that should be considered for disease management with fungicides: 1) correct diagnosis of the disease, 2) choosing the right fungicide, 3) using an adequate rate, 4) proper placement of the fungicide, and 5) timely application of the fungicide. Various application methods are available for putting out peanut fungicides. Foliar applications using ground or aerial equipment can be used to apply all products; however, certain products may also be applied through the irrigation system for enhanced control of some diseases.

Note that generic formulations of tebuconazole such as Orius, Integra, Tebustar, Tebuzol, Muscle, and Trisum are available in addition to Folicur. If you have any questions regarding the choice of fungicides for disease control, application methods, or peanut diseases in general please contact personnel at the Lubbock Center. To view Chip Lee's peanut disease photo gallery go to: (http://plantpathology.tamu.edu/Texlab/Fiber/Peanuts/atlas-toc.html). **JW**

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