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FOCUS on South Plains Agriculture

A newsletter from the Texas A&M AgriLife Research and Extension Center at Lubbock

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Cotton Entomology

Cotton planting considerations relative to effective thrips management

As we approach our High Plains cotton planting window, I would like to point out a few important pre-plant considerations related to effective thrips management. In a normal year, our Texas High Plains cotton can be infested by thrips, plant bugs and caterpillar pests. Among these, a complex of several thrips species is the primary and most common pest for the majority of the cotton acreage in the region. In a post Temik® era, insecticide seed treatments are the tools of choice for thrips management. In addition to insecticide seed treatments, a foliar application of acephate (Orthene®) is a good option for thrips control. However, the use of foliar insecticide applications may require additional field scouting labor in order to properly follow recommended action thresholds. In a study conducted last year, we found that either the use of a seed treatment or a one-time application of Orthene® or Vydate® could result in a 5-10% yield gain over plots not receiving treatments of any type (Figure. 1). If you are growing cotton in areas with a persistent thrips history, using insecticide seed treatments is suggested. Our research studies have found that the two, currently available seed treatment packages; i.e., Aeris® and Avicta Complete® for cotton are both equally effective on thrips in High Plains growing conditions.

In addition to insecticidal seed treatments, there are other considerations related to effective thrips management in cotton. Maintaining good plant health is important in order for small cotton seedlings to sustain injury by thrips. Here are few useful healthy plant points to consider:

1) Use quality seeds with good seedling vigor and timely germination.
2) Plant seeds into seed beds that contain adequate moisture and soil temperatures are within an optimum range.
3) If possible, plant seeds in fields managed under a reduced tillage system, such as terminated wheat stubble, so that the young seedlings do not suffer significant wind injury due to blowing sand. Of course, in many cases, the lack of rainfall and limited irrigation capacity do not allow for the establishment of a cover crop.

If seeds are planted when soil temperature is below optimum, it takes longer for seeds to germinate and grow. In this situation, the value of an insecticide seed treatment may be compromised and additional foliar applications might be required if consistent thrips pressure persists in the field. An ideal situation to plant cotton seeds is when soil temperature is above 60-62º F (at an 8-inch depth) with a forecast for open weather for at least one week. For thrips management, the bottom-line is to get the plant established and growing quickly so that plants can escape or quickly "grow through" the susceptible period of thrips injury, i.e., fourth true-leaf stage.

Windy conditions can also affect seedling growth. Sand particles blowing with high velocity winds can injure leaf tissues, especially when seedlings are young and the weather conditions are very dry. In recent years, dry windy conditions accompanied with blowing sand have been very prevalent during the planting and stand establishment period for much of the High Plains cotton acres. Cotton planted with some cover such as residual wheat stubble provide good protection from the winds and sand as evident in the picture in this article (Figure 2). Weak, slow growing

seedlings are more vulnerable to thrips injury, resulting in the plants requiring more time to recover and these growth delays may subject the plants to other stresses such as diseases and nematodes. **AB**

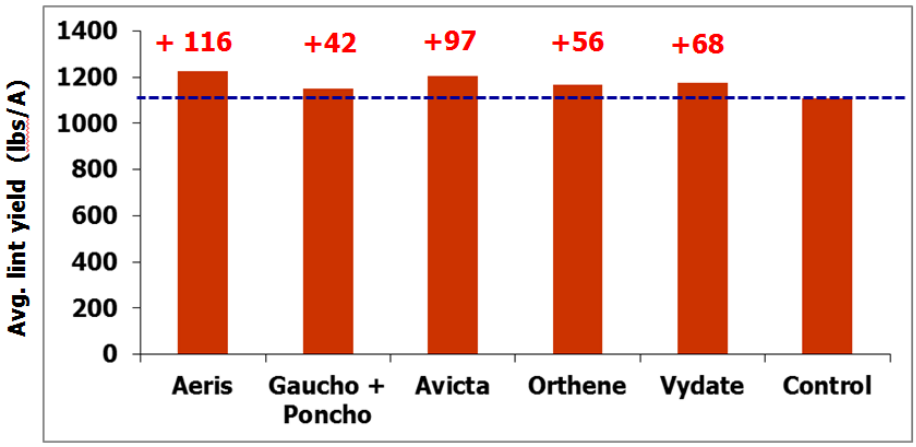

Figure 1. *Result of a trial conducted at Halfway, TX, in 2013 to evaluate the insecticide seed treatments (Aeris, Poncho/Votivo and Avicta Complete) and foliar applications of insecticides (Orthene and Vydate).*

Figure 2. *Visual comparison of seedling growth in two different conditions. Poor growth in conventional tillage versus healthy seedlings when seeds were planted between rows of terminated wheat stubble.*

Cotton Agronomy

Soil and water salinity

As a result of the continued drought conditions, some producers in the Southern High Plains region have decreased emergence and/or cotton yield due to soil and irrigation water salinity. Cotton is considered a salt tolerant row crop. However, there are soil and water thresholds that when reached or exceeded can result in significant emergence reductions and/or cotton lint and seed yields. If producers suspect a salinity issue in their fields or irrigation water, samples should be taken and sent to a soil and water testing facility for detailed "SALINITY" analyses.

Some general signs of saline soil can include white crusting at the soil surface in the furrow, side of seed bed, or top of seed bed, and/or decreased seed emergence or poor vigor. We suggest that soil samples be taken prior to planting from the 0-3", 3-6, and 6-12" depths to determine severity of salinity if present. By definition a saline soil is *a soil containing sufficient soluble salt to adversely affect the growth of most crop plants with a lower limit of electrical conductivity of the saturated extract (EC_e) being 4 deciSiemens/meter (dS/m), which is equivalent to a value of 4 mmhos/cm (or 4,000 µmhos/cm), and sodium adsorption ratio (SAR_e), another parameter measured from the soil extract, below 13.* Cotton seedlings, although somewhat susceptible to salts, in general will survive higher levels than 4 dS/m (mmhos/cm). When EC_e levels reach 15.5 dS/m, a 50% reduction in emergence may be observed. However, if a normal (3-4 seed/row ft) stand is established, cotton can tolerate soil salinity up to a level of 7.7 dS/m before significant yield reductions are observed. At 17.0 dS/m, a 50% yield reduction may occur, and at levels greater than 25 dS/m, crop development may cease with a 100% cotton yield reduction observed.

Irrigation water quality can also influence the level of soil salinity and thereby cotton crop performance. Salts are naturally occurring in groundwater, and they can accumulate in soil, especially when there is insufficient rainfall to aid in diluting or leaching of salts from the root zone. Several sources have indicated that irrigation water quality, in terms of salinity, should be closely monitored. One of these sources, IRRIGATION MANAGEMENT WITH SALINE WATER by Dr. Dana Porter and Thomas Merek, is available at http://cotton.tamu.edu/Irrigation/IrrigationwithSalineWater.pdf . This paper suggests that cotton performance is not negatively impacted by salinity in irrigation water up to an electrical conductivity of water (EC_w) threshold of 5.1 dS/m. However, when the EC_w reaches 12.0 dS/m, a yield reduction of 50% may be observed. Other sources of information on salinity and irrigation water quality are available to producers at http://lubbock.tamu.edu/programs/disciplines/irrigation-water/salinity-and-irrigation-water-quality/ .

If drought conditions persist, areas of the Texas High Plains may experience increased levels of soil and water salinity which can significantly impact cotton emergence and productivity. Due to space constraints, not all information is available in this article. The statements above should be used as a general guideline, or starting point, as other factors, such as soil type, fertility level, and irrigation practices can influence salinity levels in the soil. If a producer does determine that a saline soil/water situation is present, they can contact Texas A&M AgriLife Extension Service personnel for more information. **MK**

Small Grains Agronomy

Wheat freeze assessment report: selected areas in Texas South Plains

I have only a small number of wheat freeze inquiries this week. In general, I think the average wheat field in the region on the same calendar date is about 2 weeks later than last year, so this is helping with minimizing wheat freeze injury in many fields. Wheat for grain that was planted 'on schedule' (for example, early October in the NW South Plains to late October in the Lamesa area) is more likely to have freeze injury potential due to the more advanced growth stages which are susceptible at a higher temperature threshold.

Remember that resources needed for freeze injury assessment are on the web at http://wheatfreezeinjury.tamu.edu This includes the recent "Tips & Tools" publication on how to assess wheat in terms of where to sample, what you need, etc.

Here are four assessment reports:

Dawson Co., Monday, April 21 (Trostle)

In contrast to the previous week there was a lot more wheat for grain that was at the heading stage than I first realized, but I have not seen evidence yet of freeze injury on wheat for grain. Two growers, looking at their dryland yield potential and the uncertainty of what injury level they might see, cut for hay late last week. I noticed on rye that was grown for cover that many heads—even the majority—by Monday (and was headed out on Tuesday, April 15, when the major freeze occurred) were now bleached out and tan in color. They are sterile. Some wheat showed perhaps 1 head that was white or bleached per about 500 heads.

Cochran Co., Monday, April 21 (Kerry Siders & Jeff Molloy)

The wheat situation is not good, especially for earlier wheat. Between droughty conditions and a freeze April 15 wheat is looking rough. We looked at a few patches of wheat Monday south, west and northwest of Morton. The rule of thumb was that wheat which had progressed fairly normally, in terms of head development, received 40-60% freeze damaged heads.

The fields which were not as far along did not appear to have as significant damage. However, as these fields begin to flower and develop grain it may turn out that the flowering parts sustained some injury and were rendered non-viable. So a tough call in some situations. However, if you calculate cost of watering to find out if you will make a crop or not may help in the decision making processes. See http://cochran.agrilife.org/files/2011/09/April212014.pdf

Bailey & Parmer Counties, TX/Curry Co., NM, April 22 (Trostle)

I viewed six fields (four wheat, two triticale) mostly near U.S. 84 and north of Clovis. Only one field of wheat had any heading (perhaps 10%), but there was no sign of discoloration in emerged

heads. Texas wheat fields (3) did not demonstrate any ready evidence (heads, most recently emerging leaf), or stems and nodes that suggested freeze injury. I only split a few stems, and I found no problems. The lack of heading suggests these were later planted wheat fields where we would be less likely to find injury.

The Curry Co. wheat field (NMSU-Clovis Ag. Science Center) demonstrated significant leaf burn on some varieties. Varieties with significant leaf burn ranged from about 5% dead emerging leaf to as high as 40%. There was no boot stage anywhere among the varieties. A few additional dead growing points might be present in these plants that has not manifested the potential injury yet in a dying most recently emerged leaf. Wheats that are injured will require longer time to recover vs. those that were not, in order to recapture some of the yield potential.

Triticale samples from Parmer Co., which will be harvested for forage, were quite different. One field was about 50% or more headed, and about 2/3 of the emerged heads were mostly white in color. The head is dead. Heads that appeared to emerge since the freeze appeared normal to this point. There were only a few most recently emerged leaves that appeared to be dying or dead. The other triticale field was still pre-boot and showed no signs of freeze injury. Since the fields are going to silage there is no recommendation to change their management at this point.
http://soilcrop.tamu.edu

Concho Valley/San Angelo Region, Tuesday, April 22 (David Drake)

I spent the day looking at wheat fields and was very disappointed. I had underestimated the temperatures to which the freeze dipped on April 15. It could not have come at a worse time, mostly near flowering. There are some fields that were in warm (usually higher elevation) spots, flowered earlier or were otherwise protected, that have lower damage but not too many. I had been at the Millersview forage trials two days last week and thought that we had missed the freeze because everything was at grain fill but there is damage there. It took about a week to really show. The grain yield there may be a good cold tolerance test. Sadly, the Brady nursery was completely frozen. I do not have an Abilene and north report yet but the drought has taken the excitement out of that. Many of the fields were already being grazed because of drought. Contact Dr. Drake at drdrake@ag.tamu.edu for pictures of his Tuesday report.

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Useful Web Links

Water Management Website, TAMU, Irrigation at Lubbock, IPM How-To Videos, Lubbock Center Homepage, Texas AgriLife Research Home , Texas AgriLife Extension Home, Plains Cotton Growers

County IPM Newsletters

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