FOCUS on South Plains Agriculture

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Editor's Note

David Kerns Moves to LSU

Extension Cotton Entomologist David Kerns has started his new job in Louisiana. We wish him great success and thank him for five years of excellent work in Texas. David submitted the following statement as his last FOCUS contribution. RPP

This will be my last contribution to the FOCUS on South Plains Agriculture newsletter; since I am leaving to take a position with Louisiana State University in April. I am native to the South Plains of Texas, and when I left Texas after graduation from Texas A&M I made it a goal to return to Texas one day. It took me 20 years, but I made it back 5 years ago. Thus it seems ironic that I am so quickly moving on to yet another state, but professionally the position I have assumed in Louisiana is a dream job and too good to pass up. I've enjoyed my time here in Lubbock and I have benefitted immensely over the last 5 years, and I sincerely hope our cotton producers and consultants have benefited from me as well. DLK

Cotton Agronomy

Planting Considerations

As cotton planting quickly approaches, the Texas High Plains are still experiencing extreme drought conditions. Although we have received 3.07" of rain since October 2011 (Lubbock Airport – National Weather Service) and 6.8" of snowfall, more is needed to achieve adequate soil moisture for planting and replenish the soil profile. Furthermore, these amounts came in small increments and in most cases were followed by high winds which limited absorption into the soil. It appears that the eastern areas of the High Plains are in better soil moisture condition than most. If a significant amount of precipitation does not occur prior to planting, pre-plant irrigation may need to be applied for stand establishment. In some areas, especially where irrigation capacities are low, or under sub-surface drip, the pre-watering has already begun, although not to the extent that was observed in 2011. Furthermore, some producers may opt to plant to dry soil and irrigate to a stand, however, this can increase the possibility of seedling disease occurrence due to the application of cool irrigation water. If watering to a stand, producers should take special precautions in order to prevent seed from settling deeper into the seed bed during the irrigation process resulting in delayed or reduced emergence and decreased vigor. This is especially important in extremely "powder" dry soils and light "sandy" soils.

Whether pre-watering, planting dry and watering to a stand, or relying on available moisture from precipitation, planting into a firm, moist seed bed with the proper soil temperature and good seed-to-soil contact is imperative for achieving optimum stand establishment. Other important factors to consider for optimum stand establishment include variety selection, seed

quality, seeding rate and timing.

Most, if not all, producers have selected varieties with desired technologies for planting that best fit their management practices. Seed quality is highly important and can easily be determined. Prior to transgenic cotton seed production, producers could catch their seed and have TDA perform a cool-germ test and a warm-germ test to determine the Cool Warm Vigor Index (CWVI). Since then, producers have relied on seed companies to provide good quality seed and, for the most part, have not been disappointed. If desired, the CWVI can still be determined by adding the "standard germ" (printed on the seed tag) and the cool-germ (provided by seed companies) for individual seed lots. If the sum of the standard and cool-germs, or CWVI, are 160 or better, it is considered excellent. Good CWVI is between 140-159, Fair is 120-139, and below 120 is poor. Once seed quality has been determined, sorting seed lots by CWVI is recommended for planting sequence. Planting seed with highest quality first, if planting early, will help insure adequate stands under marginal planting conditions. Lower quality seed lots should only be planted under optimum conditions. Additionally, if producers plan to cut back on seeding rates, high quality (160 CWVI) or better should be used to increase the chances for obtaining optimum plant stands between 2 and 4 plants/row-foot on 40 inch row spacing.

Finally, timing of planting can be difficult to determine in the Texas High Plains, especially in northern areas. However, for best results, extremely early planting should be avoided. Ideally, the soil temperature should be 65^0 F or better with a favorable five to seven day forecast. Daytime temperatures should be 75^0 F or better and night time temperature should not get below 50^0 F during the germination process for best results. If planting too early, and cool temperatures are observed, the possibility of "chilling injury" is greatly increased. Temperatures at 41^0 F can damage or even kill seed. Damage to seedlings from chilling injury can include aborted root tips and decreased vigor. If the root tips are damaged or aborted, the roots will not penetrate the soil to normal depths and "crow-footing" may be
observed.

Getting off to a good start is critical to a successful growing season and optimizing yields and profitability. In summary, planting high quality seed at recommended seeding rates to a firm, moist seed bed at 65^0 F or better with a favorable five to seven day forecast will greatly increase chances for success.

Cotton Resource DVD

The 2011 Cotton Resource DVD is now available on the Lubbock website http://lubbock.tamu.edu/programs/crops/cotton/general-production/ . The DVD contains a large amount of cotton production information that producers and interested parties can utilize as well as a new section "Kid's Educational Materials" that educators may find useful. MSK

Cotton Disease

Early Season Cotton Disease Management: Seedling Disease

The principle causes of cotton seedling disease are the fungal pathogens *Pythium* spp., *Rhizoctonia solani* and *Thielaviopsis basicola*. Although less important, several *Fusarium* species can also affect seedling development. Overall, losses associated with seedling diseases are relatively low; however, the potential for seedling disease to develop exists in most all fields. Furthermore, increased losses may be experienced when cool, wet conditions are experienced prior to emergence. Severe cases of seedling disease were observed last season, despite record high temperatures and dry conditions. This was brought on by frequent irrigation needed to ensure stand establishment. The application of cool irrigation water lowered the soil temperature favors infection by the seedling disease pathogens.

Symptoms of *Pythium* and *Rhizoctonia* seedling disease are similar, and typically consist of sunken, black lesions which girdle the hypocotyl. Infections of *T. basicola* (the Black root rot pathogen) occur on portions of the hypocotyl below the soil surface and on roots, resulting in a blackened root system. This disease is most commonly found in heavier soils; however, the disease is also known to occur in fields with sandier textured soils. Interactions between the fungus and the root-knot nematode result in an increase in the disease. Black root rot seldom leads to plant death, rather plants infected by the pathogen exhibit severe stunting. Upon warmer soil temperatures, lateral roots will emerge and plant growth will resume.

Fungicide seed treatents are effective at minimizing losses associated with these diseases, and aiding in initial stand establishment. All commercially available cotton varieties contain a standard or base fungicide treatment. Ideally these treatments are comprised of different fungicides with activity against the aforementioned pathogens. The most common fungicide seed treatments and their spectrum of activity are listed in Table 1. Many of these products are offered in conjunction with insecticide options as well as several seed treatment nematicides.

Table 1.

Common seed treatment fungicides[1]	Target pathogen(s)
Acceleron, Argent, Baytan, Dynasty CST, Nuflow-M, Trilex Advanced, Vitavax-PCNB, and Vortex	*Rhizoctonia solani*
Acceleron, Allegiance FL, Apron XL, Dynasty CST, and Trilex Advanced	*Pythium* spp.
Baytan, Nuflow-M, and Trilex Advanced	*Thielaviopsis basicola*

[1]Acceleron STP (Monsanto), Dynasty CST (Syngenta) and Trilex Advanced (Bayer) are supplemental treatments that are applied in addition to a standard or base fungicide treatment.

Other diseases such as Verticillium wilt, root-knot and reniform nematodes, and Fusarium wilt occur throughout the southern High Plains. While symptoms of these diseases generally show up later in the growing season management options and variety selection need to be considered prior to planting. Management options for Verticillium wilt and Fusarium wilt are limited with variety selection being easiest and most effective way at minimizing losses. The following link http://lubbock.tamu.edu/files/2011/11/DiseaseRecommendations.pdf provides useful information as it relates to the response of varieties to several diseases that occur in the region. Keep in mind that considerations to variety selection need to be made for fields co-infested with both the Verticillium and Fusarium wilt pathogens.

Based on populations from fields sampled in the fall, root-knot nematodes may pose a potential problem later in the growing season. As with Verticllium and Fusarium wilt, several partially resistant varieties (Deltapine 174RF, Phytogen 367WRF, Stoneville 4288B2F and Stoneville 5458B2F) are available and should be used in fields with the greatest potential for damage. This is extremely important with the limited supply of aldicarb. In addition, nematicide seed treatments such as Avicta Complete Cotton (Syngenta) or Aeris Seed Applied System (Bayer) should also be considered. The fumigant Telone can be used prior to planting to reduce nematode populations. Injections of Telone should be made 12-18 inches with enough moisture in the soil to provide a seal to maximize efficiency. Studies evaluating variable rates of Telone are currently underway. As with any other pesticide, always read and follow label recommendations. If you have any questions about any of the diseases, variety selection, seed treatment or chemical management options, contact Jason Woodward at 806-632-0762 or via e-mail jewoodward@ag.tamu.edu. JW

Telone injection

Corn Insects

Refuge Compliance Checks to Intensify, Resistance to Bt Rootworm Corn Confirmed

As I suggested in my FOCUS article in February of last year, the intensive compliance monitoring program did come to Texas in 2011. This compliance checking method resulted in four times more non-compliant growers being found than did the previous methods. It would be a safe bet to assume that, since higher levels of non-compliance were found, scrutiny will only increase in 2012. Of course any grower found to be out of compliance in 2011 (by any method) is guaranteed a compliance check in 2012.

There are two types of compliance checking; that done by representatives of individual seed companies, and that done by a third party company hired by a joint industry group that represents all the transgenic seed registrants. This group is called ABSTC, the Agricultural Biotechnology Stewardship Committee, and is funded by the transgenic technology companies. So what is the difference in compliance checking by the two groups? Well, to begin with, the company hired by ABSTC will have all of the seed sales records regardless of which company or companies you bought your Bt corn from. Secondly, these compliance checks are independent of any single company – the checkers work for ABSTC, not the seed companies. Without going in to too much detail as to how the individual company compliance checks differ from the ABSTC-sponsored checks, just picture going to the doctor and having either your blood pressure checked or having a prostate exam. You will remember an ABSTC compliance check.

Part of the reason for the increased compliance monitoring is that ABSTC must report compliance data to EPA every year, and compliance has been declining for many years. This ultimately puts the registration or re-registration of transgenic technology at risk. But low compliance also means that the risk of resistance to transgenics is higher than we anticipated when we built the resistance management plans. I say "we" because I have been involved in making these plans for over 20 years now.

While I am not going to provide much detail in this edition of FOCUS, I do need to say that the corn rootworm has now been confirmed to be resistant to Cry3Bb1 corn in the Midwest. Over 400 validated reports of "unexpected damage" have been found from Nebraska to Illinois, and an Iowa State University study has confirmed this is true resistance to Cry3Bb1, the toxin found in some Monsanto rootworm protected corn. The article is here. The common threads mentioned in the Iowa State study were planting the same toxin in the same fields year after year, and not planting a refuge. Dr. Ed Bynum, Extension Entomologist in Amarillo, and I will write a more detailed explanation of this in a future edition of FOCUS, but I wanted to include it here so that it is clear that planting a refuge is vital in delaying resistance to Bt toxins.

Miticides: Onager Use Window Expanded and PHI Lowered, Zeal Approved

Onager miticide (Gowan Company) has now been approved for application after tassel. Additionally, the PHI has been reduced to 30 days rather than the former 45 days. The updated Onager label does not yet appear on Gowan's website, but the changes mentioned above are in fact approved on the label.

The other good news is that Zeal miticide (Valent) has been approved for field corn, popcorn and corn grown for seed. The PHI for Zeal is 21 days and the corn label can be found here.
RPP

Sorghum Agronomy

Huskie Herbicide Benefits Grain Sorghum

- Over-the-top weed control in grain sorghum
- Excellent control of pigweed and many other broadleaf species
- Greatly reduced injury potential compared to 2,4-D and dicamba
- Atrazine suggested as a key tank mix partner to enhance weed control

Huskie was approved for use in grain sorghum in July 2011. Some producers in the Texas High Plains region used the herbicide in late planted grain sorghum, and they were very pleased with the results. Texas AgriLife staff have researched Huskie since 2009 (brief summary below).

Huskie is labeled for over the top use (POST) in grain sorghum from 3-leaf stage to 12" tall. The herbicide's active ingredients contain two formulations of chemicals in Buctril and a second a.i. pyrasulfotole. Huskie has demonstrated good post-emerge control on Palmer ameranth and other pigweed species, kochia, species of morningglory, marestail, henbit, etc. Partial control is noted on bindweed (possession vine) and puncturevine. Best weed control is noted for weeds at ≤ 4" tall.

Also, there are numerous tank mix options particularly atrazine, which is a key for optimum weed control in grain sorghum. In fact, the Huskie label all but encourages use of atrazine to 'strengthen and expand weed control.' Atrazine rates, of course, are dependent on soil texture (heavy, light), but tank mix rates range from 0.25-1.0 lbs./A. Other tank mix options include Ally, dicamba, Peak, and Starane. Use spray grade ammonium sulfate (AMS) at 0.5-1.0 lbs./A and non-ionic surfactant (NIS) if the tank mix partner requires it.

Injury potential is low: Texas AgriLife notes only minor to ~15% injury to 4-leaf sorghum, with little evidence of injury persisting past 3 weeks. Even less injury has been observed in 8-leaf stage grain sorghum. This is much less than the injury potential from either 2,4-D and dicamba.

Sample of weed control results:

High Plains—Bushland, 91%+ control at 7 & 42 days after treatment of 3-4" Palmer ameranth when applied alone at 13-16 oz./A; 95%+ control when applied with 0.5 lb. atrazine at 13 oz./A; adding 4 oz./A dicamba did not improve control.

Halfway, Huskie + atrazine, 94-97% control of 2-4" Palmer ameranth at 21 to 41 days after treatment; slight sorghum injury noted with all POST treatments, but ≤ 5% 21 to 41 DAT unless 2,4-D was included.

For further information consult the label and your chemical dealer. An expanded summary from Texas AgriLife is available online at http://lubbock.tamu.edu/programs/crops/sorghum/weeds/

Split Pivot Irrigation Scenarios - Two Crops and Planting Dates

A common topic of discussion among winter and spring Extension meetings is the means of reducing the amount of irrigation needed at one time on our irrigation pivot systems. This involves pairing two crops under the same pivot with two different planting dates so as to minimize if not eliminate the overlap of peak irrigation water requirement for the entire pivot.

The most common scenario involves cotton planted at your regular to early planting dates (May 1-10) paired up with late medium or medium-early grain sorghum planted June 25 to July 5, depending on your South Plains location. In this case sorghum is planted such that flowering occurs in early September and peak irrigation requirement for that sorghum occurs after physiological cut-out—and significantly reduced irrigation—for the cotton crop.

Several scenarios are summarized from Extension presentations on the web at http://lubbock.tamu.edu ('Home' section on the main page). These scenarios are specific the South Plains as follows:

- Lower South Plains—Scurry, Howard, Dawson, Lynn, Gaines, Terry Counties
- Central South Plains—Lubbock, Crosby, Hockley, Floyd, Hale, Yoakum Counties
- Northwest South Plains—Cochran, Bailey, Lamb, Swisher, Castro, Parmer Counties

Cropping scenarios include:

- Regular/early cotton and late grain sorghum
- Early grain sorghum and delayed cotton
- Early corn and late grain sorghum
- Regular/early cotton and late sunflower
- Early sunflower and delayed cotton
- Peanut and early sorghum
- Short season early Valencia peanut and late sorghum

Some additional considerations outlined in the reference document include:

- An assumption that cotton, corn, and peanut are the primary crop. Companion crops such as grain sorghum, sunflower and also sorghum/sudans, are planted at seed populations that are only modestly above what you would use for dryland in the event the summer remains dry. Thus if these crops can't be irrigated much, you still have a field that has a shot of making it on its own

- Though scenarios for early sorghum or sunflower may fit your system agronomically, if the summer remains dry there is some risk to your primary crop in committing irrigation to another early planted crop. Thus this may make a late planted crop more appealing, one that would have a shot at late August & September rainfall in the event the heart of the summer is dry.
- Producers may simply elect to focus on 60 acres of well-watered, well managed cotton or corn, and leave the remaining acreage in dryland cotton (insured) or even fallow.
- The ultimate shifting of water use throughout the season is to grow wheat or small grains for forage, particularly for our northwest counties.
- Any production of grain sorghum should manage stubble to provide cover protection for 2013 cotton.

If you are interested in other dual cropping scenarios, and would like Extension assistance to think through how you would manage these, contact Calvin Trostle.

Sorghum/Sudan Hay Production

Early Planting

How early can sorghum/sudan be planted if we are trying to produce additional fresh forage as quickly as possible in 2012? Historically, in the High Plains we advise sorghums (including grain) be planted no sooner than 2 weeks after the last average 32°F date, and then only if soil temperatures (similar to what you'd use for cotton) are up (which they usually are not). We can plant sorghums at 60°F if the forecast continues for warm weather. Dates for last average freeze in the South Plains range from about April 1 at Lamesa (April 3 at Lubbock) to about April 12 in Bailey/Parmer Counties.

With the rush to get fresh forage Extension suggests with warming soils that producers consider planting limited acreage near the last freeze date if soil temperatures are favorable (they are in 2012) and headed up. Then plant the next ~20% of your acreage 7 to 10 days later, and then finish another 7 to 10 days after that. Though growth may be slow, the high seed number per acre will account for lower stand establishment if cool weather and soils returned.

In these scenarios we believe that a modest amount of grazing could be achieved by the end of the last week of May in the lower South Plains, and around the first week of June in the northwest South Plains. This would enable some grazing before the desired 24" tall recommended height for initial grazing, but then move cattle to the next field and give your earliest sorghum/sudan some time to recover and continue growing.

Sorghum/Sudan Seed Supply—Critically Short

If you need haygrazer seed then contact your preferred seed dealer immediately. Many popular hybrids are already sold out. CT

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Useful Web Links

Texas High Plains ET Network, 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

Castro/Lamb, Dawson/Lynn, Crosby/Floyd, Gaines, Hale/Swisher, Hockley/Cochran, Lubbock, , Parmer/Bailey, Terry/Yoakum