Cotton Comments

OSU Southwest Oklahoma Research and Extension Center
Altus, OK

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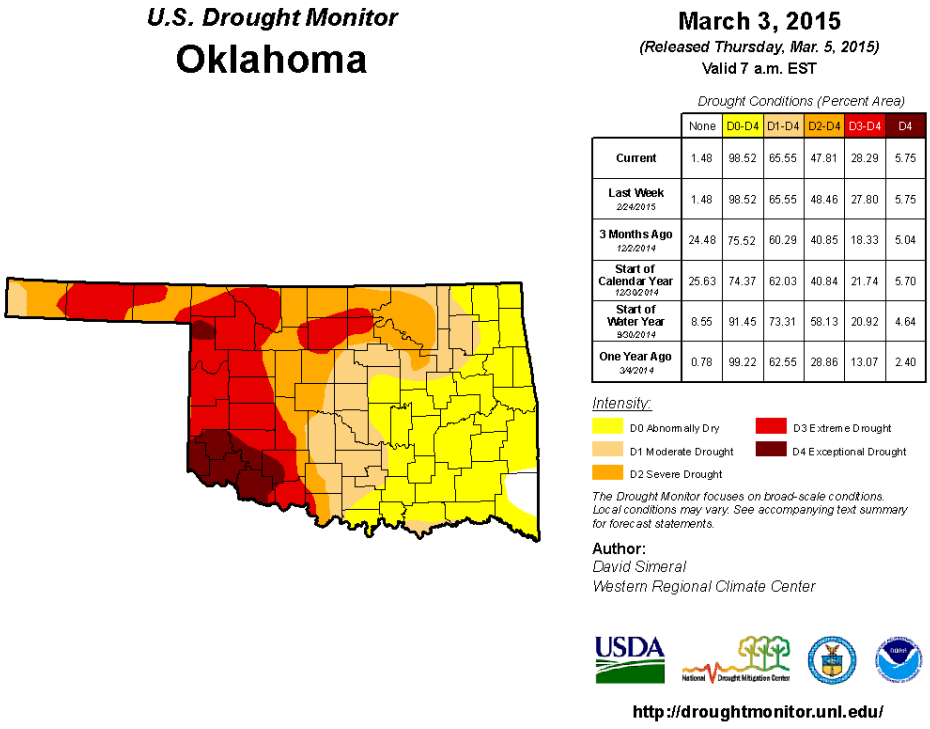
Current Situation and 2014 Crop Quality Update

The drought that began basically at the end of 2010 continues for the heart of cotton country in southwestern Oklahoma (see March 3 Drought Monitor graphic below).



According to the December USDA-NASS crop report, in 2014, 230,000 acres were planted with 210,000 acres harvested. This was a significant improvement over the 2013 crop year. Abandonment was due to extreme drought conditions in some areas. The continuing drought and lack of irrigation water in the Lugert-Altus Irrigation District contributed to abandoned acres. Other groundwater-based irrigated acreage was plagued by significantly reduced pumping capacity. Due to some timely summer rainfall, some growers in the Lugert-Altus Irrigation District were able to harvest many low yielding fields to contribute to the overall state production estimated by USDA-NASS at 235,000 bales – the highest production since 2010. As of March 6, 2015, a

total of 234,693 Oklahoma-ginned bales had been classed by USDA-AMS at Abilene, TX. The continuing Exceptional (D4) category drought in far southwestern Oklahoma (Harmon, Greer, Jackson, Tillman, Comanche, and Kiowa counties) is very serious. Significant, above average rainfall is needed to alleviate this exceptional drought situation.

In spite of the tough August, there is some good news concerning the 2014 crop quality. The USDA-AMS Classing Office at Abilene is reporting that color and leaf grades, staple, micronaire, strength, uniformity, and bark contamination have all been good to excellent for many producers. For about 235,000 bales of Oklahoma cotton classed through March 6, about 75% have been color grades 11, 21 or 31, with 49% with color grade 11 or 21 – the best possible. Leaf grades have averaged 3.0 with 36% exhibiting leaf grade 1 or 2 – the best quality possible, with an additional 36% with leaf grade 3. Bark contamination is present in about 21% of the bales classed thus far. Staple (fiber length) has averaged 35.3 32nds. This is good considering the significant moisture stress encountered in August, and we have nearly one-fourth of the crop with a 37 or longer staple, with an additional 27% classed as a 36. Micronaire averaged 4.4 units, with 80% in the 3.5-4.9 range. Currently fiber strength average is 31 g/tex, with 83% classed as 30 g/tex or higher. It is of utmost importance that growers make good decisions with respect to varieties planted, especially with the market as it is today. The Abilene classing office serves portions of Texas, as well as Oklahoma and Kansas.

2014 Project Report

Summaries for several projects pertaining to variety performance, weed control, deep soil sampling, entomology and plant pathology, harvest aids, etc. can be found in the 2014 project report. This can be downloaded at: http://cotton.okstate.edu/cttn-ext-annl-rprts and www.ntokcotton.org/ .

Deep Soil Sampling for Nitrogen

Nitrogen (N) is typically one of the most expensive fertilizer nutrients used in cotton production. It can also be difficult to properly manage because of biological activity and mobility in the soil environment. Inadequate N reduces the number of fruiting sites and potential yield, whereas excessive N can create rank growth, and can actually lower yield and quality by delaying maturity. Excess N can also potentially increase problems with disease, insects, and defoliation. Recommended N rates are based on the N required to produce a crop at a realistic yield goal, and should be reduced by credits for residual nitrate nitrogen (NO_3-N) in the soil, as well as by any NO_3-N applied in irrigation

water. Crediting soil and water NO_3-N requires collection and submission of samples to a laboratory for proper analysis. In 2012, OSU N recommendations for cotton were changed from 60 lb N/bale of yield goal to 50 lb N/bale. A factsheet was generated to support this and it can be found by clicking here. (Click here for PSS-2158).

Deep soil sampling for residual N can be accomplished using a hydraulic probe. In Oklahoma, deep sampling to a depth of 18 inches is suggested and supported with recommendations by the Soil, Water & Forage Quality Analytical Laboratory. In order to accomplish this, a probe must be inserted 18" into the soil, and the resultant core should be sectioned into 0-6 inch (submit for routine analysis) and 6-18 inch (submit for NO_3-N only) increments.

There has been no release of irrigation water to the LAID since 2011 due to ongoing drought and the lack of runoff in the North Fork watershed, and many cotton fields failed over multiple years. Working with Mr. Gary Strickland, Jackson County Extension Educator, in March and April project personnel identified several LAID producer-cooperators who agreed to participate in a deep sampling project. A total of 24 fields were deep sampled to 18" inches using this probe, and cooperators completed a survey for each field. This represented a total of 2,654 acres. The objectives were to evaluate nitrate-N accumulation by depth (0-6" and 6-18"), as well as obtain a general snapshot of residual P and K fertility. In addition, we included salinity testing in the 0-6" increment. Some sampled fields were sub-surface drip irrigated but many were furrow watered. All samples were submitted to the OSU Soil, Water, and Forage Analysis Laboratory on campus. Results indicate that substantial nitrate-N has accumulated in the soil profile in several fields due to the ongoing drought, continuing mineralization, and multiple crop failures (see Table 1 – Click here for LAID Deep Sampling Results Document). The range in lb/acre of residual nitrate-N found in fields was 57 to 266. Most fields with extremely high residual N had experienced no biomass removal since 2010. Other fields have had some level of biomass removal (low yielding forage production and harvest and baling, and thus removal) and have somewhat lower values. Average field size was 111 acres, with an average of 151 lb N/acre noted across all fields. Overall, in the 24 fields surveyed, a total of 417,445 lb N was directly measured (Table 2). When using 32-0-0 priced at $350/ton ($0.57/lb actual N), this survey indicated that the total value of residual N found in these fields was $237,944. This averages about $89/acre across sampled fields. The average per field total value of residual N was $9,914.

The high soil residual nitrate-N will be a challenge for cotton producers in the future. The excessive accumulated N can exacerbate Verticillium wilt, increase cotton aphid populations, increase plant growth regulator need, delay maturity, challenge harvest aid performance, and ultimately negatively impact fiber quality (e.g. micronaire). This could result in cotton production losses, or extremely high expenses or both. It will also be a detriment to forage sorghum production, and possibly result in high nitrates in the

harvested forage if extreme drought continues. The forage may ultimately have high nitrates and be toxic to livestock, especially if fertilized with N and the residual is unanticipated or not determined. When in doubt do some soil sampling and testing!

Bollgard II© XtendFlex™ Varieties Offered for Sale in 2015

New for 2015 are varieties with Bollgard II© caterpillar insect protection stacked with XtendFlex™ (triple-stacked for dicamba, glyphosate, and glufosinate herbicide tolerance). The XtendFlex™ technology was approved in January, but the new low-volatility dicamba herbicide formulations have not yet been approved by EPA. However, the XtendFlex™ technology containing varieties are still going to be sold in 2015, but no in-season dicamba applications will be allowed. Each bag of XtendFlex™ cotton seed will have a pink label stating:

"Notice: Do not apply dicamba herbicide in-crop to Bollgard II© XtendFlex™ cotton in 2015. It is a violation of federal and state law to make an in-crop application of any dicamba herbicide on Bollgard II© XtendFlex™ cotton unless the product label specifically authorizes that use. You should not make and Monsanto does not authorize making an in-crop application of any dicamba herbicide to Bollgard II© XtendFlex™ cotton in 2015. Refer to the Monsanto Technology Use Guide for details and recommendations on using approved Roundup© and Liberty© branded agricultural herbicides on Bollgard II© XtendFlex™ cotton."

Several seed companies will sell Bollgard II© XtendFlex™ varieties that have a fit for our region. These companies include Deltapine, Dyna-Gro, and Americot/NexGen. Two regulated XtendFlex™ germplasm trials were conducted at the Caddo Research Station near Fort Cobb in 2014. Standard Bollgard II Roundup Ready Flex entries were compared to various XtendFlex™ germplasm lines, some of which will be sold in 2015. The report for these trials can be found by clicking here.

2015 Seed and Technology Cost

Cost should not necessarily be the primary reason for selecting a variety, but it is important. The value of a high yielding cotton variety with biotech traits to ease management requirements across a large number of acres is a serious consideration. According to USDA-AMS Cotton Varieties Planted - 2014 Crop, the Abilene Classing Office indicated that producers planted about 100% of the acreage to glyphosate

tolerant varieties (Roundup Ready Flex or GlyTol), and about 95% to Bollgard II or Widestrike Bt technologies.

The ***Plains Cotton Growers 2015 Seed Cost Comparison Worksheet*** can certainly be useful for planning purposes. Shawn Wade has updated the Microsoft Excel spreadsheet which can be used within your Web browser, or downloaded and saved to your computer. About 100 varieties of many types can be found in the spreadsheet. The user can select up to 10 varieties to simultaneously compare total seed and technology fee costs based on a specific seeding rate. The row spacing and seed per row-ft can be entered by the user. This then calculates a seed drop on a per acre basis. Then, based on published pricing for the various seed varieties and technology fees, the cost per acre is automatically calculated. It should be noted that the pricing used in the spreadsheet does not include premium seed treatments or any incentive program that might be provided by the various companies. The Seed Cost Comparison Worksheet is available here: http://plainscotton.org

Variety Selection

Selecting productive cotton varieties is not an easy task, especially in Oklahoma where weather can literally “make or break” a crop. Producers need to do their homework by comparing several characteristics among many different varieties, and then keying these characteristics to typical growing conditions. We can’t control our growing environment from year to year, but we can select the varieties we plant based on desired attributes. It is very important to select and plant varieties that fit specific fields on your operation. Don't plant the farm to a single variety, and it is strongly suggested to try relatively small acreages of new ones before extensive planting.

Variety Testing Publications

If disease issues are not concerning, then scrutinize all possible university trial data that are available to see how a specific variety has performed across a series of environments, and if possible, across years. It is best to consider multi-year and multi-site performance averages when they are available. However, due to the rate of varietal release, many new varieties are sold which have not undergone multi-year university testing, or perhaps no university testing at all. Our 2014 variety testing program results are available here: http://cotton.okstate.edu/variety-tests

Producers in north Texas who have an interest in Dr. Gaylon Morgan's 2014 Texas A&M AgriLIfe Extension testing results can find them here: http://varietytesting.tamu.edu/cotton/index.htm

When it comes to variety selection in our area, several factors are important to consider.

Maturity (Earliness)

Scrutinizing the relative maturity rankings provided by seed companies will be beneficial. Don't expect a mid-full season cotton variety to perform well in a short season environment where an early or early-mid might generally work best. Many longer season cotton varieties are better adapted to areas with longer growing seasons, although significant gains in yield may sometimes be obtained in years with warm September and October temperatures. Longer season varieties will typically do much better when planted earlier and then provided an excellent finish. For later plantings, early-mid maturity varieties may be better, and for late plantings or replant situations, early maturity varieties may be better. Relative maturity for most varieties gets compressed when moisture stress occurs. In other words, under drought stress, maturity of longer season varieties will not be expressed to the degree that would generally be noted when under high water and fertility regimes.

Pounds

Yield potential is probably the single most important agronomic characteristic, because pounds do drive profitability and provides for the safety net of higher actual production history (APH) in case of catastrophic loss of acres. The benefit this can provide from the crop insurance perspective is important in our high risk area. Yield stability across environments is going to be important, and basically what we want to find is a variety that has the ability to provide high yield across varying water inputs.

Fiber Quality

Producers should also consider lint quality. We have made a lot of progress in terms of fiber quality over the last several years. We have seen significant improvements in overall fiber quality packages associated with our modern varieties. Staple is generally good to excellent for most new varieties. A lot of things can affect crop micronaire. These factors can include overall environment, planting date, variety, early season fruit loss with later compensation, excessive late season irrigation or rainfall, seedling

disease, early season set-backs due to hail damage, blowing sand, thrips, etc. Fiber strength has also significantly improved and many newer varieties tend to be at least 30 g/tex. Length uniformity can be affected by staple, maturity, and harvest method (picker harvested typically higher than stripper harvested). Higher maturity fiber generally results in better uniformity. Leaf grade can be affected by density of leaf hairs on specific varieties in some years. Generally, cool, wet fall conditions can lead to lower quality leaf grades for varieties which tend to be hairy. In drier harvesting environments these differences tend to diminish. Color grades are basically a function of weathering or exposure of the fiber on the plant to wet conditions. The highest quality that a cotton boll can have is on the day that it opens. After that, if conditions favor microbial growth (warm, wet conditions) or if an early freeze affects immature cotton, then color grade quality will likely be reduced. Bark contamination is generally also driven by significant late season rainfall followed by a freeze. In some years this can't be easily managed if stripper harvested. Conversely, picker harvesting can significantly reduce or eliminate bark contamination.

Storm Resistance

Storm resistance is still a concern for growers in our area. Even though many producers have adopted less storm resistant cotton varieties over the last several years, and generally done well with those, the overall management system the producer adopts can be important. Under significant moisture stress on dryland, some newer varieties may provide an unacceptable level of storm resistance, especially if the field is "left to the freeze." Producers planning to execute a sound harvest aid program as soon as the crop is mature can probably grow some fields of less storm resistant cotton. However, having large acreages of varieties with low storm resistance might be a prescription for disaster if the right environmental conditions align at harvest. Do not plan to leave looser open-boll cottons in the field until a freeze conditions the plants for harvest. Unacceptable pre-harvest lint loss is likely to result. Higher storm resistance varieties are better adapted to our harvesting conditions and they are more likely to survive damaging weather prior to harvest without considerable seedcotton loss. Inquire about the storm resistance of any variety on your potential planting list. If you do choose a variety with low storm resistance, plan and budget ahead for a good harvest aid program that will let you achieve an early harvest. Good storm resistance data are now being provided by most companies and we evaluated all variety trials for this attribute in 2014.

Disease and Nematode Resistance/Tolerance

Producers should likely not plant the farming operation to one cotton variety. A question should be "do I have plant diseases or Root knot nematodes in this specific field?" Although we have not been able to identify substantial acreage with this pest in Oklahoma, varietal tolerance or resistance will be critical for managing this. One thing to consider is whether you know which disease is present. If you have a problem with a wilt disease and don't know what it is, then you need to have the problem identified. If known Verticillium wilt pressure is present, then take a look at Dr. Terry Wheeler's and Dr. Jason Woodward's data from several locations investigating variety performance under constraints from this particular disease. The same should be considered for Fusarium wilt/Root-knot nematode issues. Many times varieties which do well under Verticillium wilt pressure may not be the same ones which rise to the top with Fusarium or Root-knot nematode pressure. **Bacterial blight is an occasional problem in the region. There are several varieties out there that can provide high levels of resistance/immunity.** To determine the disease reaction of many currently available varieties, visit the Texas A&M AgriLife Research and Extension Center Website here: http://lubbock.tamu.edu/

Biotech Trait Types

Producers need to ask themselves several questions. Do I want a herbicide-tolerant variety, if so, which system? While the current list of transgenic herbicide options has recently increased with the availability of triple-stacked herbicide tolerant varieties (glyphosate, glufosinate and dicamba) from Monsanto, the list of in-season herbicide options for 2015 has not. **In-season use of dicamba will not be allowed on the XtendFlex varieties in 2015. Therefore those varieties should be managed as "Roundup Ready Flex and Liberty Link stacked."** The agronomic capabilities of glyphosate tolerant cotton varieties continue to improve and the weed control system it enables is very effective if properly executed. The Liberty Link system has thus far been more widely adopted in other regions, perhaps due to our tough early season environment in some years. In 2015, there are several varieties with GlyTol/Liberty Link "stacked" technologies, and a few "stacked" with Bayer's proprietary TwinLink Bt trait.

As for Bt caterpillar insect protection, the Bollgard II (Cry1A + Cry2AB) and Widestrike (Cry1A + Cry1F) technologies have provided outstanding caterpillar pest control in our area. TwinLink (Cry1Ab and Cry2Ae) also provides similar results. In 2014, we had an opportunity to evaluate PhytoGen 495 W3RF, containing Widestrike III triple-stacked Bt technology (Cry1A + Cry1F + VIP 3A) targeted to control various lepidopterous pests. The WideStrike III technology is the first "triple stacked Bt product" in the market.

Widestrike III Bt was effective in controlling low populations of lepidopterous pests encountered at the site in 2014. The triple-stacked Widestrike III product should provide an additional layer of Bt protection to reduce the potential for insect resistance development. Based on our local technology pricing, these traits have been widely planted on Oklahoma cotton acres. Because of the lack of disruption of beneficial arthropods by insecticides used to target bollworms, etc., aphids will likely not be flared which is of considerable value.

2015 Texas A&M AgriLife Extension Profitability Spreadsheet

An Excel spreadsheet has been developed by Extension agricultural economist Dr. Jackie Smith at the Lubbock Center. See: http://agrilife.org/southplainsprofit/

The spreadsheet allows the users to select various crops and input their operation's data. This spreadsheet covers a multitude of summer crops including alfalfa, corn, corn silage, cotton, grain sorghum, sorghum silage, peanuts, sesame, sunflowers, etc. The user can enter prices, input costs, etc and calculate potential returns.

Topguard Terra Full Section 3 Label Approved by EPA and ODAFF

On January 30, 2015, EPA granted a full section 3 label for the fungicide flutriafol (brand name Topguard Terra) to control Cotton Root Rot (CRR). This disease is caused by the soil borne fungus *Phymatotrichopsis omnivora*.

Topguard Terra is a new 4.16 lb/gallon flutriafol product. This product should not be confused with the 1.04 lb/gallon original Topguard product which recently received a Section 18 Exemption label for Texas (effective between February 1 and June 30, 2015). The Topguard Terra product is fully labeled for use in Oklahoma cotton and we DO NOT have a Section 18 for original Topguard formulation use in 2015. **Therefore two important points should be considered. 1) Topguard Terra is a higher concentration of active ingredient (4.16 lb/gallon) versus Topguard (at 1.04 lb/gallon). 2) The labeled rate of Topguard Terra is 4-8 oz/acre.**

Flutriafol fungicide works by forming a protective barrier around the cotton root at the point of disease infection. Precipitation in the form of rainfall or irrigation is required to move the product into the infection zone. The amount of water required will vary with soil type, soil moisture, and rainfall or irrigation intensity.

The disease is present in several cotton producing counties in the state including Comanche, Cotton, Kiowa, and Tillman. This pathogen can be found very deep in soils and is known to infect over 2,000 broadleaf plants, but does not affect grasses. Each year cotton plants begin dying in July or August which continues until the end of the

growing season. Once infected, cotton is rapidly killed by this disease. This initially occurs in patches, and typically, eventually the patches coalesce into larger areas. These dead areas provide a minimal amount of harvestable crop and the dead, decaying stalks become entangled and disrupt the flow of seed cotton in harvesting equipment, especially stripper-type machines. This reduces the speed of harvest. This additional time required to harvest increases labor and fuel costs and at the end of the day, more expenses for producers. Later harvesting can result in both lower yield and lower quality due to field exposure to rainfall, and potentially ice and/or sleet events. Many of today's contemporary varieties, are susceptible to pre-harvest losses to some degree, if the harvesting is delayed much past the optimum.

Many cotton producers in these above-listed counties incorporate wheat/cotton rotations into their farm management scenarios. However, due to CRR presence in many fields, producers will generally not rotate to cotton or other susceptible (broadleaf) crops, but choose to instead remain in monoculture wheat production. This results in a less than ideal situation with respect to wheat production, because continuous wheat planting increases soil borne diseases and weed pressure in a monoculture situation. Under monoculture wheat production, disease and weed pressure can reduce yields and result in lower quality, and can potentially degrade soil health. Yield increases in wheat can potentially be substantial due to reduced wheat disease pressure and weed competition since these cycles can be broken with a cotton rotation.

In 2013 two Oklahoma flutriafol projects were conducted by Southwest Research and Extension Center personnel, in collaboration with Mr. Rick Minzenmayer with Texas A&M AgriLife Extension Service, San Angelo. One was planted near Snyder in Kiowa County (irrigated) and the other near Hamms in Tillman County (dryland). Substantial but spatially variable CRR pressure was encountered at the Kiowa County irrigated site. Results indicate that 0.13 and 0.26 lb/acre flutriafol rates had lower percentage diseased plants than the untreated. The 0.26 lb/acre rate resulted in a lower percentage of diseased plants than the 0.13 lb rate. When compared to the modified in-furrow treatment, the T-band application method resulted in a higher number of healthy plants at both 14 and 28 DAP, but this did not result in higher yield. Lint yields were 1226, 1566, and 1715 lb/acre for the untreated check, and flutriafol rate main effect means of 0.13 and 0.26 lb a.i./acre, respectively. When compared to the untreated check, yields were increased by 340 and 489 lb/acre for the 0.13 and the 0.26 lb a.i./acre rates, respectively. This represents 28 and 40 percent yield increases for flutriafol rates of 0.13 and 0.26 lb a.i./acre, respectively, when compared to the untreated check. Results from this project indicate that flutriafol was effective at reducing the negative impact of CRR at this site.

Topguard Terra Use Directions (At-Plant Soil Application Only)
Rate: 4-8 fluid oz/acre

<u>Overhead or Sprinkler Irrigation Fields:</u>
• The T-Band application method is preferred under these cropping practices.

• Modified In-Furrow can be used. Effort should be made to avoid applying product in direct contact with seed.

Dryland Fields:
• The Modified In-Furrow application technique may provide more consistent control under low rainfall conditions.
• Application using a T-Band method requires rainfall to move the product into the disease infection zone below the soil surface.

Furrow and Drip Irrigated Fields:
• Apply in T-Band or Modified In-Furrow.
• When using the Modified In-Furrow application method sufficient irrigation must be applied to thoroughly wet the TOPGUARD Fungicide treated zone after cotton has emerged.
• For T-Band applications, the top of the bed must be thoroughly wetted after the cotton has emerged.

NOTICE for All Applications Methods and Field Conditions: Heavy rainfall or irrigation within 3 days after planting may delay emergence.

AS ALWAYS, READ AND FOLLOW ALL LABEL DIRECTIONS. Below are links to the Topguard Terra label, Tech Sheet, Sell Sheet and Rate Card.
http://www.cdms.net/LDat/ldC5C000.pdf
http://www.cheminova-us.com/en/products/fungicides/topguard-terra/topguard-terra.htm
http://www.cheminova-us.com/download/sheets/topguard-terra-sell-sheet.pdf
http://www.cheminova-us.com/download/470-topguardterra-rate-card.pdf

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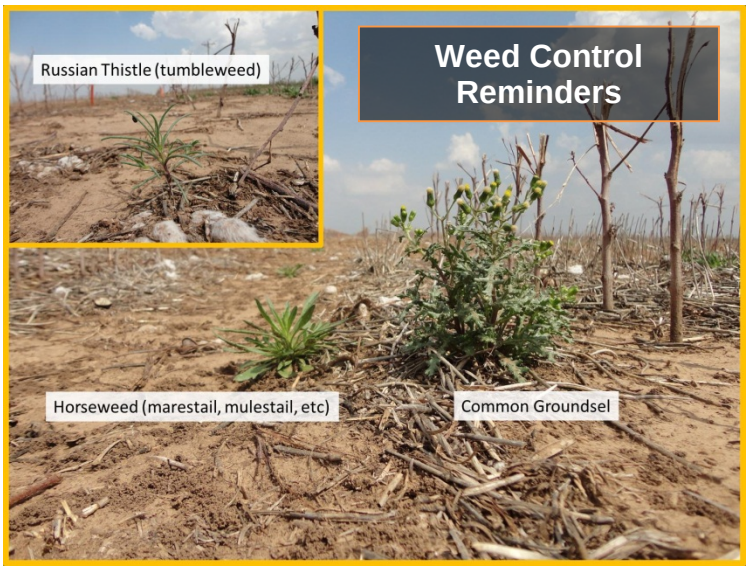
Weed Control Update



Burning down weeds ahead of planting is an essential step towards a healthy, vigorous stand of cotton. Several studies have shown that weed competition early in the cotton plant's life can significantly reduce yields. Starting clean is essential. Spring weed control ahead of cotton in Oklahoma often involves several weed species. Some of the more difficult species to control are horseweed (marestail), Russian thistle, common groundsel and

morningglory. With respect to horseweed, dicamba and 2,4-D are usually key ingredients in the recipe for success as long as the application time (date) allows for the proper cotton plant back restrictions to be observed (the dicamba label states that for 0.25 lb a.i./acre, 21 days must pass after receiving one inch of rainfall or sprinkler irrigation following applications; for 1 lb a.i./acre of 2,4-D, planting may occur 30 days after application). As we get closer to planting our options change. Despite highly publicized weed resistance issues, many Oklahoma producers still shift into a "glyphosate only" mode when addressing weed issues within this period. Although this route may be an effective option, there are important issues that need to be considered. First, these particular weed species (horseweed, Russian thistle, common groundsel and morningglory) generate quite a few phone calls early in the season, especially when conditions get hot and dry. Under these conditions control from glyphosate can be inconsistent with these weeds. Unfortunately the phone calls don't come in until the grower recognizes this a few weeks after application. Often planting has already occurred and the crop has emerged. What can I do now? There is a short list of products for over-the-top broad-spectrum weed control in cotton. The second issue is glyphosate resistance. At this point we have to add pigweed (palmer amaranth) to the list of difficult to control weeds. If your field falls into this category, the short list of options previously mentioned becomes even shorter with much greater expense. Therefore steering clear of these two potential issues is highly recommended. How we do so depends upon your circumstances.

When trying to burn down morningglory adding 1 oz/A of Aim 2 EC plus 1% crop oil concentrate to your full rate (size dependent) of glyphosate greatly improves control. In addition, this application can also be effective on small palmer amaranth ($\leq$ 4 inches) when the Aim rate is increased to 1.6 oz/A (according to the label). Aim is a contact herbicide therefore good results require good coverage. It's also important to note that Aim is a group 14 herbicide providing an alternate mode-of-action (herbicide resistance issues). Consult the label for specifics.

If horseweed is still a concern there are a few options during this period. Since glyphosate resistant horseweed has been confirmed in many locations (most cotton producing counties) across Oklahoma the glyphosate option is out. Typically by this stage horseweed has bolted and becomes very difficult to control. Paraquat is one of the few options available to producers to effectively deal with this problem closer to planting. Paraquat is also a contact herbicide so once again good results require good coverage (consult label). Another key for paraquat' success is getting the rate correct for the weed size. Although 0.5 lb ai/A typically does a great job on moderately sized (8-10 inch) Russian thistle (tumbleweed), controlling horseweed at this date typically requires a more aggressive approach. For horseweed that has already bolted I recommend 0.75 lb ai/A. Don't be surprised if larger horseweeds (> 8-10 inches in height) require a sequential application 7-14 days later for good control. Also, I have seen good results when tank-mixing paraquat with FirstShot SG. In addition, these product labels list control of many other broadleaf weeds (various mustards, common cocklebur, redroot and prostrate pigweed, redstem filaree etc.). Although Firstshot SG is considered a sulfonylurea (group 2 herbicides classified as similar mode of action to

Finesse, Cimarron Extra, Glean), it is different in that it can be applied 14-21 days before planting cotton (depending on soil type-consult label), whereas many other sulfonylureas have very long rotational restrictions before planting cotton. I also want to point out that utilizing different modes-of-action (herbicide groups) is highly recommended for preventing the spread of glyphosate resistant weeds. I will discuss this more below. In addition, tank-mixes of paraquat with FirstShot SG can be very effective for the control of common groundsel still present closer to planting time.

An additional option for weed control prior to planting and on into the season is Liberty. Utilizing this chemistry when possible allows for a deviation from the usual glyphosate only routine. Liberty is a non-selective, group 10, contact herbicide. As with previously mentioned contact herbicides there are application specifics that contribute to the success of its use. Consult the label. It may be used ahead of planting for burndown purposes (and can be effective for morningglory). It may also be used over-the-top in-season if your cotton variety contains the Liberty Link trait. Currently Bayer CropScience offers cotton varieties containing this trait alone or in combination with glyphosate tolerance (GlyTol trait). The combination of both glyphosate (Roundup) and glufosinate (Liberty) herbicide tolerance allows for flexibility when attempting to control weeds with over-the-top broadcast applications. Glufosinate based weed control programs (utilizing Liberty herbicide technology) have been very important in the fight against resistant weeds in the Southeast and/or Midsouth. In fact, many growers from those regions won't plant a variety without tolerance of Liberty herbicide. In the Southwest, we are just now beginning to see the spread of glyphosate resistant weeds and our adoption of the Liberty Link technology has not been anywhere near that of the highly publicized Southeast. Growers in the Southwest interested in utilizing varieties with these dual herbicide traits (Roundup and Liberty tolerance) definitely stand to benefit from the flexibility and resistance management aspect of the system. However, in this region we need to be aware of some differences that exist between Southwest Oklahoma and Georgia or Tennessee as it relates to the use of Liberty herbicide. Here in the Southwest, Liberty has been very effective for the control of morningglory in cotton, which is an occasional weakness of the glyphosate tolerant (Glytol or Roundup Ready Flex) systems. In addition, with our low humidity and high temperatures Liberty has proven less effective on pigweed as compared to glyphosate. Together these two systems can be very complimentary and allow us to address resistance management concerns at the same time. If considering this route there are some things to note. For effective season-long pigweed control it is highly recommended to include multiple residuals in your weed control program regardless of which herbicide trait or technology you buy.

The following suggestions apply regardless of the herbicide technology planted (Roundup Ready Flex, GlyTol, Liberty Link, or Glytol+Liberty Link). In my opinion a yellow herbicide is mandatory. It should also be noted that yellow herbicides provide absolutely no burndown or postemergence activity on weeds already emerged. In many cases where substantial residue is present, growers may fail to notice small weeds that have already emerged prior to the application of a yellow herbicide. Without a postemergence herbicide in the tank with the Prowl H20 (works best with residue) these

weeds will continue to grow after application becoming more visible as they outgrow the residue, and leading the grower to believe that the Prowl H20 provided no benefit. Thorough scouting before application can eliminate this frequent scenario. Controlling these weeds early is very important. Also, tank-mixing (Warrant, Dual II Magnum, Staple, etc.) at early postemergence is also highly recommended. In the Southwest when we do receive adequate rainfall it is usually in the early part of the season (typically from spring on into June). In order for residual herbicides to be effective one of the following three requirements must be met -rainfall, irrigation or shallow tillage. Taking advantage of the rainfall component is critical. In our region it's important to plan on getting residuals out early-season, when we still have good chances to receive the activating rains. Once we get into July, our chances of getting the benefit out of a residual herbicide (without the use of a sprinkler) are much less. An effective defense against resistant weeds starts with early-season residuals.

In closing, glyphosate is still very valuable technology because it is still effective on many other weed species. Stewardship now will help sustain that value for the future. The information provided within this newsletter or on our website is not intended to replace or substitute for any product labeling. Read and follow all product labels. For access to cotton weed control recommendations follow this link to our website http://cotton.okstate.edu/weed-control .

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Insecticide Seed Treatments for Thrips Control

Now is the time to decide on whether to use a seed treatment or wait to control thrips by foliar spray application if damaging populations develop. There are pros and cons to both options. Seed treatments are easy to use and relatively safe to handle. In-season chemical control application timing is critical and weather plays a part. One of the "pros" of waiting is that added expense only occurs if a damaging population occurs and a decision is made to treat. Also cotton has a great ability to compensate for early damage in Oklahoma growing conditions. If you decide to wait for foliar application, this will be discussed in later newsletters.

There are a number of seed treatments on the market which include Gaucho Grande, Cruiser, Avicta Complete Cotton, and Aeris. The length of control is dependent upon growing conditions and thrips pressure. Additional follow-up thrips control can sometimes be warranted after using any of the below listed seed treatments.

• Gaucho, Acceleron I, and generics (imidacloprid, a systemic neonicotinoid insecticide) are weak against western flower thrips, our primary species in Oklahoma. If onion thrips are the only species they provide acceptable control. The length of control for western flower thrips lasts about 7 days[1].

• Aeris (imidacloprid and thioidicarb). The added thiodicarb increases western flower thrips control and provides some nematode control. Thrips control generally lasts 14-18 days[1].

• Cruiser (thiamethoxam) is another systemic neonicotinoid but extends control of western flower thrips. The length of thrips control is generally about 14-18 days[1].

• Avicta Complete Cotton and Acceleron N both contain multiple products including upgraded fungicides. Length of western flower thrips control is about 18-21 days[1].

For all of the above treatments 21 days is the maximum length of control. A cotton plant can still sustain thrips damage until past the fourth true leaf stage. In some years, because of varying growing conditions, this is adequate. In other years the crop may not reach this stage after 21 days, and thus may not be adequate. Therefore, it may be important to keep cotton growth and development rate and foliar thrips control products in mind.

[1] Dr. David Kerns (formerly Texas A&M AgriLife Extension Entomologist, Lubbock; currently Louisiana State University Professor/Fields Crops Entomologist, Winnsboro) provided the length of control for each treatment.

JG

Upcoming Cotton Growers Meetings

March 11, 2015 Jackson County Growers Meeting
Contact Gary Strickland 580-482-0823 for further details.

March 12, 2015 Greer County Growers Meeting
Contact Gary Strickland 580-482-0823 for further details.

March 25, 2015 Carnegie Cotton Conference
Contact Jeannie Hileman 580-654-1142 or David Nowlin 405-247-3376 for further details.

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