



# Cotton Comments

OSU Southwest Oklahoma Research and Extension Center  
Altus, OK

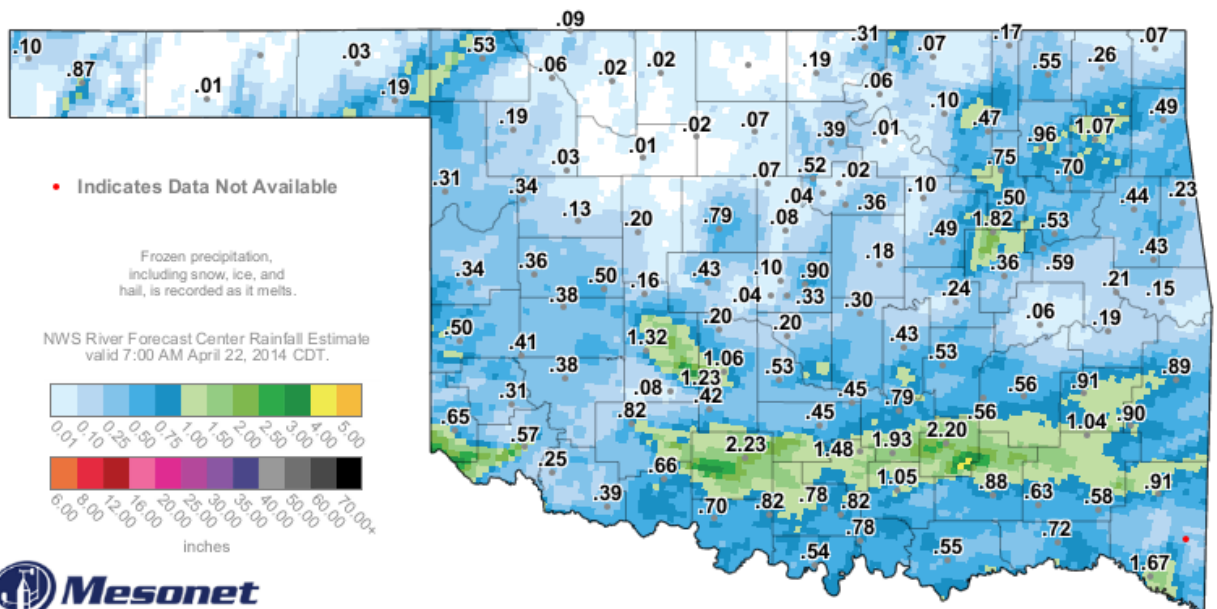


April 22, 2014

Volume 4 No. 1

## Current Situation

It was great to see some excellent rainfall in some areas over the weekend. This basically indicates that it can rain! Fairly high rainfall amounts were reported out west across the state line, and some of this spilled across the Red River into Harmon and Jackson Counties. The Mesonet graphic below shows substantial rainfall in some areas. We are still nowhere close to having the necessary moisture in western Oklahoma, but we'll take what we can get.



4-Day Rainfall (inches)

7:35 AM April 22, 2014 CDT  
Created 7:40:22 AM April 22, 2014 CDT. © Copyright 2014

Over the last several months the drought situation has not improved in the southwestern corner and in the western counties in general. Based on the April 15 U.S. Drought Monitor, Extreme and Exceptional drought continues to paint much of western Oklahoma (see graphic below). These two categories currently represent about 26% of the state. Most of the far southwestern corner and western tier of counties are classified in the Exceptional Drought Category. Many producers are rightfully concerned about the possibility of heading into a fourth summer of disastrous drought.

The next several weeks will determine whether we have the potential for a good start. Lake Lugert is currently at 11% of capacity, which does not bode well for the Lugert-Altus Irrigation District. Lake Tom Steed is currently at just under 24% of capacity. We are coming into our important rainfall season, and we really need to catch some good rains and runoff soon.

## U.S. Drought Monitor Oklahoma

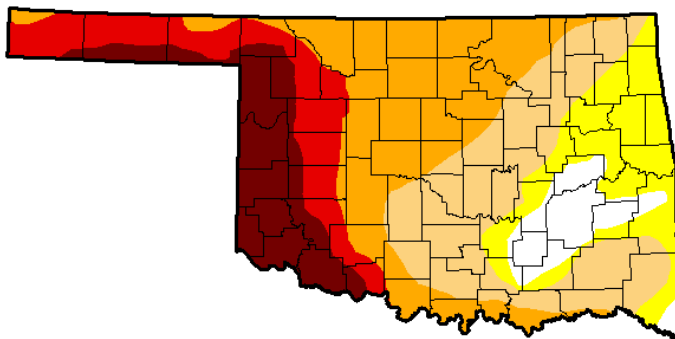
**April 15, 2014**

*(Released Thursday, Apr. 17, 2014)*

Valid 8 a.m. EDT

*Drought Conditions (Percent Area)*

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	6.73	93.27	78.95	54.81	26.51	13.71
<b>Last Week</b> <i>4/8/2014</i>	6.34	93.66	76.48	52.63	26.39	13.54
<b>3 Months Ago</b> <i>1/14/2014</i>	35.17	64.83	38.04	18.99	4.84	2.40
<b>Start of Calendar Year</b> <i>1/20/2013</i>	50.84	49.16	38.17	18.99	4.84	2.40
<b>Start of Water Year</b> <i>10/1/2013</i>	21.74	78.26	43.00	17.62	4.42	1.45
<b>One Year Ago</b> <i>4/16/2013</i>	8.09	91.91	81.91	57.61	33.47	7.62



*Intensity:*



*The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.*

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<http://droughtmonitor.unl.edu/>

### Deep 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 ( $\text{NO}_3\text{-N}$ ) in the soil, as well as by any  $\text{NO}_3\text{-N}$  applied in irrigation water. Crediting soil and water  $\text{NO}_3\text{-N}$  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  $\text{NO}_3\text{-N}$  only) increments. We have a few producers who have adopted deep sampling as a management practice. These producers have constructed the frame and purchased the hydraulic pump system and soil probes and other accessories. Probes have been mounted on utility vehicles such as a John Deere Gator or Ranger Polaris. Pickup trucks or small tractors can also be utilized. We recently acquired a Gator and Mr. Danny Davis of Elk City provided considerable assistance to get a hydraulic probe constructed and mounted (see below). He pioneered this design a couple of years ago. We want to extend our thanks to Danny for his engineering skills and assistance. This equipment will expand our field sampling capabilities and will be used for numerous projects in the future.



It is evident that N mineralization in the soil profile has contributed to the amount of residual N found in the 0-18 inch depth. All cotton fields at the Altus and Tipton research farms failed in 2011, 2012, and 2013 due to drought issues. For an example of the amount of NO<sub>3</sub>-N accumulation at the OSU Research and Extension Center at Altus after the 2011, 2012, and 2013 crop years, see the table below. This results in serious implications for growers who may choose to plant forage sorghum, and we continue to have drought issues. 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!

## Deep Sampling Results OSU SWREC, Altus

**Residual NO<sub>3</sub>-N in 0-18" Sampled in January  
Fertilized for making a crop in  
both 2011 and 2012!**

Residual NO <sub>3</sub> -N in lb/acre in 0-18 inches			
Field	January, 2012	January, 2013	January, 2014
Block A	132	198	143
Block C	141	248	173
Block D	151	250	--
Bargain City	116	--	--
North 40	168	339	208

**Cotton failed in all years, but we did obtain stands in all years.**



### 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 - 2013 Crop, the Abilene Classing Office indicated that producers planted about 100% of the acreage to Roundup Ready Flex or GlyTol varieties, and about 98% to Bollgard II or Widestrike Bt technologies. The new Bayer CropScience proprietary TwinLink Bt trait is available in several varieties in 2014. The Plains Cotton Growers 2014 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 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 2013 variety testing program was drastically affected by drought and results are available here: <http://cotton.okstate.edu/variety-tests>

When it comes to variety selection in Oklahoma, 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 2013.

## **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 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? Weed control has been catapulted forward by the advent of transgenic Roundup Ready Flex, GlyTol, Liberty Link, and Glytol plus Liberty Link (“stacked”) cotton varieties. 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 2014, there are several varieties with GlyTol/Liberty Link “stacked” technologies, and a few “stacked” with Bayer’s proprietary TwinLink Bt trait in 2014.

As for insect protection, the Bollgard II and Widestrike technologies have provided outstanding caterpillar pest control. TwinLink is expected to provide similar results. 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.

## **Soil Temperatures**

Soil temperatures are still quite cool and nowhere near the target for planting. Based on the Altus Mesonet station data, over the last 120 hours (5 days), the 4” depth bare soil temperatures have cycled from a low of about 55 degrees on April 19<sup>th</sup> to a high of about 70 degrees on April 22.

Note that the Mesonet 5-cm soil depth is equivalent to 2 inches, and the 10-cm depth is equivalent to 4 inches. The 4-inch depth bare soil low temperatures for the last 3 days have been 60, 60, and 60 degrees. The highs for these same days have been 70, 63, and 65 degrees. The overall soil temperature average at the 4-inch depth for bare ground for the last 3 days has been 62 degrees.

Dry soils will warm up faster than moist soils. Since we continue to have roller coaster air temperatures, when we do get rainfall the soil temperatures will then be lower. It is a good idea to have your own soil thermometer so you can check your own specific field situation. The bottom line is that we are not quite near soil temperatures appropriate for cotton planting at this time.

To see the state map of 3-day average 4-inch bare soil temperatures, go to:

[Mesonet 3-day 4-inch bare soil temperature map](#)



To see the state map of current 4-inch bare soil temperatures, click here:

[Mesonet Current 4-inch bare soil temperature map](#)

## Successful Planting Strategy

The single most important issue to recognize is that cotton seedlings can be damaged by cool, wet soils. Historically most southwest Oklahoma producers don't begin planting until at least the last week in April. However, the long-term optimum planting window is typically early to mid-May based on field trials and average soil temperatures. Although soil temperatures are high now, we will likely see them drop, especially if precipitation is obtained and a cold front pushes through the region. Best management practices for cotton planting under normal soil moisture conditions would be to delay planting until:

- 1) The 3-day Mesonet bare ground average soil temperature at the 4" depth is at least 65 degrees
- 2) The 5-day forecast calls for dry weather and a minimum of 25-50 DD60 heat units. The normal calculation for cotton DD60 heat units is:

$((\text{maximum air temperature} + \text{minimum air temperature}) / 2) - 60 = \text{DD60 heat units}$

Essentially, the average air temperature for the day is determined and the 60 degree developmental threshold for cotton is subtracted. The DD60s for each day are then totaled. If you have faith in your local forecast, then the projected high and low for the following several days can be used to calculate DD60s.

- 3) Low temperatures are forecast to remain above 50 degrees for the 5 days following planting.

If we recognize that equipment constraints and large acreages generally require producers to plant during less than optimum conditions, they should realize that seed quality and seeding rate become very important. The seeding rate can be adjusted on the planter. However, with transgenic seed prices and technology fees being expensive, increasing seeding rate is not a palatable option for most producers. Therefore, seed quality becomes very important.

The Texas Cool Germination test was developed to specifically test cotton seed under cool soil temperature conditions. This germination data is NOT required on the state seed tag, but many seed companies will provide this information. The state seed tag reports Standard Germination data and it is performed in a different manner. It is usually guaranteed on the seed tag at a minimum of 80%. Texas Cool Test data are obtained from a test conducted at 64 degrees F with seedlings counted after 7 days.

The Texas Cool Test data may be obtained from most seed companies upon request. Higher Cool Test data indicate higher vigor under temperature stressed conditions. If the Cool Test data for a specific lot of cotton seed is known, then potentially more vigorous seed lots can be identified. This can be used to determine the planting sequence and possible planting date. Producers should begin planting with higher vigor seed under cooler temperatures, and finish up with lower vigor seed under warmer temperatures. Planting conditions for rapid germination and emergence include:

- 1) high quality seed with good to excellent Cool Germination Test data (>60%)
- 2) a favorable 5-day forecast
- 3) minimum air temperature of at least 50 degrees
- 4) maximum air temperature of at least 80 degrees
- 5) plant into a firm, moist seedbed 1-2 knuckles deep
- 6) proper and uniform seeding rate of no more than 4-5 seeds per foot in 40-inch rows.

### **Imbibitional Chilling Injury**

This injury occurs when cotton seed is subjected to cold conditions during the first 2-3 days after planting, or during the period of time when the seed is imbibing moisture from the surrounding soil. Cotton seed contains lipids which must be converted to energy during germination. The cell membranes must properly develop. Soil temperatures around the seed of 50 degrees F or below can damage seedlings during this time. Soil temperatures of 41 degrees F or less may kill or severely injure the seedling.

The three seedlings below were subjected to chilling temperatures during the imbibition phase. During the first six hours of imbibition, the damaged seedlings were exposed to a temperature of 40 degrees F. After the chilling period they were moved to a chamber set at 86 degrees F for two to four days. The curling, shortening and thickening of the roots are typical of imbibitional chilling injury. The chilling during this phase of imbibition injures and typically kills the root tip meristematic tissue. This results in cessation of normal taproot growth. Subsequently, lateral roots develop to compensate for this loss. Typically these seedlings may survive and produce productive plants if additional stresses such as water deficit or disease are not encountered.



**Cotton seedlings exhibiting chilling injury**

The two seedlings below show normal root development. When the two groups are compared it may be noted that seedlings injured by chilling are often short with thickened hypocotyls and radicles, dead root tips, and show some signs of lateral root growth.



**Normal cotton seedlings**

### **Seeding Rate**

Stand components consist of both uniformity and density. Uniformity of planting seed in the row is affected by planter type. The newer vacuum planters are extremely effective at controlling vertical distribution of the seed in the seed furrow and horizontal spacing down the row. These modern planters typically provide excellent seed to soil contact

capability, which results in an increased likelihood of an individual planted seed being able to germinate. Seeding rate or density is controlled by producer. The newer vacuum planters coupled with the generally higher seed quality today than what we many times encountered in the past, have allowed most producers to successfully reduce seeding rates. However, because of the cost of transgenic varieties in addition to cost of insecticide seed treatments, many producers are pushing the agronomic minimum and living on the edge, with little margin for error, so to speak. Many seeding rate trials have been conducted in southwestern Oklahoma and the Rolling and High Plains regions of Texas over the last several years. Results all point to the fact that seeding rates can be pushed to a lower level than what was generally accepted 10-15 years ago, however, the producer must have extreme faith in his planter and its adjustment, field-specific planting situation, seed quality, and environmental conditions after planting. It is difficult to agronomically justify less than 2 seed/row-ft as a best management practice in dryland cotton production.

Cotton has a remarkable capacity to compensate yield across a fairly wide range of plant populations. Recent seeding rate studies have indicated that within the FINAL plant stand range of 1.5 to 4.5 plants per row-ft. in 40-inch rows, lint yield can remain reasonably unaffected. However, how a producer gets from a seed drop rate to a final plant stand can be a treacherous journey. Assuming that good soil conditions are present, and an excellent vacuum planter is used to control seed distribution both down the row and in planting depth, a range of 2-4 seed per row-ft. in 40-inch rows is probably acceptable. Under dryland conditions, the low end may be targeted. If poor planting conditions (such as low seed quality, marginal soil moisture in the seeding zone, a large amount of crop residue which may affect seed to soil contact, lack of precision planting equipment, or poor forecast conditions) exist, it may be more important to increase the seeding rate. If a low seeding rate is used, the producer must have high confidence in the seed quality and planter precision.

### **2014 Texas A&M AgriLife Extension Profitability Spreadsheet**

An Excel spreadsheet has been developed by Extension agricultural economists Jay Yates and Jackie Smith at the Lubbock Center. 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, guar, peanuts, sesame, sunflowers, etc. The user can enter prices, input costs, etc and calculate returns. This spreadsheet is available here:

<http://agrilife.org/southplainsprofit/>

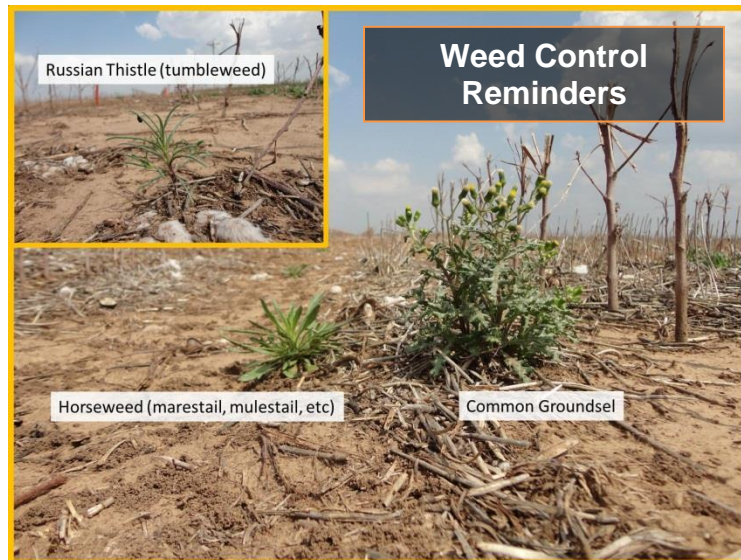
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## Weed Control Update

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 sulfonyleurea (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 sulfonyleureas 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 H2O (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 H2O 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.

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## Herbicide Program Suggestions For Fighting/Preventing Glyphosate Resistant Pigweed In Oklahoma Cotton



Weed Control Programs in Glyphosate Tolerant Cotton Varieties (Roundup Ready Flex, GlyTol)

	Production System	Preplant Burndown or Incorporated	At-plant Burndown or Preemergence	Early to Mid-season Postemergence	Late-season Layby-Hoods
1	Minimum or No-till	Dicamba or 2,4-D + Glyphosate	Glyphosate + Prowl H2O	Glyphosate + Staple LX	Aim + Direx
2	Minimum or No-till	Dicamba or 2,4-D + Valor + Glyphosate	Gramoxone SL + Direx	Glyphosate + Warrant	Glyphosate + Direx
3	Minimum or No-till	Dicamba or 2,4-D + Sharpen + Glyphosate	Glyphosate + Dual II Magnum	Glyphosate + Prowl H2O	Caparol + MSMA
1	Conventional tillage	Treflan or Prowl H2O	Caparol	Glyphosate + Staple LX	Valor + MSMA
2	Conventional tillage	Treflan or Prowl H2O	Direx	Glyphosate + Warrant	Aim + Caparol
3	Conventional tillage	Treflan or Prowl H2O	Staple LX	Glyphosate + Prowl H2O	Direx + MSMA

Without the use of residuals Palmer amaranth can emerge all season long...plan ahead!



### **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<sup>1</sup>.
- Aeris (imidacloprid and thiodicarb). The added thiodicarb increases western flower thrips control and provides some nematode control. Thrips control generally lasts 14-18 days<sup>1</sup>.
- Cruiser (thiamethoxam) is another systemic neonicotinoid but extends control of western flower thrips. The length of thrips control is generally about 14-18 days<sup>1</sup>.
- Avicta Complete Cotton and Acceleron N both contain multiple products including upgraded fungicides. Length of western flower thrips control is about 18-21 days<sup>1</sup>.

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.

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

JG

### **Upcoming Field Day/New Facility Dedication**

A crop production meeting and building dedication is planned for May 2<sup>nd</sup> at the Tipton Valley Research Center, about 4 miles south of Tipton on Highway 5. The new facility has integrated office, laboratory, and shop space, and was constructed in the aftermath of an EF4 tornado which destroyed all structures at the research farm on November 7, 2011. This new facility will provide considerable enhancements to the site well into the future. The public is invited to attend a field tour at the site, which will cover wheat, grain sorghum and cotton topics. Due to the current drought conditions and potential issues with wheat production, summer crop topics of sorghum and cotton may be timely. Immediately following the field tour, lunch will be provided, and the new facility will be dedicated with a ribbon cutting ceremony. In addition, 2014 is the Centennial of Extension in the U.S. and this will be discussed. Several OSU Division of Agriculture and Natural Resources administrators plan to attend including Drs. Mike Woods, Jonathan Edelson, and Randy Raper. Mr. Jim Reese, Oklahoma Secretary of Agriculture will be there and will provide an update on the state situation. Local elected officials from Tillman and Jackson Counties have been invited to attend, and some have

committed at this time. The complete package of programming will provide clientele an opportunity to see the new facility, hear about the latest research and extension programs in our area, and to visit with some elected leaders and university administrators.

Click here for a copy of the agenda

[2014 Field Tour and Tipton Valley Research Center Dedication Agenda](#)

For a copy of the news release, click here:

[2014 Field Tour and Tipton Valley Research Center Dedication Press Release](#)

Please give credit to this newsletter if any information is reproduced or incorporated in any other communications. Thank you.

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