



Cotton Comments

OSU Southwest Oklahoma Research and Extension Center
Altus, OK

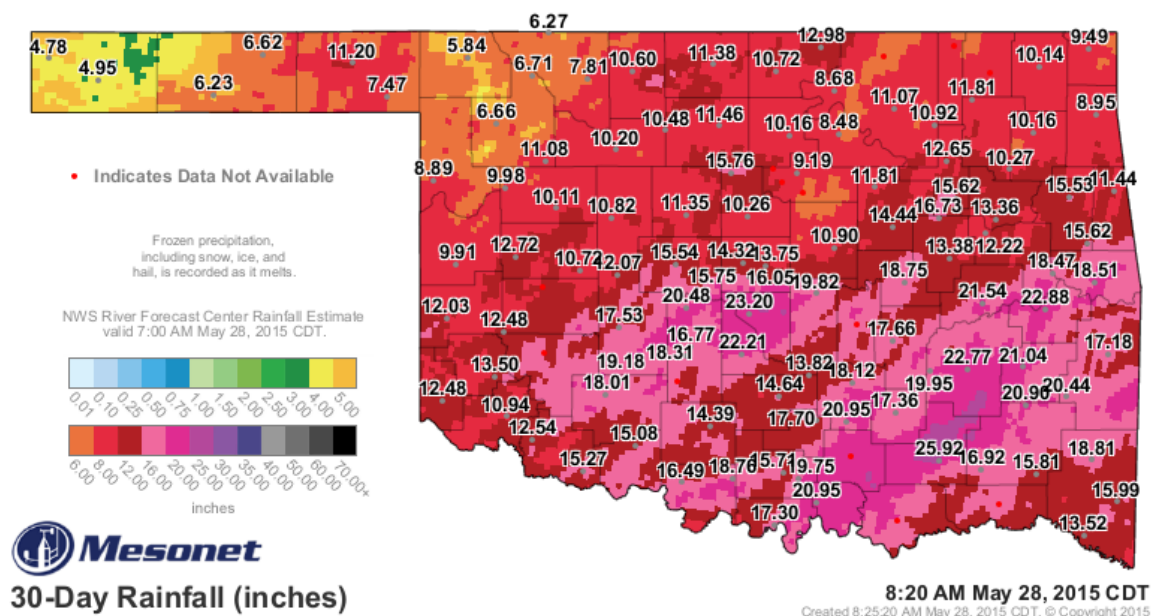


May 28, 2015

Volume 5 No. 3

Current Situation

It's amazing how much the moisture situation has changed within the past month. Record May rainfall in many areas has resulted in a major turnaround in the southwest corner of the state. We have gone from 90-95 degree temperatures in the first week in April, with little subsoil moisture for the stressing wheat crop to an overabundance of rainfall, incredible runoff, painful flooding, and important reservoirs reaching capacity. The Mesonet 30-day rainfall graphic below provides important information with respect to recent rainfall.

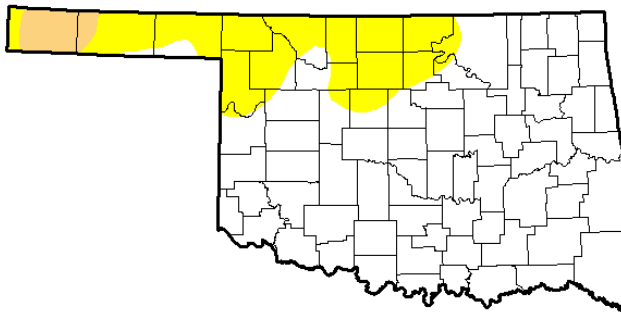


The overall impact of the record May rainfall on the drought has been basically a knockout punch. This can be seen in the most recent (May 26) US Drought Monitor graphic for the state of Oklahoma (see below). All of the D3 – Extreme and D4 – Exceptional drought conditions have been removed within the last month (see April 28 graphic further below for contrast). For the first time in several years, the southwest corner of the state is devoid of drought conditions based on the US Drought Monitor. Residents of this region are elated and certainly feel blessed. Both Lake Lugert (irrigation lake) and Lake Tom Steed (municipal water supplies) are essentially at capacity as of this writing. This drought removal has not been without its share of grief – flooding, homes severely damaged in many places, etc. This has also carried over into

significant impacts on agriculture including wheat fields damaged or destroyed by flooding, hail, high winds, etc.

U.S. Drought Monitor Oklahoma

May 26, 2015
(Released Thursday, May 28, 2015)
Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	77.31	22.69	2.74	0.00	0.00	0.00
Last Week 5/19/2015	49.19	50.81	41.94	8.98	0.00	0.00
3 Months Ago 2/24/2015	1.48	98.52	65.55	48.46	27.80	5.75
Start of Calendar Year 12/02/2014	25.63	74.37	62.03	40.84	21.74	5.70
Start of Water Year 9/30/2014	8.55	91.45	73.31	58.13	20.92	4.64
One Year Ago 5/27/2014	5.78	94.22	79.94	73.26	55.04	26.47

Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

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

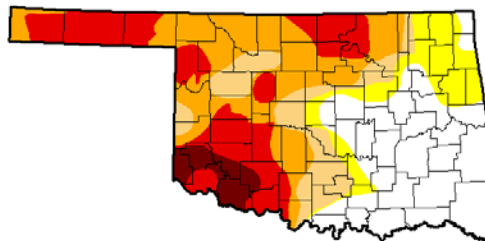
Author:
Brad Rippey
U.S. Department of Agriculture



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

U.S. Drought Monitor Oklahoma

April 28, 2015
(Released Thursday, Apr. 30, 2015)
Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	30.00	69.92	59.29	47.51	24.34	4.13
Last Week 4/21/2015	25.19	74.81	60.92	52.39	37.13	8.36
3 Months Ago 1/27/2015	5.03	94.97	60.60	45.34	22.58	5.69
Start of Calendar Year 12/02/2014	25.63	74.37	62.03	40.84	21.74	5.70
Start of Water Year 9/30/2014	8.55	91.45	73.31	58.13	20.92	4.64
One Year Ago 4/28/2014	7.18	92.81	79.21	54.81	39.03	20.28

Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

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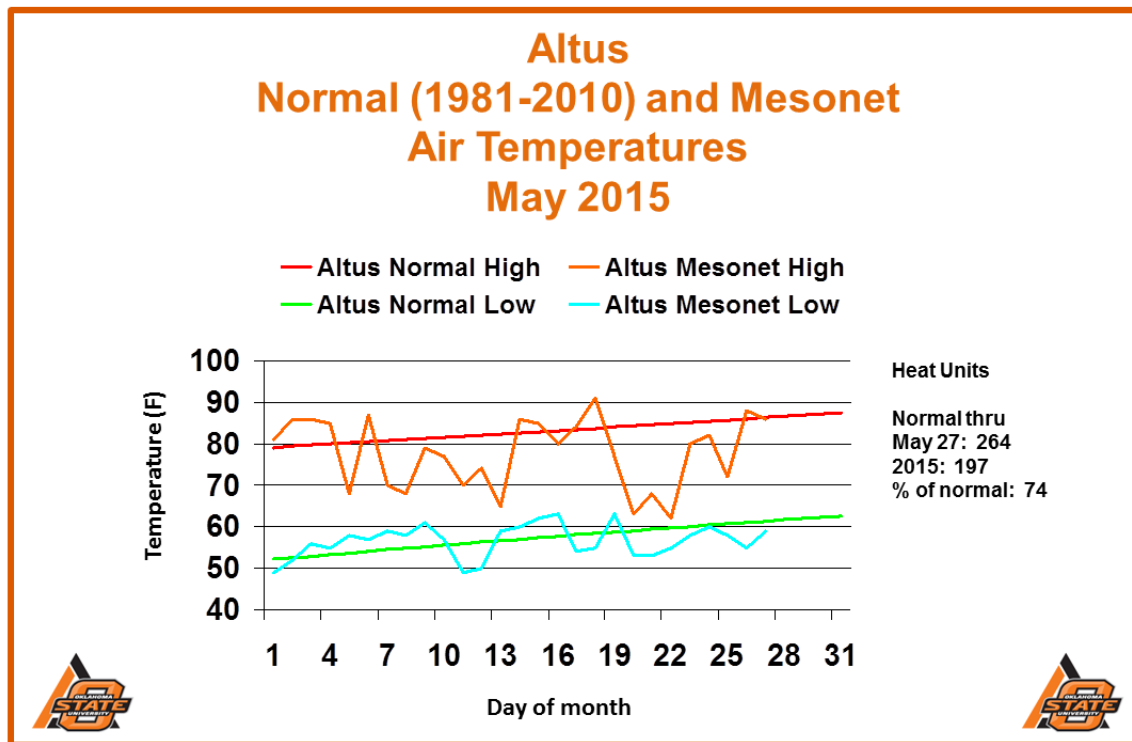


<http://droughtmonitor.unl.edu/>

Crop Update

All of the rainfall has been great with respect to drought removal in our area. Some of the challenges associated with the high rainfall and cool conditions have centered around planting the 2015 cotton crop. Although USDA-NASS is reporting that cotton was 26% planted by May 17, and 28% planted as of May 24, I submit there was virtually no cotton planted in the state as of the 17th, and very little planted by the 24th. This is due to the fact that most fields were too wet, or temperatures were just not quite where many growers would like to have them. Flooding along many creeks and streams, particularly Otter Creek below Tom Steed Dam and the North Fork of the Red River below Lugert Dam have impacted numerous fields. It will take normal temperatures and wind and some time before many of these fields will be able to be planted.

A quick look at the air temperatures for Altus for the month of May shows the cool conditions associated with all of the various rainfall events. With respect to cotton heat unit accumulation, the total from May 1 through May 27 is about 74% of normal.



Some sandy locations that were not inundated with water dried out enough on the 27th to allow some planting to occur. Rainfall once again fell during the night of the 27th and provided more challenges for some growers whose fields were nearly dry enough to initiate planting. By and large however, we are still waiting for many locations to dry sufficiently to begin planting.

What this means is that we have few acres planted and it's nearly June. There is no way to say it other than we will have a late irrigated crop in 2015. The final planting date for insurance purposes for several counties (Jackson, Tillman, Harmon, Greer, Custer and Blaine) with substantial irrigated cotton is June 10th. This deadline doesn't mean you can't plant after that.

Cotton can still be planted during the 7-day Late Planting Period and insured. However, the acreage planted during the Late Planting Period will have the insurance coverage amount reduced by one percent for each day of the Late Planting Period that passes before planting occurs.

Many times our dryland is planted later into June, so what will happen there remains to be seen. Most of our southwest counties have June 20th insurance deadlines for non-irrigated cotton.

[For a one-page summary of the Final Planting Dates for Cotton Crop Insurance Purposes for Oklahoma Counties, click here.](#)

Plains Cotton Growers Newsletter on Crop Insurance and Prevented Planting Issues

Shawn Wade with Plains Cotton Growers in Lubbock has generated an excellent newsletter that discusses the late planting situation many in our region are currently facing. Planting cotton past the insurance deadlines will be a likely scenario in 2015. If rainfall challenges keep coming, then some growers may be forced into a very serious situation. The Prevented Planting Provision may offer some relief. However, this option is very complicated and has numerous requirements. It is highly recommended to visit with your insurance agent/company to get the best information available as it pertains to your operation. To read Shawn Wade's comments concerning these issues, go to:

<http://www.plainscotton.org/esw/news/cotnewsback/2015/CN150522.htm>

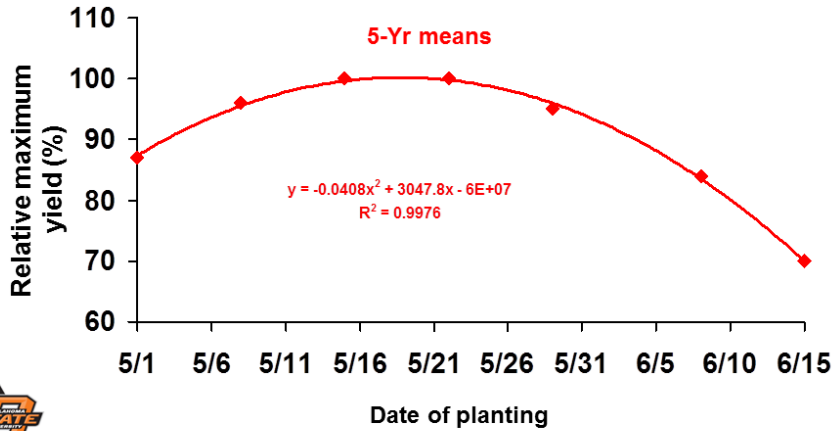
Variety Selection?

After visiting with cotton seed company representatives, all have indicated that many varieties we have available in our area may not necessarily have to be reconsidered before about June 10. I suggest that if you have questions or concerns about your genetics selections, call your company representatives. We have little experience with short season growing conditions with most of the recently released varieties in our area due to the severe drought problems encountered in the past 4 years.

What Kind of Impact Does Late Planting Have on Irrigated Cotton?

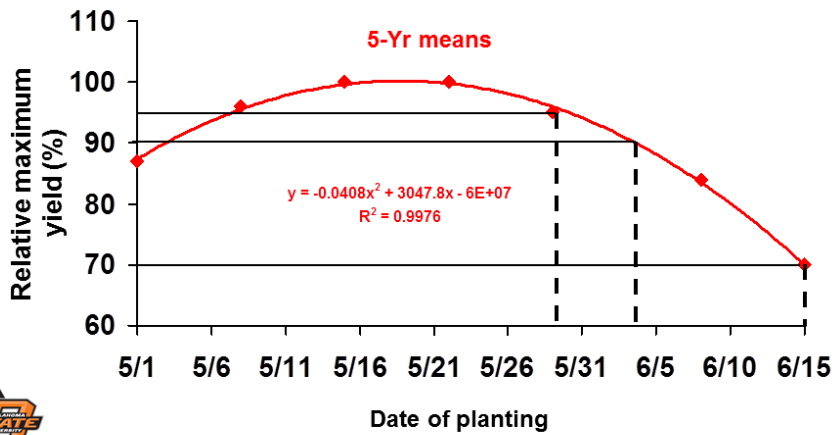
A date of planting study was previously conducted for several years at the Southwest Research and Extension Center at Altus. Targeted planting dates began about May 1 and were conducted weekly through June 15. Verhalen et al. (1992) reported results from 1984-1988 crop years in the Beltwide Cotton Conference Proceedings. It should be noted that older genetics were planted (Westburn M and Stoneville 506), and that the reported years were prior to boll weevil eradication and the advent of modern transgenic (Bt, Roundup Ready Flex, etc) cotton varieties. The graph below presents the 5-year means of lint yield data. A quadratic regression model fit the 5-year mean of the relative maximum yield data very well.

Effect of Differential Planting Dates on Irrigated Cotton Yield at Altus, OK (1984-1988) (Verhalen et al., 1992)



What this graph indicates is that about 95% of the maximum yield could be expected for planting dates ranging from May 8th through the 28th, and at least 90% of the maximum yield could be obtained between planting dates of about May 3rd and June 4. After June 4th there was a rapid decline in the yield potential. By June 15th the data indicate a 30% reduction in yield occurs (presented below).

Effect of Differential Planting Dates on Irrigated Cotton Yield at Altus, OK (1984-1988) (Verhalen et al., 1992)



When investigating the individual growing seasons presented in the study (1984-1988), and comparing the 5-year mean to the 30-year normal, it can be noted that these crop years averaged above normal cotton heat unit accumulations, and no significant deviations from first freeze dates occurred. In other words, the years reported for the experiment were on the average warmer than normal, and no below normal growing conditions were encountered. Therefore, one could expect further reduced yield potential from later planting dates if fall temperatures are below normal.

So, I think the overall big picture from the data would allow us to conclude that once we push planting dates into the month of June, we see documentation of substantial reduction in yield potential in “normal” years. What all of this means to the grower is 1) expect significantly lower yields based on long-term averages and 2) adjust crop inputs and management to reflect that.

Early Growth is Normally Exceptional

June planted cotton typically exhibits excellent vigor and grows off very quickly. This is due to higher daily heat units and warmer soil conditions. The table below was generated in the Texas High Plains but provides important information on how planting date affects the number of days it takes cotton to reach first bloom.

Days from planting to white bloom decrease as planting date is delayed.

Planting date	Pre-bloom period (days)
5/10	63
5/20	57
6/1	54
6/10	53
6/20	53
6/30	53

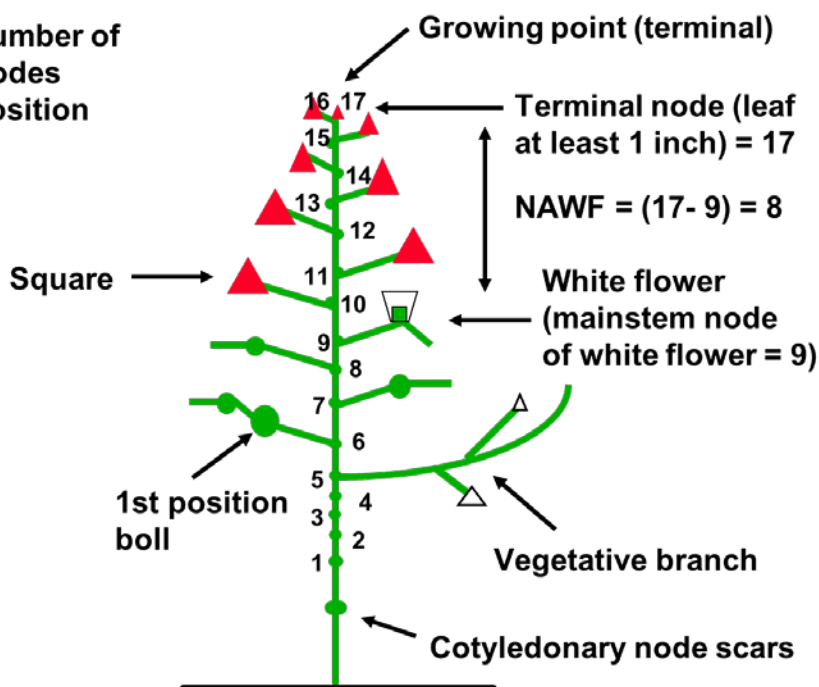
It can be noted that in 2013 we planted a regulated trial on June 20th, and due to excellent growing conditions at Fort Cobb, the study hit first bloom on August 7th, right under 50 days from planting. So, if we get good growing conditions for our June planted cotton, expect the first bloom stage to arrive in fewer days than what is experienced with a normal planting date in many years.

Moisture and temperature are key factors in producing good yields and quality fiber. The effective boll setting period for mid-May planted cotton normally extends from perhaps around July 10 to August 20. This time frame also corresponds to the most favorable day and night temperature regimes for fiber and seed development. In contrast, the effective boll setting period for June planted cotton is typically restricted to roughly a 3-week period in August. If cotton is planted on June 10 and can reach first bloom in 50 days, then that would occur around the first of August. COTMAN, a cotton management program developed at the University of Arkansas with funding from Cotton Incorporated, indicates that a bloom requires at least 850 heat units in order to produce a high quality boll ([link to COTMAN Cutout Dates here](#)). Blooms occurring after August 20 in many years have low probability of producing mature bolls. Bloom tagging studies

conducted several years ago indicated that blooms set after August 20th have a low probability of making fully mature bolls. Blooms set during the first week of September are often expected to contribute to final yields, and can sometimes do so, however low micronaire should be expected. It should be noted that above normal late season (September and October) temperatures could provide additional heat units and thus better maturity.

Plant mapping can be used to help monitor the progress of the crop and determine some important crop factors. Entering bloom with a high percentage of fruit retention and healthy leaves will be important. Make sure that square thieves do not take the first fruit. Good to excellent boll retention during the first 3 weeks of blooming will be critical. This implies that a well fruited plant with good leaf area, minimal moisture stress, and a root system undamaged by cultivation or sidedressing is a necessity. Nodes above white flower (NAWF) is an important plant mapping measurement and indicator of crop vigor and yield potential. NAWF is defined as the number of mainstem nodes to the terminal above a node that has a fruiting branch with a first position white flower. The terminal is defined as the uppermost node with a leaf that is at least an inch in diameter. Normally we expect a minimally stressed crop to have at least 8 NAWF (and preferably more) at first bloom (see Figure below).

Count the number of mainstem nodes above 1st position white flower



Determination of nodes above white flower.

Premature cutout is probable as NAWF reaches 4-5, especially with short-season varieties, unless sufficient irrigation is applied or rainfall is obtained to keep the plants vigorous. Picker varieties tend to be more resilient and under good moisture conditions, yield potential is typically somewhat higher.

Generally speaking, at early bloom, 80% of the yield potential is already on the plant, and first position fruiting sites are extremely important components of final yield. We like to see at least 85% square retention going into the first week of bloom. In a normally-fruited moderately yielding irrigated crop, about 80% of total yield is derived from first position fruit, 15% from position 2, with the remaining 5% composed of position 3 and vegetative bolls. Dryland boll production will generally come from first position fruit, unless an exceptional year is encountered which allows the crop to set, hold, and mature second (and/or greater) position fruit.

Managing for Earliness

If it is assumed that "average" conditions will prevail for the remainder of the year, it follows that with a short effective fruiting period and somewhat less yield potential, June planted cotton is likely to require fewer inputs. Producers should protect early fruit from insect damage if necessary to keep retention high. The crop should have adequate and timely water and nitrogen to promote early fruit retention.

Reducing the potential for negative cultural practice impacts is important. Be careful with cultivations as they may result in root pruning and thus delay development. Avoid practices that could cause crop injury and/or delay development.

Hormone herbicide or other crop injury must be avoided. The last thing an already late crop needs is more maturity delays. This is typically encountered with damage arising from drift or spray tank contamination of hormone herbicides such as 2,4-D or dicamba.

Applications of nitrogen (N) are likely to stimulate growth and promote fruit retention. For each bale of yield goal, 50 lb N/acre is recommended. This would include N from all sources including irrigation water and residual soil fertility. It is important to not over fertilize with N when reduced yield potential is anticipated due to late planting. Excess N makes late cotton more difficult to manage on the back side of the season. Some late-season insect problems, such as aphids, can be aggravated by high N status plants. Assess the yield potential of your specific fields and make N fertilization adjustments accordingly. Apply sidedress fertilizers as early as practical (but before bloom), and take care to minimize root pruning during application. It takes about 10 lb of N to produce 100 lb of lint. If the yield potential is reduced by one-half to one bale per acre due to late planting or lagging development, then also reduce the N rate by 25 to 50 lb per acre.

Mepiquat chloride is sold under various trade names (Pix, Mepex, Mepex Ginout, Stance, etc.). Under good growing conditions, MC may increase fruit retention, control plant growth and promote earliness. MC should not be applied if crop is under any stresses including moisture; weather; severe mite, insect, or nematode damage; disease stress; herbicide injury; or fertility stress. DO NOT use MC on cotton that is stressed or likely to be stressed. MC can impact crop earliness through better early season fruit retention. Typically, discounting problems with insects or severe weather, a high percentage of the early developing fruit is normally retained in late planted cotton. Improving retention of later set fruit may not greatly influence yield as these bolls may not have time to reach maturity. Results from our replicated testing indicate that we obtained from 5 to 15% reduction in plant height (compared to the control) from 16 oz of 4.2% a.i. MC material applied in up to 4 sequential 4-oz/acre applications starting at match head square and ending at early bloom. We have been able to "shave" about 1 node from the growth of the main stem at some locations, which can result in about 3-5 days earlier cutout. We have not observed consistent yield increases from any of the MC materials we have investigated. A good

boll load will normally help control plant growth. Fields with poor early-season fruit retention, excellent soil moisture, and high nitrogen fertility status may be candidates for poor vegetative/fruitlet balance and should be watched carefully. **Growers who have planted some of newer more vigorous growing varieties and have conditions resulting in high growth potential may need to be concerned.** For brush roll header stripper harvest, 28 to 32-inch tall plants optimize stripper harvesting efficiency. If possible, target a maximum plant size of about 32 inches under high input irrigation (drip or high capacity pivots). If plants get larger than 36 inches, harvest efficiency and productivity drop significantly. The best growth regulator is a well fruited crop.

This year, crop conditions will likely be such that we will need to take advantage of all heat units available. This means that some fields will likely be “up against the wall” in terms of maturity by the end of the season. Keeping track of cutout dates (where NAWF = 5 during a steep decline) and calculating heat units (basically using the BOLLMAN portion of the COTMAN management program) can help producers “zero in” on which fields may reach maturity (850 heat units past cutout) first. Then an appropriate harvest aid program can be initiated to terminate the crop and get it harvested in a timely manner. Late planted cotton runs the risk of fiber quality problems including low micronaire, and if an early freeze is encountered, perhaps poor color, and increased bark contamination. If an early killing freeze is obtained, then expect low turnout. Micronaire is influenced by fiber maturity and there is nothing we can do to increase the rate of fiber development and we are at the mercy of heat unit accumulation and open skies. However, fine-tuning cotton stripper harvesters by reducing the aggressiveness of the stripper rolls by widening the settings can result in less foreign material in the bur cotton and reduce bark contamination potential.

RB

Weed Control Update

Despite numerous reports of glyphosate resistance issues in 2014, many Oklahoma producers still have the mindset to shift into a “glyphosate only” mode when trying to clean up fields just before or at planting. Not a great idea. That being said, the usual questions that follow are:

#1) What should I burndown with, #2) when should I do it (before or after planting) and #3) should I put something (a residual) with it to keep the weeds from coming back? So let’s address all of them.

First question: **What should I use?**

Starting and staying clean will completely depend on the effectiveness of your at-plant burndown operation. Finding out that your burndown treatment didn’t work after your



cotton emerges is a situation we want to avoid. Therefore growers need to be considering different burndown chemistry closer to or at planting in order to eliminate glyphosate resistant pigweeds that have already emerged. For (non-glyphosate) postemergence burndown activity within this timeframe, Gramoxone, Aim and Liberty are three non-selective (active on grass and broadleaf weeds) options that can do a great job depending on your circumstances. All three are contact herbicides that are extremely dependent on good coverage and can be effectively used to eliminate small (≤ 2 leaf) volunteer cotton. All three product labels recommend more water than most growers are accustomed to using (10-20 gallons per acre...read labels closely). Many labels state that dense weed canopies require higher spray volumes. It is also worth noting that label recommendations for effective application procedures with some of these products may also be contrary to some drift control strategies. Each product has its own application recommendations for effective control while minimizing drift. Read and follow label instructions. In my experience all three of these products perform their best when applied with a medium spray droplet to deliver the best coverage possible. It should be noted that applications of these products with "fine" spray droplets significantly increases the risk of off-target movement and every precaution possible should be taken to prevent this occurrence. Therefore, choose a nozzle package that produces the desired droplet size at your desired speed and stick with the plan.

Gramoxone (paraquat) applied at $\frac{1}{2}$ lb ai/acre plus $\frac{1}{4}$ - $\frac{1}{2}$ % (v/v) non-ionic surfactant will typically do good job on relatively small pigweeds (≤ 4 inches). As weed size increases rates should follow. The highest labeled rate of paraquat for burndown at planting is 1.0 lb ai/acre. When applied properly, this rate of paraquat can clean up some pretty tough situations. It should also be noted that while I have seen good control of several additional broadleaf weeds (Russian thistle, morningglory, purslane, common groundsel, etc.) it is not uncommon for some larger grassy weeds to survive and regrow after a few weeks.

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 (≤ 4 inches) when the Aim rate is increased to 1.6 oz/A (according to the label).

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 the 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 now seeing 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. However, with our usual low humidity and high temperatures Liberty has proven less effective on pigweed as compared to its effectiveness in other regions. While these two systems can be very complimentary when their respective traits are stacked together, we need to be aware of Liberty's challenges with pigweed in this area.

While all three of the herbicides mentioned have a good fit in certain situations, paraquat probably offers the most flexibility and the broadest spectrum of control for (non-glyphosate) burndown applications at planting.

Second question: **When should I apply my burndown, in front of or behind the planter?**

The answer to this question is dependent on your overall strategy. Burning down weeds in front of the planter is always an option. However, it should be noted that if a residual is not included at this time then we are betting on the effectiveness of our next in-season postemergence application (which will most likely come after your cotton has emerged). Often times this is the origin of disaster when we choose to depend on glyphosate alone to clean up emerged pigweeds. On the other hand, if you do include a residual at this time (in front of the planter) we need to remember that moving soil during our planting operation will create an untreated area down the row that will have to be dealt with shortly thereafter. For these reasons I would prefer to burndown behind the planter.

Third question: **Should I include something to keep the weeds from coming back?**

This is the easiest question to answer. Residuals are mandatory in today's environment. Glyphosate resistant pigweed problems were reported in many (Oklahoma) locations last year and it is well documented how easily pigweed seeds can travel. Additional studies have documented the negative effects of weed competition on cotton lint yields. While we initially tend to focus on the added costs from residual herbicides we need to remember that choosing to use these residuals actually insures that all of our investment in critical inputs (fertilizer, water, etc.) turn into cotton lint instead of weeds. This all adds up to a genuine need for early-season weed management. While there's definitely something to be said for "getting back on the

horse” why don’t we consider the value of staying on the horse to begin with? Early-season residuals will prevent us from “falling off of that horse.”

Prowl H20, Warrant, Dual II Magnum, Caparol, and Karmex are some of the most popular preemergence herbicides used behind the planter. All of these provide very good residual pigweed control. Additionally, attention to product labeling is important because when it comes to preemergence applications, soil type often dictates product rates. Over-applying these products can lead to crop injury so attention to labeling is definitely warranted. It should also be noted that Prowl H20, Warrant and Dual II Magnum can also be applied over-the top of cotton during the early postemergence timing (from emergence to bloom, however exact timing is product specific-read labels). Since these herbicides provide absolutely no burndown or postemergence activity on weeds already emerged a tank-mix partner (glyphosate or glufosinate (Liberty)) would be required to take down existing weeds. Using residuals at-planting and another at early postemergence timing is highly recommended for a clean crop going into the fruiting period.

SO

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