



Cotton Comments

OSU Southwest Oklahoma Research and Extension Center
Altus, OK



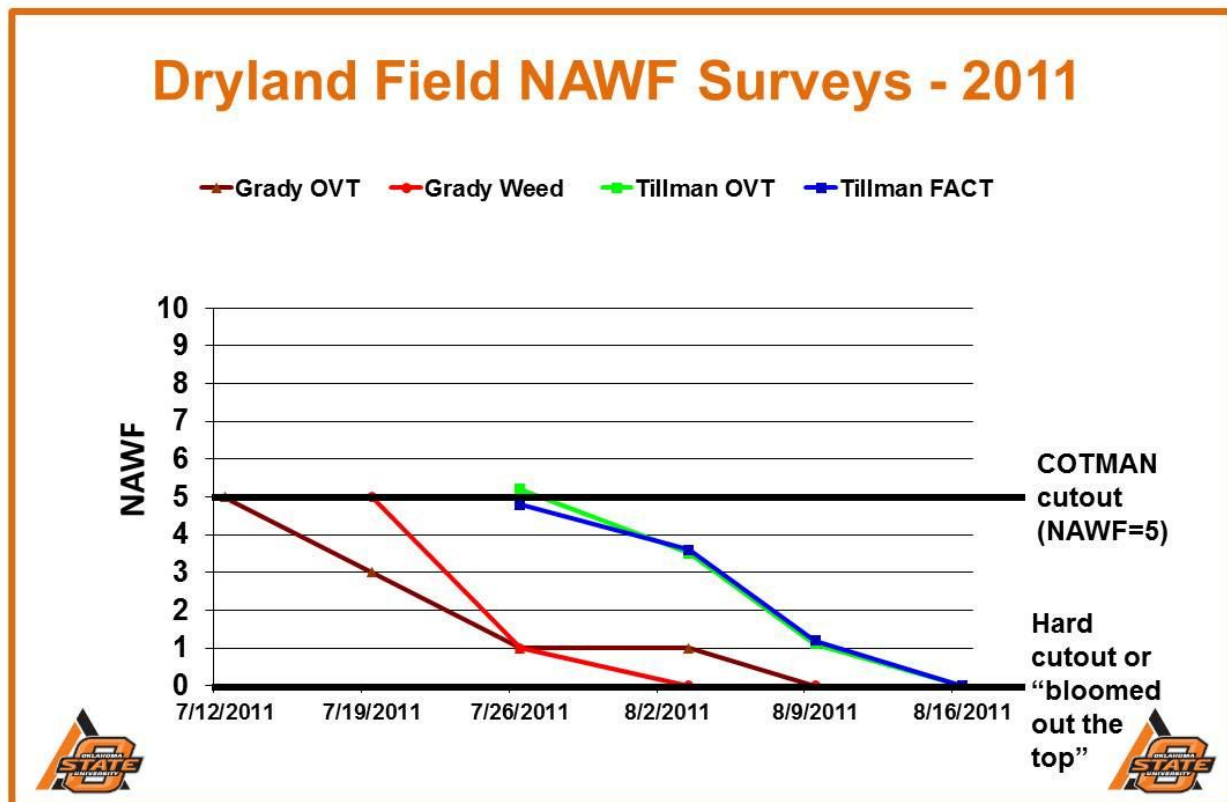
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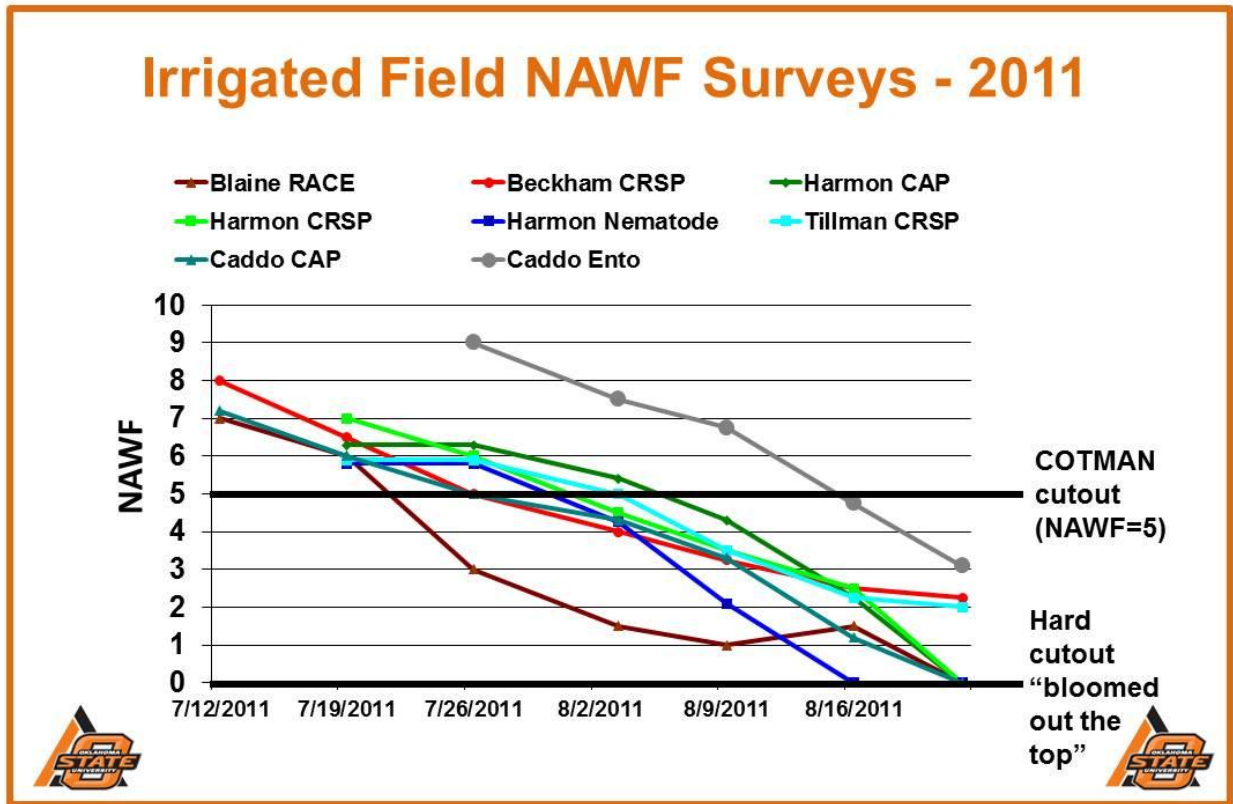
Crop Update

I apologize if the newsletter sounds like a broken record, but the Great Drought of 2011 continues with its brutal effects. Record breaking temperatures are still underway and based on recent forecasts they will continue. It appears to me that we will have virtually no surviving dryland fields produce harvestable yield. There may be some exceptions, but I have not personally seen any.

The surviving dryland program fields in which we tracked nodes above white flower (NAWF) had all bloomed through the terminal by August 16. These drought devastated fields should be adjusted based on the boll count method at this time.



Five of eight program fields where NAWF have been tracked are in hard cutout (bloomed through the terminal) at this time, with three other fields at 2-3 NAWF. This means that the window for setting yield potential is closing, especially when one considers the hot, dry forecast.



Because of the extreme environment, reduced yield due to fruit shed and small boll size will plague many irrigated fields this year. **There are many factors involved in this. Insect issues were not involved. Poor fruit retention can be attributed to heat stress and drought.** Four-bract squares, "extruded stigmas" (where the stigma "punches through" the floral dome prior to petal exertion or some other blemish appears), and "parrot beaked" bolls (due to incomplete pollination) have all been noted in most fields.

“Extruded Stigma”



Abnormal 3-bract square
(greater likelihood of shed)



“Parrot Beaked Bolls”



Mis-shaped bolls
caused by
incomplete pollination



Pollination has been incomplete, evidently due to pollen sterility arising from high temperature stress. Sprinkler irrigation can result in incomplete pollination of some flowers, but I have seen this in furrow irrigated fields also this year. This results in misshaped or “parrot beaked” bolls which are caused by unequal seed numbers in all boll locules. Locules with higher seed counts grow and expand normally, whereas those with fewer seed in the locules are smaller which results in asymmetrical boll shape. I am attributing all of these fruit anomalies to the extremely high temperatures we have experienced this year.

Some open cotton can be found in irrigated fields where early fruit was somehow retained. With the lower yield level (which is reminiscent of fair dryland cotton) these fields will be mature enough for harvest aid applications soon. However, in many other fields, the bottom and middle fruit has been shed. In many fields nearly the entire “typical fruiting zone” associated with yield has been decimated by fruit shed and it appears that the struggle should be over for many irrigated fields. Extremely high crop evapotranspiration (ET) and declining irrigation capacity in many groundwater source fields have also had a very negative impact on the overall situation.

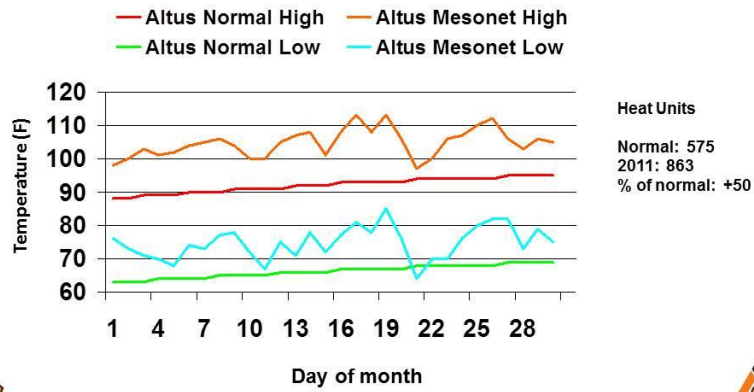
Irrigation Termination

Nearly all fields are ahead of schedule this year. This is due to lack of rainfall, extreme deficit irrigation, and extreme heat. For example, when long-term average heat units from May 25 for Altus are calculated using the “normal” (30-year dataset encompassing 1971-2000) temperature data, the total is 1,904 DD60s through August 22. This year, based on Mesonet data from the Altus station, the total from May 25-August 22 is 2,700. This compares to having an additional 30-year normal (730 heat units) month of July squeezed into the growing season! The actual heat unit accumulation between May 25 and August 22 is about 42% above normal. For a summary of this, see the table below.

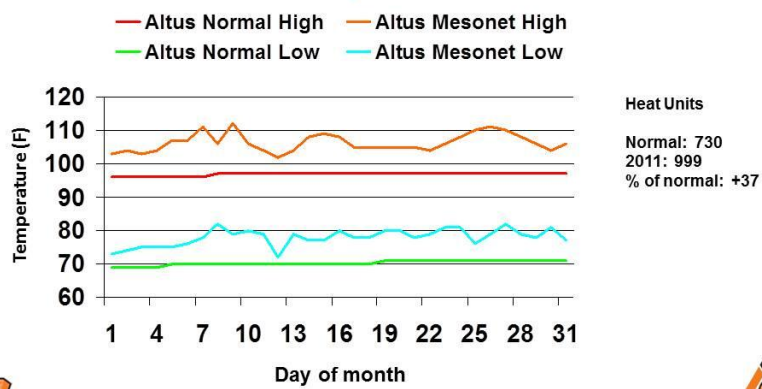
Month	Normal heat unit accumulation (DD60s)	2011 heat unit accumulation (DD60s)	Percent above normal (2011 vs normal)
June	575	863	50
July	730	999	37
August (1-22)	503	863	72
Season May 25 – August 22	1904	2700	42

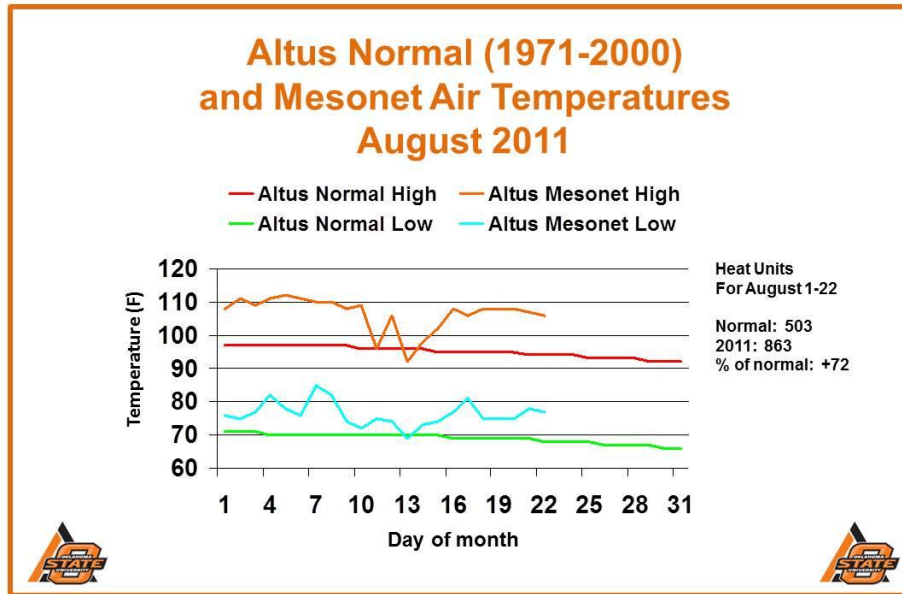
Below are the excruciating temperatures associated with each of these months.

Altus Normal (1971-2000) and Mesonet Air Temperatures June 2011



Altus Normal (1971-2000) and Mesonet Air Temperatures July 2011





Therefore, most of the irrigated cotton is well ahead of schedule, and is at or near the mature stage when all bolls are set that will contribute to ultimate yield, especially those fields that had severe deficit irrigation compared to crop ET. When one also considers the COTMAN 50% probability date of August 20 for a bloom making a mature boll, much of this irrigated cotton is “finished.” For more discussion on the COTMAN program see the August 8th issue of Cotton Comments.

Crop ET has been excessive based on the environment (solar radiation, temperatures and wind speed) and crop demand. Using Tipton Mesonet station data for a May 25 planted crop, since August 1 the amount of crop ET has totaled about 9.2 inches. For an example of this see the table below.

Last Irrigation Date	Evapotranspiration (inch)	Accumulated Evapotranspiration (inch)	Rainfall (inch)	Accumulated Rainfall (inch)	Water Balance (inch)
8/22/2011	0.46	0.46	--	0	-0.46
8/21/2011	0.45	0.91	0	0	-0.91
8/20/2011	0.46	1.37	0	0	-1.37
8/19/2011	0.48	1.86	0	0	-1.86
8/18/2011	0.41	2.26	0	0	-2.26
8/17/2011	0.37	2.64	0	0	-2.64
8/16/2011	0.5	3.13	0	0	-3.13
8/15/2011	0.37	3.5	0	0	-3.5
8/14/2011	0.3	3.8	0	0	-3.8
8/13/2011	0.29	4.09	0.01	0.01	-4.08
8/12/2011	0.44	4.53	0	0.01	-4.52
8/11/2011	0.4	4.93	0	0.01	-4.92
8/10/2011	0.41	5.34	0	0.01	-5.33
8/9/2011	0.34	5.67	0	0.01	-5.66
8/8/2011	0.5	6.17	0	0.01	-6.16
8/7/2011	0.46	6.63	0	0.01	-6.62
8/6/2011	0.49	7.12	0	0.01	-7.11
8/5/2011	0.49	7.61	0	0.01	-7.6
8/4/2011	0.42	8.04	0	0.01	-8.03
8/3/2011	0.35	8.39	0	0.01	-8.38
8/2/2011	0.4	8.79	0	0.01	-8.78
8/1/2011	0.38	9.17	0	0.01	-9.16

Many center pivot systems in southwest Oklahoma are likely applying 1 inch to 1.5 inches per week. This indicates that total irrigation applied when using these systems for the first 3 weeks of August is 3 to 4.5 inches. Therefore, since August 1, these systems would have the capability of between 33% ET replacement (at 1 inch/week and 3 weeks = 3 inches applied / 9 inches of crop ET) and 50% ET replacement (at 1.5 inches/week and 3 weeks = 4.5 inches applied / 9 inches of crop ET). This is another factor in the crop's early maturity situation.

What this means is that individual fields must be assessed immediately to determine yield potential and if continued irrigation can be reasonable. I submit that we have a lot of fields being watered out there that need to be terminated as soon as possible in order to save groundwater resources for another day. From a resource management perspective, it makes little sense to continue watering many fields. **Staying in compliance with crop insurance requirements is extremely economically important for producers. However, producers who have fields with poor yield potential and are only irrigating for the sake of covering the bases for crop insurance purposes should request a move to the boll count procedure and have adjusters look at these fields as soon as possible.** I really don't see any agronomic need to continue irrigation for these fields at this time, as the cotton has or is nearly

flowered through the terminal, extreme heat is forecast for the next several days, and we are past our COTMAN 50% probability date of getting a productive boll from additional blooms.

Other fields with higher yield potential – there are some, but not many that I have seen, will continue to benefit from additional irrigation. For comments pertaining to irrigation termination in these better fields see the August 8th issue.

Upcoming Meetings

Harmon County – Management of Drought Acres: Thursday, August 25, 10:00 am to 2:00 pm. Contact Harmon County Extension Office at 580-688-3584 for more information. ([click here for agenda](#))

Caddo County – End of Season Cotton Management: Friday, August 26.

Insect Update:

No activity was observed nor reported. This further demonstrates that this year's yield potential has reached its end. Insects from this point forward **“CAN'T EAT WHAT AIN'T THERE”**.

There is no economic benefit from controlling any further pests.

Editors

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