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The Floyd County AG NEWSLETTER

July, 2011

July 8, 2011

Corn and Sorghum Agronomy

Drought Damaged Corn

As the heat and drought continue we have seen many fields of irrigated corn finally pushed over the edge due to the excessive heat in the past week. Texas AgriLife Extension's Brent Bean, Amarillo will be preparing a tip sheet on decision making regarding droughted corn by Friday July 1. We will forward this to county Ag agents, industry, etc. as soon as it is available, or contact the Lubbock or Amarillo Research and Extension Center.

Terminating Irrigation

Several reports have been received since mid June about the decision to abandon some corn acreage. Brent Bean, Texas AgriLife Extension, Amarillo, notes on June 29th that the decision to stop irrigating has more than one factor. It largely depends on if you still have adequate soil moisture to get a crop through the next 30 days. That is less likely as you move further south through Texas High Plains as soil textures become more coarse, temperatures are hotter, and irrigation capacity is lower. If you do have moderate soil moisture, then Dr. Bean suggests you may decide to keep watering the corn. In the Texas Panhandle yield will only be reduced about 5T if watered at 75% ET. Historically it has been better to abandon some acres in order to take care of the remaining acres. In some cases in order to take care of the remaining acres. In some cases as you move from north to south through the region corn is being abandoned in favor of maintaining irrigation on cotton. If you are considering abandoning some corn acreage you may wish to involve your crop insurance provider in the decision. It may be better for crop insurance to accept some partial abandonment in order to keep other acres going, whether it is corn or other crops.

Feed Value of Abandoned Corn

Corn that is being abandoned could provide some much needed forage. First, corn is not a member of the sorghum family and will never have prussic acid. It is possible that nitrate accumulation could occur, but that would only be a possibility where high N fertilizer N levels were applied and you have irrigated very little. If you have been trying to keep up with irrigation then I do not expect that nitrate accumulation would be an issue.

The feed value of corn should be relatively high, comparable to sorghum/sudan at similar growth stages. Plants that are not yet developing ears or tasseling would be relatively young plants still, and should have good forage quality. Thicker stalks wil make some of the forage less palatable, however, as long as you can ensure that you can get the leaf baled, then quality should be good. Local producers have suggested that corn hay could easily bring $125/ton and perhaps more. Droughted corn may also be ensiled though the moisture levels may be lower than what is preferred for silage if you have already stopped irrigating.

The above information is provided by Dr. Calvin Trostle, Texas AgriLife Extension Agronomist

COTTON INSECTS

Thrips

The unrelenting heat has fried what thrips were left and a good bit of the cotton crop is beyond the susceptible stage anyway.

Cotton Fleahoppers

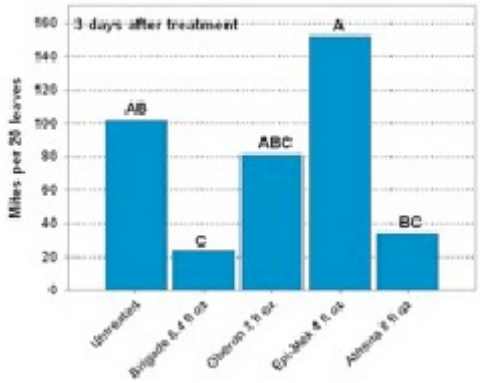
With the hot dry conditions we do not have many weeds to host early-season fleahoppers and consequently they have been extremely rare thus far this year. I have seen only one. But we are seeing quite a few blasted squares due to heat, wind, and blowing dirt. Some square sets have been reduced to 75% or so and most of the squares lost appear to be early first position squares. Bottom line is to not blame square loss on fleahopers without confirmation of the pest.

Spider Mites

Although a good many fields infested with spider mites have experienced declines in the mite population, others remain light to high; with some populations increasing. So far most of the more severe infestations are occurring around Lubbock and south and southwest of Lubbock. Unlike spider mites in late season cotton where the leaves redden, we are nog seeing that type of damage on seedling cotton. What we are seeing is heavy stippling and yellowing of the leaf. Usually the heaviest mite populations can be found along dusty roads. Thus it is possible to save money by just treating along the field edge where the mites are most numerous.

We have not experienced heavy early mite infestations in High Plains cotton for quite some time and we are not sure which miticides wil prove efficacious early season. One field south of Brownfield was treated with Bidrin XP (Bidrin + Brigade mix) at 1 duo-container per 25 acres and it looked like it got a good kil at 3 dahs after treatment. In a test we have near Welch in cooperation with Ben Neudorf (consultant) and Jake Tiechrobe (groweer), we are evaluating Brigade (bifenthrin) at 6.4 fl oz/ac, Oberon at 3 fl oz/ad, Epi-Mek (abamectin) at 4 fl oz/ac, and Athena (abamectin + bifenthrin) at 8 fl oz/ac. All of these treatments included Dyne-Amic non-ionic surfactant at 3 pt/100 gal and were sprayed at 15 gallons per acre early in the morning.

The data we have are only 3 days after treatment, so keep in mind that some products may be slow acting and not show much activity yet. Here are the results thus far for the test:



My Extension colleagues in the Mid-South have been battling early spider mites for the past 5 years and they report that none of the miticides currently available provide more than 10 days control. We have observed a similar trend this year in our area. I have seen one field that was treated with a high rate of Oberon yet, by 12 days after treatment, the mite population had returned to a severe infestation level. However, this cotton was heavily infested and had webbing and dust accumulated on top of the leaves, which may have interfered with product absorption into the leaf. The growers in the Mid-South typically choose to use the cheapest yet fairly effective miticide they can get. The most commonly used miticide there is abamectin (Abba, Agri-Mek, Epi-Mek, Zephyr and Zoro) at 4-6 fl oz/acre. However, based on early results in our test, I am not yet comfortable recommending the 4 fl oz rate. In late season cotton the 8 fl oz rate of Epi-Mek provided good control.

As of now I would recommend treating these early mites with Brigade at 6.4 fl oz/acre, Biddrin XP at duo-container per 25 acres or Oberon at 4 fl oz/acre.

When treating spider mites good coverage is essential. Spider mites produce webbing, and this webbing will collect dirt and my repel he miticide. This can be even more of a problem when infestations are high and webbing is produced on top of the leaves. Thus it is a good idea to increase spray volume to at least 15 gallons per acre, and to include a non-ionic surfactant. Additionally, since most of our miticides have translaminiar activity (move into the leaf tissue) it is important that they don't evaporate too quickly. Thus with the heat we have been having, I suggest spraying early in the morning or in the evening.

Leaf striping by Spider Mites

Typical spider mite colony on underside of leaf

Severe spider mite infestation with webbing on top of leaves collecting dust

Severe spider mite infestation with dust covered webbing on underside of leaves and webbed in terminal growth

Heavy infestation of leaf miners in the Rio Grande Valley (old damage)

Leafminers

Leaf miners are still common. Some fields have miners on the true leaves of eery plant. However, I'm still not recommending treating these unless we average at least 3 active mines per leaf. An active mine is one where the miner has not been parasitized and has not cut out. For the most part, what you want to look and count are mines that are less than or equal to 2 inches in length if stretched out. These are unlikely to be parasitized and would not have cut out yet. Thus far I have not seen a single field that I thought should be treated for leaf miners. However, you do not want to let them get out of hand like we saw earlier this year in the Rio Grande Valley (see picture). This infestation was too old to treat; most of the miners had cutout or were parasitized, but probably should have been treated earlier. Even in a situation as bad as this one we are not certain if controlling the miners would result in a yield response. Products that should have efficacy on leav miners include Tracer and abamectin (Abba, Agri-Mek, Epi-Mek, Zephyr and Zoro).

Beet armyworms

Dr. Pat Porter is reporting high number of beet armyworms infecting corn. This could bode of a bad beet armyworm infestation in cotton on later, so we need to watch for these.

The above information is provided by Dr. David Kerns, Texas AgriLife Extension Entomologist - Cotton

MULTI COUNTY TURN ROW MEETING

A multi-county turn row meeting has been scheduled for 8:00 am June 15 in Ralls.

The meeting will be held at the Pleasant Hill Gin located just North West of Ralls on FM 1471. The program will be conducted by the Texas AgriLIFE Extension Services offices in Floyd and Crosby counties.

Two Texas Department of Agriculture continuing education units will be offered.

Program topics include an update on conditions across the South Plains on cotton production, insect management and a plant disease update.

The program is being sponsored by Crop Production Services.

For more information, contact Mark Carroll, AgriLIFE Extension agent in Floyd County, at 806-983-4912 or Caitlin Frederick, AgriLIFE Extension agent in Crosby County, at 806-675-2347.

A publication of the Texas Agricultural Extension Service in Floyd County.
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Dr. Dana Porter, Extension Agricultural Engineer, has provided an overview of crop water demand and the amount of water that will be needed to sustain our crops. We appreciate Dr. Porter providing this sumary for us.

Irrigation Management Decisions 2011

Brutal drought conditions, poor outlook for relief from the current hot, dry weather in the short term, and limited and declining well capacities are making 2011 a tough crop season for the Texas Southern High Plains and for much of the southern U.S.

Summary of current crop water demand estimates

Daily estimated crop water demands (inches of water per day) for selected crops in the South Plains during the week ending June 28 are summarized below.

Crop	Stage	Crop Water Demand, inches per day
Corn	12-leaf	0.50
	Blister	0.57
Cotton	Emerged	0.22
	Squaring	0.41
Sorghum	5-leaf	0.28
	Flag	0.38
Soybeans	Emerged – V-6	0.23 – 0.36
Peanuts	Flower - Pod	0.31 – 0.48

Relative drought sensitivity is an important concern in irrigation management decisions. Cotton and sorghum are more drought tolerant than corn, peanuts and soybeans. In fact cotton is often irrigated on a managed deficit irrigation strategy targeting 75-80% crop water demand (based upon atmospheric water demand estimates such as those noted in the above table), assuming high irrigation application efficiency afforded by well managed low pressure center pivot (LESA, LEPA) and subsurface drip irrigation systems.

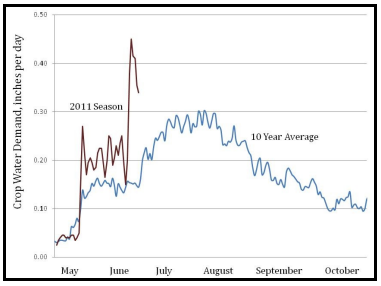
Literature indicates cotton and sorghum require a minimum of approximately 13 inches of available water from stored soil moisture, rainfall and/or irrigation to achieve any harvestable yield; full water demand in an "average" year is approximately 27 inches and 24 inches for cotton and sorghum, respectively. Water less than about 75% of this value, or 21 inches for cotton, would be expected to result in yield loss. Of course greater water deficit (drought stress) will result in greater loss in yield, and drought stress occurring at critical growth stages will result in greater yield and/or quality effects. For drought sensitive crops (corn, peanuts), the decision of how much acreage can be irrigated realistically is especially critical in 2011.

Current conditions, short term and long term precipitation and temperature outlooks

To state the obvious, the 2011 crop season to date is not typical. Higher than normal temperatures and wind, along with low humidity have driven atmospheric water demand higher than average. This is illustrated in the figure below summarizing typical (10-year average) daily cotton crop water demand and 2011 crop water demand (to date) for cotton planted May 15. May 15 – June 28 cotton water demand to date in 2011 is estimated at 8.1 inches,

compared to 5.1 inches for the same period on average. Year to date precipitation at Lubbock is approximately 1.1 inches for 2011, compared to long-term average of approximately 5.6 inches. The National Oceanic and Atmospheric Administration National Weather Service Climate Prediction Center indicates ongoing drought, expected to persist or intensify for much of Texas through September 2011 (http://www.cpc.ncep.noaa.gov/products/expert_assessment/seasonal_drought.html). Temperature probability is expected to remain above normal, and precipitation probability is expected to remain below normal for the region for the month of July (http://www.cpc.ncep.noaa.gov/). Long-term June monthly average high temperature, low temperature and mean daily temperature are 90.0, 64.1, and 77.1 degrees F, respectively. Average high, low and average temperatures at Lubbock for the first three weeks of June 2011 were 99.8, 70.0, and 85.1 degrees F, respectively.

To illustrate the effects of these hot, dry windy conditions on atmospheric crop water demand, cotton crop water demand estimates for 2011 and 10-year average are summarized for Hale County, Texas in the figure below.



Cotton crop water requirements for the 2011 crop season are compared with the 10 year period ending 2009 for cotton with a May 15 planting date in Hale County, Texas. *Courtesy: Texas High Plains AgriLife Research and Extension Water Management*

Irrigation system capacity

Irrigation system capacity and soil moisture storage are additional critical irrigation management considerations. Irrigation capacities based upon gallons per minute per acre are related to equivalent inches per day and inches per week in the following table.

Irrigation capacity equivalents expressed in inches per day and inches per week		
GPM/Acre	**Inches per Day**	**Inches per Week**
1	0.053	.037
2	0.11	0.74
3	0.16	1.11
4	0.21	1.48
5	0.27	1.86
6	0.32	2.23
7	0.37	2.59
8	0.42	2.97
9	0.48	3.34
10	0.53	3.71

These values assume a high irrigation application efficiency; lower efficiency systems will deliver lower effective irrigation application depths. For example, a 120 acre center pivot delivering 360 gpm will apply about 360

gpm/120 ac = 3 gpm/ac, or about 0.16 inches of water per day. If the application efficiency is 88%, the effective irrigation application is only about 0.16 in/day X 0.88 = 0.14 in/day.

Stored soil moisture can help mitigate short term deficit irrigation and rainfall, but only if there is moisture stored in the root zone. Since roots grow in moist soil (neither saturated or excessively dry soil), soil moisture profile during crop establishment can be very important in determining the relative volume of the effective root zone. Under extremely dry conditions and with limited irrigation capacities, it can be difficult to establish or maintain this stored soil moisture reserve. While many agronomic crops can develop effective root zones of up to 5 or 6 feet, most crops will get most of their water from the top 1-3 feet of soil.

Soils vary in their capacity to store plant available water, but generally speaking, finer textured (clay loam) soils can store more plant available water than coarser (sandy) soils. Approximate soil moisture storage capacities for selected South Plains soils are summarized below for 1, 2 and 3 ft root zone depths. The 50% Management Allowable Depletion (MAD) depths are also listed; MAD is often used to "trigger" irrigation applications to prevent drought stress induced by excess soil moisture depletion. Some kind of soil moisture monitoring is essential to determine how much water is stored in a given field, and at what depth in the root zone it is stored. A method to estimate soil moisture by feel and appearance is described by the USDA-NRCS at http://www.mt.nrcs.usda.gov/technical/ecs/agronomy/soilmoisture/index.html. An overview of soil moisture monitoring, "Irrigation Monitoring with Soil Water Sensors" is available at http://lubbock.tamu.edu/cottondvd/content/cottondvd/Irrigation/SoilWaterSensors.pdf.

Soil Series	**Plant Available H_2O* Capacity (inches)**				**50% MAD (inches water)**		
	1 ft. soil	**2 ft. soil**	**3 ft. soil**		**1 ft. soil**	**2 ft. soil**	**3 ft. soil**
Acuff loam	**1.9**	**3.8**	**5.7**		**0.9**	**1.9**	**2.8**
Amarillo fine sandy loam	**1.7**	**3.6**	**5.5**		**0.9**	**1.8**	**2.7**
Brownfield fine sand	**1.2**	**2.4**	**3.6**		**0.6**	**1.2**	**1.8**
Olton clay loam	**2.0**	**4.1**	**6.1**		**1.0**	**2.0**	**3.0**
Pullman clay loam	**1.9**	**3.8**	**5.7**		**0.9**	**1.9**	**2.8**

** Plant Available Water represents the soil moisture storage capacity held between field capacity and permanent wilting point. These values are approximate, as soil physical characteristics may vary with location and conditions.*

Information compiled from the USDA-NRCS Web Soil Survey, http://websoilsurvey.nrcs.usda.gov/

Salinity concerns

For the most part, water quality in the Ogallala Aquifer is very good. Yet localized elevated salinity levels in the Ogallala Aquifer, as well as water from the Dockum (Santa Rosa) Aquifer and wastewater effluent sources merit special management consideration. Effects of salinity are more obvious in the current droughty conditions, as there is less opportunity for dilution or leaching of salts by rainfall or by limited irrigation capacities; hence salt accumulation in the seedbed and root zone may be more obvious. Foliar damage by salts in irrigation water is more likely to be a concern with sprinkler irrigation methods. LEPA, subsurface drip or furrow irrigation can reduce foliar exposure to salts where that is a concern. Salinity effects are often most obvious in outer spans of center pivot irrigation fields, often indicating the exacerbating effect of deficit irrigation and likely also indicating a decline in irrigation capacity (well decline). If this is the case renozzling the center pivot system is probably justified, since the outer spans of the center pivot system represent a large portion of the total acreage under that system.

Additional information and resources

The Kansas State University Research and Extension Mobile Irrigation Laboratory (http://www.ksre.ksu.edu/mil/Tools.htm) offers some convenient online irrigation management tools, including a *Compare Energy Costs* calculator to help with energy conversion decisions and a *Crop Water Allocator* to assist in allocating limited irrigation resources between crops for greatest economic return. These tools and others are being updated and expanded to larger regional applicability (including the Texas High Plains) through collaboration of Texas AgriLife Research and Extension Service and Kansas State University through the USDA-ARS Ogallala Aquifer Program (http://www.ogallala.ars.usda.gov/).

The U.S. Drought Monitor website (http://www.drought.unl.edu/dm/monitor.html) provides additional information on the current drought conditions. Additional irrigation reference materials summarizing applied irrigation research, irrigation technologies and best management practices are included in the 2007 Cotton Resource DVD, available online at http://lubbock.tamu.edu/cottondvd/content/cottondvd/Irrigation.html.

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