Irrigate *On* Time

Right Varieties, Optimum Moisture Provide Best Cotton Growing Conditions

BETTY VALLE GEGG-NAEGER
MidAmerica Farmer Grower

JACKSON, TENN.

Choose the right varieties and irrigate on time are the two keys to growing a successful cotton crop in West Tennessee, according to Dr. Tom Barber, University of Arkansas Extension cotton agronomist.

Barber discussed irrigation and how varieties react differently to irrigation in a presentation addressed to farmers in Tennessee and nearby Arkansas.

"West Tennessee has limited irrigation, maybe 10 percent of total acres, versus Arkansas, where about 90 percent of the cotton is irrigated," he said. "We're doing a trial focusing on varieties, some of the new release varieties that will be sold in the next couple of years and some that we've had for two or three years, and recording how they react differently to irrigation."

Also working on the same study are Dr. Darrin Dodds, Mississippi State Extension cotton specialist, and Dr. Chris Main, University of Tennessee, who are looking at varieties in the midsouth.

"Coming from a state where most of our cotton is irrigated, we have to pay attention to maturity of these varieties, especially in the northeast corner of the state, which is very similar to West Tennessee conditions," Barber said. "We don't want to pick a variety that's going to get too late on us before it matures, so we have to be careful about when we start irrigating the first time."

Pinpointing that first time when to run the water is the key, and if it's done right it can add two to three extra nodes by bloom up the stalk thus developing a full fruiting structure early. A variety that will do that in a compressed window growing season and, at the same time, not grow too much is what is needed.

"In Northeast Arkansas and West Tennessee we tend to use some of the fuller season varieties," he noted. "Examples would be Stoneville 5458, Delta Pine 1034, Phytogen 499. If we irrigate those early we will get growth; but sometimes it's too much growth and that actually sets us back later in the growing season or at the end of the season when we need that crop to cutout and mature. Years we can get into trouble with that are like this year (2011) where in the first week of September the highs are in the lower 70s. That hurts the crop in regards to filling immature bolls, especially if we got it planted late.

"With the turnover of varieties occurring so rapidly, many times we don't know what the variety will do until we plant it over a large number of acres," Barber continued. "So, we hope that these trials will give us an idea of what to expect from these varieties under multiple stresses including irrigated and non-irrigated conditions. It's the same situation on the non-irrigated side. We want a variety in our non-irrigated fields that will still produce a good stalk under limited moisture conditions."

How much rain will come down in the midsouth is always an unknown. So researchers are looking at it from two different angles.

"We're trying to find the best fit on our irrigated ground as well as the best fit on the dryland ground here in West Tennessee under no-till conditions," he said. "It's a challenge to try to determine how these varieties are going to react because there's so many other factors; but we realize, by running these trials, the selection process can potentially be narrowed down to top performers."

The trials are looking at 20 varieties, split rather evenly between early, mid-maturing and late maturing.

"In Mississippi and Arkansas we obviously have a little different growing conditions," Barber said. "Northeast Arkansas is very similar to West Tennessee but when we get to South Arkansas there may be two extra weeks of growing season. So the variety selection there is going to be a little different than it will be in Northeast Arkansas; but I think it's a good way to look at these varieties, get an idea of how they are going to react with timely water, when it needs to be placed, and then the effects if we don't water.

"It's a compounding issue, but when we study the fertility process and the amount of nitrogen we use, we can see a little difference early in irrigated cotton versus non-irrigated," he reported. "Then with our growth regulator applications, we generally don't trigger any growth regulator applications in dryland cotton until we see a bloom. We like to get that structure established, we don't want to stunt it early by applying high rates of plant growth regulators which could result in premature cutout.

"However, in irrigated cotton it's really the opposite in Arkansas," Barber noted. "If we have good fertility, we know we've watered it on time; and again the key is on time. A week to two weeks prior to bloom we need to be ready to water if we have to, and then we need to be ready to apply the plant growth regulator because it will grow. When it has nitrogen and water and the water cooling the soil, that cotton will want to grow and we need to be prepared for that. So what we're seeing with the mid-varieties is an application of plant growth regulators prior to irrigating. Whenever we start that irrigation on time, it's helping us a lot to stay ahead of the internode elongation and excessive terminal growth."

Dr. Tom Barber, University of Arkansas Extension cotton agronomist explains how the right variety and timely irrigation are key to a successful cotton crop.
Photo by John LaRose, Jr.

This study has been underway for a couple of years, though the coordinated effort with the same varieties has only been done for one year.

"I think Chris, Darrin and myself have been doing it on our own in separate states and this year we just joined to get a regional study to look at the same varieties so we can compare data," he said.

Some varieties have shown promise, according to Barber. On the irrigation side, he finds it goes back to maturity more than anything else.

"I need a variety that in Northeast Arkansas in a compressed growing season, will not get too rank under irrigation," he said. "I need it to continue to fruit while we're watering it, and Delta Pine 912 is an example of one that has done real well for us in that situation."

Another good variety which, for whatever reason, reacts a little differently to the irrigation, is Phytogen 375. Separate studies are underway now looking at some of these other varieties and studying whether timing needs to be changed a bit.

"That's what this study is all about," he continued. "It's looking at how the varieties react differently to the irrigation. Our standard recommendation is to irrigate on a two-inch deficit. That's across the board standard recommendation. Soil type can change it. On clay soils it really ought to be a three-inch deficit instead of two and that may be the case with some of these varieties. They may perform and retain fruit better under limited moisture situations."

In the future researchers may get to more specifics about whether a two- or three-inch deficit is best for the variety.

"We are trying to fine tune irrigation management for cotton," Barber said. "We need to focus on intensive management and push what we can out of these varieties by utilizing the resources we have available."

In the meantime, he urges farmers to use irrigation in a timely manner.

"We've got to start on time and that's not at bloom," he said. "We're late if we're at bloom without any substantial rainfall and it could mean a 200 pound per acre decrease in yield. I've got data to prove that, if we start late.

"Also, pick the right variety for the situation. That's really what this test is focusing on, because some of these early mids or mid to full varieties may be growing and producing well on dryland but they are going to react a lot differently to irrigation. So they may actually get too late in some situations to grow in West Tennessee and Northeast Arkansas," he said. Δ

BETTY VALLE GEGG-NAEGER: Senior Staff Writer, MidAmerica Farmer Grower