Drought Management

Proactive Efforts Can Help Overcome Heat, Drought Effects

BETTY VALLE GEGG-NAEGER
MidAmerica Farmer Grower

PORTAGEVILLE, MO.

The impact of the drought on crops in 2012 and ways to curb that kind of damage this year was discussed recently by Dr. Bill Wiebold, Professor with the University of Missouri in the Division of Plant Sciences.

He compared the drought of the past season with others in Missouri history. Last year's drought ranks number one in corn yield loss, and number three in soybean yield loss statewide.

Irrigation in southeast Missouri reduced the impact of the drought, so the 2012 drought did not have quite the impact in Southeast Missouri that it had in other parts of the state, he said. He also discussed how grain crops, both corn and soybean, respond to drought.

"There are actually about three or four different ways in which yield is lost," Wiebold said. "One is fewer flowers, the second is fewer numbers of those flowers fertilized, and that's probably more of a problem in corn than soybean. The third is number of flowers or fruit that fall off the plant. This is really more of a problem in soybean than in corn. Finally, there's seed abortion and reduction in seed size that are problems for both of those crops. So, even if the seed was fertilized, drought can cause a plant to stop growing part way through the season."

If the drought occurs late in the seed-filling period then seed size is affected. Considering the development of both corn and soybeans, he outlined the stages that are most critical in terms of their response to drought.

"The critical stage for corn is what we would call R1 which is silking and through much of the midwest that is in early July," Wiebold explained. "The most critical time in soybean is what we would call R4 which is full pod. Beginning pod starts in R3 and full pod is R4, seed filling starts at R5 so it's in the middle of all that when soybean is the most sensitive to drought."

Looking ahead to next year he offered some management techniques to build some stability in the yield of both corn and soybeans.

"I suppose if there's a take home message it would be don't learn the wrong lessons from 2012. I know it is easy to be affected by some pretty severe weather but we don't want to make any drastic changes to the way we grow our crops. Think clearly about how we should manage those crops, where we're growing those crops; you know the bootheel of Missouri, the central part of Missouri, the northwest part of Missouri, those are not Iowa and Illinois. There are things we need to consider in terms of weather and soils and plan our cropping system in the place we actually grow the crop."

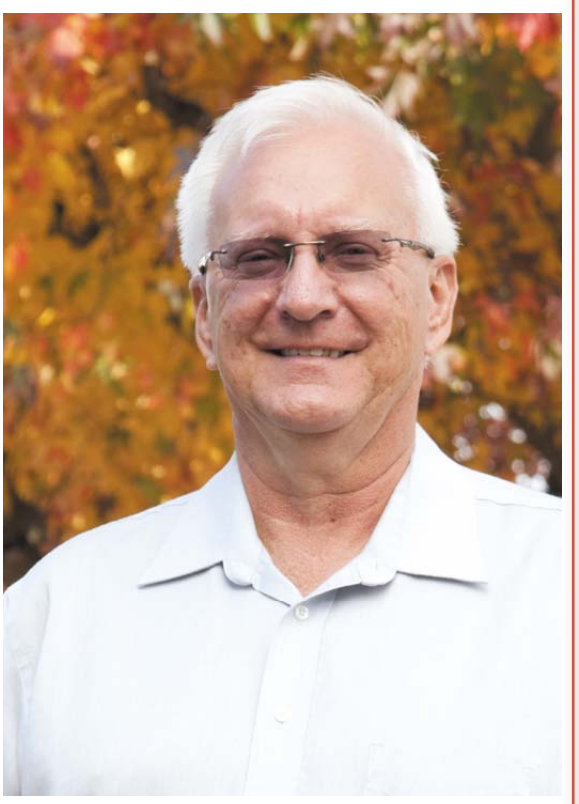
He said farmers need to think about three or four measures:

"One, we ought to try to enhance the water-holding capacity of our soils," Wiebold said. "That's not an easy task. Unfortunately we've had some wet springs and that can compact that soil. Compacted soil cannot hold the water. In this part of the state there's quite a bit of tillage but we ought to till only as much as we need. There are some reasons we have to till but we have to be careful since every time you till you dry out that soil. You bring wet soil up and then the water evaporates from that soil."

Root health is very important and some years those roots are abused. While they may not show damage, soil compaction can thwart them. Sometimes, a seed treatment or a biotech trait in corn or soybeans can help those roots. Producers will have to make their own decision on that, but root health is extremely important. Protect those roots in any way that you can.

"Then I think we ought to think about diversifying that crop," he said. "Obviously many of us use the corn and soybean rotation, in the state of Missouri here we have cotton and rice and we have some other crops to choose from so that may be helpful. But even within the crop we may want to consider diversifying in terms of their maturity; because just like the stock market, one stock can go up and one can go down, one maturity group may be able to withstand the time period the heat and drought hits better than another. It will help with short term stresses if you have a few days difference in maturity, whether its corn or soybeans. So I think those are probably some of the things to think about as we move into 2013."

Considering corn, the most critical time for corn is at the silking period and a short term



The impact and damage to crops due to drought in 2012 and how to reduce that kind of damage was discussed by Dr. Bill Wiebold, Professor with the University of Missouri.

stress can actually decrease yield by as much as 30 percent or 40 percent. Just a few days of stress during that most critical time can devastate a crop.

"I know when the corn in my research plots was silking we had 10 days of 100 degrees or more and, coupled with the dry soil, that really had some tremendous effects on yield," Wiebold said.

"Soybean is a little more stable. It flowers over about a 30- or 40-day period, but with some short term stress, you can lose 20 percent of your yield. In soybean what happens is that the pods with absize or fall off. It will stimulate much more than normal but it's over a longer period of time, and it's able to handle short term stress better than corn. Of course, when we went through 2012 we had long-term stress for much of the state; we had a stressful period for about three months and there's no plant that can handle that kind of stress. Δ

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