CORN IRRIGATION TERMINATION TIMING

As the corn crop approaches physiological maturity, a decision on when to stop irrigating has to be made. The goal is to maintain adequate soil moisture until the corn reaches black layer, which indicates physiological maturity. This ensures that the kernels can obtain their maximum weight so the crop’s full yield potential will be achieved. The decision is best made toward the end of the season by a field determination of the maturity of the crop and the soil moisture status.

An initial consideration is how many days it has been since planting. If it has been 90 days since planting and the corn is a 112-day corn, then it may be within 3 weeks of maturity and a field check should be made. Determining how developed the starch is in the kernel is helpful in making the decision on when to terminate irrigation. The starch begins forming as a line from the top of the kernel and moves toward the tip of the kernel where it is attached to the cob. The progress of the starch line can be checked by taking approximately six (6) representative ears from the field and removing the shucks. The ears can then be broken in half and some of the kernels taken from where the ear was broken. These kernels can be sliced lengthwise so the starch development can be observed.

The goal is to determine if there is at least 50 percent starch development inside the kernels sampled. If there is 50 percent starch and good soil moisture exists from a recent surface irrigation or rain, then irrigation can be terminated. However, if the soil is becoming dry at this point, then additional irrigation is needed to assure maximum seed weight and yield. A final irrigation at this stage should be as quick a flush as possible with flood (levee) or border irrigation. If the corn is irrigated with a center pivot, then it is recommended that the starch development be at 75 percent with good soil moisture before stopping irrigation.

Keep in mind that maturity may be variable across a field, so it is advisable to check several spots in a field to get an accurate measurement of maturity. Also on any given corn ear, maturity will vary from the top to the bottom of the ear. We recommend looking at kernels from the middle of the ear for reference. Once the kernel has reached the R6 Stage, a black layer should be readily seen by scraping the bottom of the kernel. The black layer formation will occur over a few days and will begin as a tan/gray color and slowly increase in size and become black in color. At true black layer no further moisture enters the kernel and grain moisture is approximately 35%.

Also with this newsletter are photos of various stages of corn to assist with irrigation termination. If you should have any questions, please feel free to contact the Phillips County Cooperative Extension Service at 870-338-8027.
Figure 1 (left) Dent Stage (R5).  
Figure 2 (right) Starch line 15-20% down kernel.

Starch line has moved approximately 75% down the kernel and corn is approximately 7 days from maturity. With adequate soil moisture, furrow or pivot irrigation could be terminated on this field.

Figure 3

R6 Stage corn. A fully developed black layer is clearly visible on the right two kernels.

Figure 4

Sincerely,

Shawn Payne  
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