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NEWS COLUMN

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Will my corn make it to maturity before a killing frost?
By Lizabeth Stahl, Extension Educator - Crops

WORTHINGTON Minn. (8/29/19) – As of August 28, the Southern Research and Outreach Center in Waseca reports growing degree units (GDUs) since May 1 are 5% less than normal. The Southwest Research and Outreach Center in Lamberton reports GDUs are behind as well, running 5.8% behind the long-term average as of August 26. Corn has generally been at least 1 crop stage behind where we would expect it to be and cooler-than-normal conditions combined with late planting dates continue to make us question if crops will reach maturity before a killing frost.

Grain corn killed by frost before reaching physiological maturity can not only result in lower yields, but grain that is lower in test weight and higher in moisture. Kernel quality can be reduced and harvestability may be a challenge. There is also potential for more ear molds, ear drop, stalk rots and/or stalk lodging.

The Midwest Regional Climate Center website, which hosts the "Useful to Useable" Growing Degree Day Decision tool at https://mrcc.illinois.edu/U2U/gdd/, uses long-term weather data to make trend projections in crop development. I ran the tool on August 29 to predict when we might reach physiological maturity (black layer or maximum dry matter accumulation) this fall under various scenarios, using a location in Martin County. You can run the tool for your own location: Results will vary by location depending on the weather data being used for that location.

At the selected location, the tool calculated the average first freeze date to be October 13, although dates ranged from September 23 (in 1983) to November 10 (in 2005). 28° F was used as the killing freeze temperature for corn. I ran six different combinations of hybrid maturity and planting dates through the tool. The relative maturity, planting date, and estimated black layer date (Est BL) as predicted by the tool are listed below:

C1) Planted 103 RM hybrid May 15, Est BL = October 20*
C2) Planted 103 RM hybrid May 25, Est BL = > December 1*
C3) Planted 95 RM hybrid May 25, Est BL = October 3
C4) Planted 95 RM hybrid June 1, Est BL = October 14*
C5) Planted 90 RM hybrid June 1, Est BL = September 29
C6) Planted 90 RM hybrid June 5, Est BL = October 6

*Corn will likely reach black layer prematurely due to a killing frost

Will my corn dry down in the field this year?

At physiological maturity or black layer (when it occurs naturally), moisture content of corn grain is expected to be around 28 to 35%. For safe storage up to 6 months, clean, aerated corn grain should be no more than 15% moisture, and no more than 13% moisture for storage longer than 6 months.

Allowing corn to dry in the field after reaching maturity is a common practice to help save on drying costs. Daily moisture loss for corn grain drying in the field in Minnesota can range from 0.75 to 1% from September 15 to 25; 0.5 to 0.75% from September 26 to October 5; 0.25 to 0.5 % from October 6 to 15; and 0 to 0.33% from October 16 to 31. After October 31 very little dry down is expected to occur.

These scenarios reflect a snapshot in time and what actually happens this fall remains to be seen since it all depends on the weather for the rest of the growing season. Depending on when you were able to plant corn and what maturity was planted will be key factors in whether or not the crop reaches maturity before a killing frost. One message is clear, we should be prepared to handle wet corn this fall as we will likely have less natural drydown of grain in the field than we normally expect.

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