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#tipback...Corn Crop Going Backwards?

After walking through corn in much of Western, IA the past couple weeks, it is apparent that the corn crop has been through significant weather stress this summer. The dryness in early summer (some areas all summer) coupled with high temperatures are lowering prospects of monster corn yields in many fields this year.

The environmental stress is being expressed as corn ears that are severely tipped-back with many aborted and/or non-fertilized ovules.

Picture taken 8.9.16 near Badger, IA



How can this be possible with near perfect moisture conditions through the critical month of July in many parts of Western IA?

1. Excessive heat kills corn yields through grain fill
2. Drought stress in June stunted the ability of corn plants to maximize yield potential

How hot has 2016 been so far? According to WeatherTrends360.com for Des Moines, IA:

June 2016: 5.5F above average (Hottest in 25 years); 3.47in below average (driest in 24 years)

July 2016: 0.5F above average; 2.51in above average (4th wettest)

The statistics for July do not overwhelm a corn field at first glance; however, the key lies in the heat wave July 18-July 25. We endured 8 nights in a row in which temperatures did not go below 70F, 3 nights in a row during that span were between 75 and 80F. Unfortunately, this occurred directly after pollination for much of the region when corn was changing from R2 Blister into R3 Milk stage. Bad timing... The corn plants could not keep up with the respiration demands to remain cool on this string of hot nights, so they aborted kernels at the tip of the ear to ensure solid seed fill for the lower part of the cob = significant yield loss.



WeatherTrends360.com. Des Moines, IA. July Calendar accessed 8.10.16.

Timely rains in early July masked the stress that a record hot and nearly record dry June put on our fields as well. Many fields in IA were severely drought stressed for 2-3 weeks during June. Corn was rolling and the fields were stringing together plenty of 'bad days'; exposing issues with compaction caused by spring and fall field operations.

I estimate that we lost 5-7 days of grain fill due to the heat wave in mid-July and the short burst heat waves we have endured since. If a 'normal' grain fill period lasts approximately 60 days (pollination to black layer), then we have lost 8-12% of our grain fill window. Will this translate to 8-12% direct yield loss? If your field is showing severe tip-back and signs of heat stress, I would argue it could be even worse.

The picture for Iowa is not all doom and gloom. Some areas look tremendous, especially areas that were lucky enough to receive a solid shot of rain in mid-June. This allowed the roots to get through the dry and compacted layers to reach sub-soil moisture. Earlier planted corn looks better overall. Fields sprayed with fungicide at VT are holding their tip much better (lower respiration). Higher fertility and nitrogen management is also paying off this year; the plants are showing less signs of stress in fields where more nitrogen was applied.

Some of the issues we are seeing in the field were predicted far in advance of this growing season. See previous newsletter:

<http://www.agrigold.com/Universal/Articles/2016-Grain-Fill-Weather-Hot-and-Dry/>
The heat has definitely made an impact on 2016.

Picture taken 8.9.16 near Lehigh, IA.



Picture taken 8.5.16 Boone County, IA.



2016