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The 2009 Season in Degree Days Through Late August

Abstract

Degree days are a critical driver of crop development, and 2009 certainly illustrates that point. Wet soils and cool early season temperatures delayed some plantings and also delayed the development of crops that were planted on time. The early vegetative stages were slowed by cooler-than-normal temperatures, then July arrived with a remarkably un-summerlike chill that lasted the whole month.

Keywords

Plant Pathology, Agronomy

Disciplines

Agricultural Science | Agriculture | Agronomy and Crop Sciences | Meteorology | Plant Pathology

The graph shows the progress of the seasons in ten-day periods, starting on May 1. A line segment that rises indicates an above-average 10-day heat accumulation, while one that falls gained less-than-average heat. Several observers have suggested that seasonal heat accumulation trends in 1992, 2003 and 2004 through mid-August all experienced significantly colder weather than average, quite similar to the current season. Remember that getting a bit ahead in development before the reproductive stages initiate is generally an advantage (up to 200 or 250 GDD ahead of normal), while falling 100 to 250 GDD behind during the reproductive stages is also often an advantage in that it extends the time of grain filling, assuming that day-time temperatures exceed 75F. Such was the case in both 1994 and 2004. In 1992 yields were very high but the total GDD accumulation was not sufficient for the crop to reach full maturity and very wet corn was harvested.

Degree days and previous crop performance as taken from archived outlying research farm reports for the representative years are summarized here:

1992 – May 1992 was a bit above normal, but that was the end of that. Once June came, week by week found us falling more and more behind in degree day accumulations. We did receive ample rain in July and August, but the cold slowed crop development considerably. Frost came to central Iowa late in September, and although both corn and soybean crop yields were quite good, slow or inhibited dry down and resultant grain quality issues were a considerable and costly.

1994 – The year was one of above normal temperatures during the vegetative period, followed by a cool July and August, with September (dry-down) again warmer than average. Rainfall was generally favorable throughout. The result was a year that set record (for the time) crop yields, and fairly good harvest conditions.

2003 – Some have compared 2009 (to date) with 2003. Rain in May and June 2003 was normal (2009 was generally above normal). Temperatures and rainfall were conducive to good pollination but August went downhill with unseasonably warm and dry weather stressing fields when 10 days topped 90 degrees. Yield cutting soybean aphid populations also damaged many acres. Fall harvest weather was pretty good. Corn yield and quality were good. However the heat and aphids took a bite out of soybeans and yields were generally disappointing.

2004 – The spring was about average for heat accumulation, but a bit on the wet side. August was quite cool (no above-90 degree days) and September was dry and about average to a bit above in heat accumulation. Killing frost in central Iowa came on Nov. 3. This was a good crop year, but there was more than usual regional variation across the state.

2006 – Yields were good to excellent for corn and about average for soybeans. Planting was on schedule, and we had a dry June followed by a hot July when the mercury topped 90F for 15 days. Timely rainfall in August helped in most parts of the state.

2007 – The year started with a very wet spring. Precipitation was above normal for most of the year, and stored water helped set the stage for flooding in June, 2008. Heat and moisture stress from the consistently warm season was averted by the consistent rainfall. Both the yield and quality was mostly average for both corn and soybean.

2008 – Last year many Iowa farmers were kept in limbo by excessive rainfall and flooding early in the season. Wet conditions delayed and prevented planting on many acres, especially in central and eastern Iowa. The crop progressed slowly, but from early July to early September we received timely rain and adequate - hot but not excessive - heat. Mid-September was warm and favorable for dry down, and yields were pleasantly good for most.

2009 (to date) – This year will be remembered in part for a wet spring and some planting delays, and the first or second coldest July on record,

depending on the criteria for comparison. Vegetative crop stages lagged in most areas, and two or three weeks passed in early July with the corn or soybean growth stage not advancing much. Corn silking date was late, with corn not reaching R1 until the last week of July in many places. What we needed was some good rainfall and a second year of not too cold and not too hot weather. And, so far, so good! The USDA crop condition report issued Monday, August 24 listed Iowa corn AND soybeans as rivaling Nebraska as the best in the Corn Belt, with both at 79 percent rated good to excellent.

So where do we go from here? The jury is still out of course, but at least the judge has sent the jury instructions, and we have solid reason to hope. Remember that the delay in reaching silk and setting pods is an issue, and although we are filling kernels and pods now, we are racing the season to get to maturity. Barring an early frost, things should be OK, but dry-down may be an issue, as it was in 1992. The difference is that August 2009 has been a bit more favorable for grain fill and maturation.

We still anticipate harvest concerns with wet grain. Grain quality and storage issues will likely be concerns. We still have another month and time will tell.

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