



DELAYED PLANTING VS CORN HYBRID MATURITY

April 17, 2018

It seems every year the question of whether to back off on relative hybrid maturity or not arises at least somewhere in the Hoegemeyer footprint. Whether it's due to excessive rain, snow, or cold temperatures, planting delays make many of us uneasy and can be an emotional topic.

No matter what date you plant your corn, it still takes about 125 growing degree units (GDU's) for corn to emerge. In addition, research has shown that full season corn hybrids can also adapt to GDU's needed for growth and maturity when planted later.

For example, a corn hybrid will adjust to late planting by reducing the GDU's necessary to reach black layer by about 6 units per day. An example would be a hybrid planted on May 20th that would require about 150 fewer GDU's than the same hybrid planted on April 25th. Although the time required for a late planted hybrid to go from silk to black layer is increased, the time period from planting to flowering (tassel) is actually significantly reduced. Although significantly later corn planting dates are not beneficial overall in terms of yield response, later planting dates will help accelerate emergence out of the ground and the plant will benefit from more measurable GDU's per day after emergence compared to significantly earlier dates. In most years fields planted the first two weeks of April will not capture enough additional GDU's to emerge that much ahead of a field planted the last week in April. This especially holds true as we move north.

There is a point when backing up in maturity does make sense, especially as one moves north. In general, the best chance to approach optimum yield vs. planting date is still achieved by sticking with the normal adapted corn maturity for that area until at least the 20th of May. After that, reducing maturity by about 5 days is justified as we approach the end of May. After the first week of June, reducing maturity by another 5 days is justified. Beyond the 2nd week of June, planting corn is usually not advised. Note that these estimates vary some depending on the individual situation and geography. If we could predict a cooler than normal grain filling period (August and early September), then one might error on the side of caution and plant an earlier hybrid the closer we get to June. Below is "Switchhybrids", a 2011 article Tom Hoegemeyer wrote about making corn maturity switch decisions.



Switchhybrids

By Dr. Tom Hoegemeyer – May 2011

You have to love farming in the Great Plains – or it will drive you crazy. We have gone from having a mix of wet areas in a relatively dry region, to being cold and soaked. And the forecast is for another wet week or more before we will have a chance to get into the field. We have had several inquiries concerning planting dates for specific hybrids, and when will they need to consider switching hybrids and maturities.

The issue is how many heat units do we have to work with, and how is yield affected by later planting. First, the total heat unit accumulation from a presumed planting date to the average date of first freeze in the fall is fairly well known for each locality. If you look at these heat unit tables (on the web or from your university extension group) there, typically, is about 350 heat units accumulated between April 15 and May 15 – that is not a lot of growth potential between those planting dates. Compare the tables of heat unit accumulation from spring dates to first freeze, and the heat unit requirements of your favorite "full season" hybrids in the 2011 Seed Guide. It is clear that at nearly every location there is likely to be enough heat units to mature our favorite hybrids if they are planted by May 20th. When it is cold, cloudy and wet (like the predictions) we accumulate few heat units. If the daily low is 40 degrees, and the high is 60, we average the two temps, and subtract 50, giving zero heat units for such a day – meaning corn isn't going to grow anyway. We are likely to lose fewer than 150 heat units if planting is delayed for the next two weeks. And for each two days later emergence we might see (assuming a two week delay in planting), we will likely delay flowering only one day.

Second, how much is yield affected by a delay in flowering? For optimum yields, one wants to fill grain during longer days—that is as soon after July 4th as possible. However, actual yields are GREATLY impacted by heat (and moisture) stress in the period of a week before until 10 days after silking. Better or worse weather a few days earlier or later makes much more yield difference than precise planting date – and that's mostly random in mid-July. However, if flowering is delayed until late July, the odds of hotter, drier weather increase. Especially in irrigated corn, the "optimum" planting date implies lower yields if planted BEFORE or AFTER the optimum date. And, historically those optimums lie between April 20 and May 5 for most of us.

Then, there is the issue of hybrid yield potential, by maturity. Longer season hybrids, in general, always have higher yield potential than earlier ones. They have greater leaf area – just a bigger factory to produce grain – and greater ear size and/or number of kernels – more room to pack starch and protein. Switching to earlier hybrids, even if they have high yield potential, almost always results in putting a "lid" on yield potential. As long as we have enough time (heat units) available to mature the fuller season hybrid, we are almost always better off NOT to switch to earlier hybrids with less yield potential. Hybrids of the same "heat unit maturity" will also vary in relative flowering dates, sometimes by several days. They can also vary in drydown rate (and staygreen, which affects drying rate).

So, taken together, what does this mean? In general, I can't recommend switching hybrids from your "normal" full season choices until, AT LEAST, May 20th. While that will be later than the optimum planting date – you will sacrifice some yield, switching to earlier (and probably lower yield potential) hybrids isn't likely to make you money. With some, relatively, earlier-flowering hybrids, that date is probably May 25th or after. One person asked me, "What about drydown problems, like we saw in 2009?" Those problems were largely the result of a cool July and cold August, REALLY RARE OCCURANCES! Even with some drying issues, full season hybrids consistently gave the highest yields and net profits.