

Corn Planting Time In A “Normal” Spring



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Yes, a year does make a lot of difference – in 2012, we had 5 percent of the Illinois corn crop planted by April 1 and 17 percent planted by April 9. This year, the April 8 issue of Illinois Weather & Crops from the Illinois office of NASS

gives no percentage planted as of April 7, which means that less than 1 percent had been planted. There has been some planting this week, but with soils still cool and rain in the forecast, along with a drop in temperatures into the 30s at night later this week, many producers are proceeding with caution.

According to the Illinois State Climatologist's office, soil temperature at the 4-inch depth at 10 AM averaged in the mid-30s on March 20, 2013, compared to the upper 50s on the same date in 2012. Soils have warmed since then, but according to the DTN/Illinois Farm Bureau website, ranged from only the mid-50s in southern Illinois to the upper 30s in the northern edge of the State on April 9, 2013. With cool weather returning late this week, soil temperatures are likely to decrease. And wet soils warm more slowly than dry soils, so we may be in for some “patience-requiring” weather.

Cool soils by themselves don't represent much threat to corn seed, but soils that are both cool and wet slow germination and emergence, and provide an advantage to microbes in the soil that can attack corn seed. Some producers may be inclined to set planting depth a little shallower in an attempt to help with emergence under such conditions. That can help sometimes, but the shallowest-placed seed after planting should never be less than about 1.25 inches deep, and planter settings should seldom be less than 1.5 inches deep. Remember, too, that soil close to the surface both warms faster during the day and cools down faster at night than soil beneath the surface, so the overall effect of shallower placement on temperature experienced by the seed and seedling might not be very predictable.

Compared to the corn that was planted in mid-March last year and suffered frost damage the second week of April, the crop this year should be in little danger of frost damage. Chances of frost drop quickly as April progresses, to very low levels by the end of the month in all but the northern edge of Illinois. That doesn't mean zero chance – we had frost through much of central and northern Illinois the first week of May in 2005 – but frost through mid- or even late April is not likely to damage corn this year because there won't be much corn emerged and growing if frost occurs.

The corn planted on April 5 in our planting date study here at Urbana has germinated and sent out its radicle (root), but not yet the plumule (shoot). It has accumulated some 70 growing degree days (GDDs) through April 10, but the 10-day forecast through April 19 is for accumulation of fewer than 50 GDDs over the next 10 days, so I expect emergence to take another week or so. Over the past 10 years the GDD accumulation for April at the Champaign airport has ranged from 210 to 344, with an average of 263. We're on track to accumulate normal GDDs in April 2013. But temperatures during April don't always increase steadily, and

we can't count on later planting to provide warmer temperatures after planting. In 2012, GDD accumulations for the first, second, and third 10-day periods in April were 109, 94, and 80, respectively.

The variability in daily accumulation of GDDs during April produces a wide range in number of days – from a week to three weeks – required for emergence. It's not necessarily a problem for corn to take 20 days or more to emerge, as long as both emergence percentage and emergence uniformity – the time between first and last emergence within a field – are good.

Under cool temperatures, it is normal for the emergence process to take longer, with perhaps as much as four or five days from beginning to end. People often worry about this, having heard that non-uniformity of emergence costs yield. Plants that end up being behind their neighbors in development tend to stay behind, and often lose out in the competition for light, water, and nutrients. It is not the case that such plants end up as “weeds” – that is, that they reduce the yields of remaining plants. But the remaining (larger) plants don't completely make up for the yield lost from the plants that get left behind.

It is important that we consider the cause of non-uniformity of emergence, however. Non-uniformity of emergence is a problem if differences in emergence are related to factors such as seedling damage, soil crusting, low seed vigor, etc. But uniformity of emergence is also affected by temperature (GDD accumulation rates) just as is the time between planting and emergence. So I suggest that we consider emergence as “uniform” from the plant development standpoint if it occurs over the time it takes to accumulate 20 or 25 GDD, whether that takes one day or five days. As with other aspects of corn development, basing events on “thermal time” (GDDs) works better than using time measured in hours or days. The practical effect is that, once it warms up, plants that emerged in 110 GDD and those that took 130 GDD to emerge will differ very little in their stage of development.

While it takes patience to wait until wet soils dry out before we can plant, remember that it's still early, and we haven't begun to lose yield potential from planting delays. It helps that soils were in reasonable shape (meaning they had warmed enough to dry out) in many parts of Illinois by the end of the first week of April – this often means better chances of having them dry out after rain, though cool temperatures will slow that some.

While planting date responses do vary among years and sites in our research, we can for all practical purposes consider the planting date response to be flat for the month of April, with losses starting to pick up, slowly at first, starting in early May. It pays to remember during this time that it is easy to do more damage by working or planting into soils that are too wet than we could gain by planting a little earlier.

While we hope to get most of our crop planted by the end of April, what happens after planting remains a lot more important to the corn crop than the exact date we are able to plant. We need look back only one year to see that early planting does not guarantee high yields. Δ

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