THE OHIO STATE UNIVERSITY
COLLEGE OF FOOD, AGRICULTURAL, AND ENVIRONMENTAL SCIENCES

Hardin County Extension News Release

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For Immediate Release – May 20, 2021

How Long Will Crop Emergence Take?

Hardin County – Growing degree days (GDDs) vs. calendar days – how long will crop emergence take? When we examine crop emergence post-planting, two factors can impact speed of emergence – soil moisture content and soil temperatures. If soil temperatures are lower, it can take more calendar days for emergence to occur meaning rowing corn may take a little more time. In the Ohio Agronomy Guide, emergence should begin to occur after approximately 100 air GDDs.

A difference in 10 degrees in temperature can dramatically affect how quickly crops will emerge. For example, at a temperature of 60 degrees F heat unit accumulation per day would be 60 F – 50 (base temperature for growth) = 10 GDDs. If it takes 100 GDDs to start to see emergence, at this rate it would take 10 calendar days to see the crop start to emerge. If temperatures are 70 degrees F, heat unit accumulation per day would be 70 F – 50 = 20 GDDs. This would shorten the emergence window to 5 calendar days instead, resulting in more rapid emergence from planting.

In recent research from OSU, emergence starting at 110 to 120 soil accumulated GDDs (base of 50 degrees F) for corn, which equated to first emergence observed in 4 or 5 days after planting. Some of the difference in calendar date for emergence (though GDD accumulation was similar) was because planting depth was changed, and the 1” planting accumulated GDDs faster than the 2” and 3” planting depths. These studies though were planted in May or early June (2019 wet spring delayed planting), and daily accumulated GDDs was higher than we might expect if planted in late April. Soil accumulated GDDs have been discussed above, and these could vary slightly compared to air accumulated GDDs (calculated using air temperatures). In the work referenced above, accumulated air GDDs in the first four days post-planting were 106-118 GDDs, slightly less than the soil accumulated GDDs.

If you want to predicate emergence on your farm, the GDD calculator found at https://mrcc.illinois.edu/U2U/gdd/ is a useful tool. It is a two-step process, first find your location on the map, then enter your planting date. The graph will display accumulated GDD’s

for your location. The GDD calculator can be used to predict growth stage throughout the growing season. This is a handy to time when scouting and management decisions should be made.

Don’t be surprised if the crops don’t pop out of the ground quickly due to lower soil temperatures. If emergence is still not observed after two weeks, it may be worth checking the field to see if other issues may be affecting emergence. Recent warmer weather will accumulate growing degree days quicker, causing faster emergence than past weeks.

Article written by Alexander Lindsey, Greg LaBarge, OSU Extension-Ag Crops Team and edited by Mark Badertscher, OSU Extension-Hardin County.