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

Hardin County Extension News Release

For Further Information Contact:
Mark Badertscher
Agriculture and Natural Resources Extension Educator
Phone – 419-674-2297
E-Mail – badertscher.4@osu.edu
For Immediate Release – May 4, 2018

Corn Emergence Depends on Temperatures

Hardin County – The slow start to 2018 planting continues, but we would expect progress to accelerate this week as rainfall amounts lessen and air temperatures increase. We are at the calendar date where ground conditions rather than concerns about soil temperature will dictate planting. Soil temperature and accumulated Growing Degrees Days (GDD) from select Ohio Agricultural Research and Development Center (OARDC) weather station locations monitor conditions necessary for corn emergence. The closest OARDC weather station to Hardin County is the Northwest Research Station located near Custer in Wood County.

Corn typically requires 100 to 120 growing degree days (GDDs) to emerge (but emergence requirements can vary from 90 to 150 GDDs). GDD are based air temperatures, not on soil temperatures. To determine daily GDD accumulation, calculate the average daily air temperature (high + low)/2 and subtract the base temperature which is 50 degrees F for corn. If the daily low temperature is above 50 degrees, and the high is 86 or less, then this calculation is performed using actual temperatures, but if the low temperature is less than 50 degrees, use 50 degrees as the low in the formula. Similarly, if the high is above 86 degrees, use 86 degrees in the formula. The high cutoff temperature (86 degrees F) is used because growth rates of corn do not increase above 86 degrees F. Growth at the low temperature cutoff (50 degrees F) is already near zero, so it so it does not continue to slow as temperatures drop further.

If it takes a corn hybrid 110 GDDs to emerge, and daily high and low temperatures average 70 and 50 degrees following planting, 10 GDDs accumulate per day, and corn should emerge in about 11 days (110 GDDs to emerge/10 GDDs per day = 11 days). However, if daily high and low temperatures are cooler, averaging 60 and 45 degrees after planting, 5 GDDs accumulate per day, and it may take more than 3 weeks (110 GDDs to emerge/5 GDDs per day = 22 days) for corn to emerge. In past years, corn planted in mid to late April has taken as much as 3 to 4 weeks to emerge in many fields.

Temperatures at or below 50 °F may also impact final plant stands, especially when there is protracted period of low temperatures following planting. When such conditions occur, stand loss is usually greater on heavier and poorly drained soils. Given the relationship between GDD accumulation and emergence, we should not be too surprised that it sometimes takes early planted corn up to 3 or more weeks to emerge. Seedling emergence is dependent on soil temperature and air temperature. Also, keep in mind

that estimates of emergence based on GDDs are approximate and can be influenced by various factors including residue cover, tillage, planting depth, hybrid differences, and soil organic matter (soil "color") and moisture content.

Spring corn planting in Hardin County began in earnest this week. Using the OARDC growing degree calculations for the Northwest Research Station, a total of 47 growing degree days have accumulated since Sunday, April 29 as of the writing of this article on May 4. Soil temperatures have been between 53 and 59 degrees. The total growing degree days this spring around the county is Ada 176, Alger 179, Dola 177, Dunkirk 178, Forest 179, Kenton 183, Mt. Victory 192, Ridgeway 193, and Roundhead 187.

Article written by Greg LaBarge, OSU Extension-Field Specialist, Agronomic Systems and revised by Mark Badertscher, OSU Extension-Hardin County.