Crop Observation and Recomendation Network
C.O.R.N Newsletter 2010-08
April 13, 2010 - April 19, 2010

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A) Corn Emergence And Heat Units - Peter Thomison

According to USDA-NASS (http://www.nass.usda.gov/oh/) for the week ending April 11, 2010, Ohio was much further ahead in heat unit (growing degrees day, GDD) accumulation than is typical for this time of year. GDD accumulation since April 1 has averaged 134 across the state compared to 50 GDDs for the long term norm. Last year during a cool wet April in 2009, we only accumulated about 42 GDDs during this period. Like air temperatures, soil temperatures have generally been above average, as high as 10 degrees, since April 1.

Corn requires about 100 GDDs to emerge but emergence requirements can vary from 90 to 150 GDDs. To determine daily GDD accumulation, calculate the average daily 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.

If it takes a corn hybrid 100 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 10 days (100 GDDs to emerge/10 GDDs per day = 10 days). However, if daily high and low temperatures are warmer (as is sometimes the case in late May or early June), averaging 80 and 60 degrees after planting, 20 GDDs accumulate per day, and it may take about five days (100 GDDs to emerge/20 GDDs per day = 5 days) for corn 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, and soil organic matter (soil "color") and moisture content. Corn emergence can be slowed by inadequate soil moisture. Dry soil conditions can cause uneven emergence in some fields that may impact yield if emergence delays exceed 1.5 to 2 weeks. Crops vary widely with regard to the minimum moisture content required for emergence. For corn, the minimum moisture content at which the radicle emerges is 30% of the seed dry weight. In contrast, for soybean, the reported minimum moisture content required for germination is 50%. However since a soybean seed generally weighs only two-thirds or less the weight of a corn seed, a soybean seed requires less water to germinate.

B) Corn Seeding Rates vs. Final Stands - Peter Thomison

Recent Ohio State University evaluations indicate that final stands of 32,000 plants/A or higher may be required to optimize grain yield of some corn hybrids. If the recommended plant population for a corn hybrid is 32,000 plants/acre based on various factors including site yield and potential hybrid characteristics, what should the seeding rate be? Remember a recommended plant population refers to final plant stand or the number of plants/A at harvest not seeding rate.

The number of plants/acre at harvest is always less than the number of seeds planted (unless you have a lot of volunteer corn!) Planting date, tillage practices, pest problems, chemical injury, planter performance, and seed quality can affect

final corn populations obtained in the field. To compensate for these losses, a corn grower needs to plant more seed than the desired population at harvest.

To determine an appropriate seeding rate, use the following formula: Seeding rate = Plant population per acre at harvest/(Seed germination x Expected survival).

Seed germination is the percent germination shown on the seed tag. Most seed corn has a germination rate of 95% or higher. Expected survival is the percentage of plants that you expect to survive to become harvestable plants in the fall. Keep in mind that survival rates for corn may be in the range of 85 to 95% but can vary considerably depending on planting conditions and other environmental factors. When early planting is likely to create stressful conditions for corn during emergence (e.g. no-till in early to mid April), consider seeding rates at least 10% higher than the desired harvest population.

EXAMPLE: A grower wants to achieve a final stand of 32,000 plants/acre. The seed tag indicates a germination rate of 95% and the grower expects that 95% of the germinable seed will survive until harvest. Based on the formula above, divide the desired plant population at harvest, 32,000 plants/acre, by 0.95 x 0.95 (0.90) to obtain a seeding rate of 35,555 seeds/A. (Note that % germination and % survival are converted to decimal form for use in the formula.) Since actual germination rates are often nearly 100%, with a seed germination of 98%, the seeding rate would be slightly less, i.e. 32,000 plants/acre divided by 0.98 x 0.95 (0.93) = 34, 409 seeds/A.

C) A Couple of New Herbicides (New Formulations of Old Herbicides) - Mark Loux

Mon 63410 (Monsanto) is an encapsulated formulation of acetochlor that can be applied postemergence to soybeans for residual control of annual grasses, pigweeds, waterhemp, black nightshade, and common lambsquarters. MON 63410 can be applied after soybeans are copmpletely emerged through the R2 stage. This product is intended for use in combination with Roundup WeatherMAX or PowerMAX in early postemergence applications to Roundup Ready soybeans, where residual control of these weeds is desired in order to minimize the need for a second postemergence glyphosate application. MON 63410 will not provide adequate residual control of marestail and most large-seeded broadleaf weeds, including ragweeds and annual morningglory. Other products that can be applied POST with glyphosate to provide residual weed control include Pursuit (and several premixes of Pursuit with glyphosate), Scepter, Outlook, and FirstRate. See the PRE herbicide effectiveness table on page 102 of the 2010 OH/IN Weed Control Guide for information on the residual control from these herbicides.

Callisto Xtra (Syngenta) is a premix of atrazine and mesotrione (Callisto) for postemergence use in field corn, seed corn, sweet corn, and yellow popcorn. The product can be applied at the rate of 20 to 24 oz/A, and the 20 oz rate provides the equivalent of 2.5 oz of Callisto and 0.5 lb ai of atrazine. This product must be applied before corn exceeds 12 inches in height because it contains atrazine. Other guidelines are similar to those for the use of Callisto – see label for specifics.

D) An Early Wheat Fungicide in the Absence of a Disease? - Bruce Clevenger

In 2008, growers were asked to consider using a foliar fungicide early during spring development of Ohio's wheat. This use of fungicide was rare and unprecedented, but was locally promoted. An on-farm research plot was established in Defiance County to evaluate disease incidence and yield responses of soft red winter wheat to the application of an early-spring, ½ rate, foliar fungicide at growth stage Feekes 5-6.

The cooperating farmer had planted two wheat varieties in the fall of 2007, the first being Cooper, rated susceptible to Septoria and Stagonospora and the second variety being Branson, rated moderately resistant to Septoria and Stagonospora. Disease ratings were reported in the 2008 Ohio Wheat Performance Test, Horticulture & Crop Science Series 228.
Stratego® @ 5 oz/A and MPCA @0.93 oz/ac and an untreated check were replicated four times in each wheat variety in a strip plot design across the field. Plots were 90 feet wide by 1000 feet long. Stratego® fungicide and herbicide were applied on April 27, 2008 at Feekes wheat growth stage 5-6 by the cooperator.

A disease assessment for Septoria and Stagonospora leaf blotch and weed pressure assessment was completed on

May 19, 2008 by Dr. Pierce Paul, OSU Plant Pathology. No significant differences were observed in disease presence in any plots in either treatment. No significant differences were observed in weed pressure in any plots in either treatment. Results from this one-year study indicated that the addition of a ½ rate of fungicide at growth stage Feekes 5-6 did not significantly increase yields on either variety. Cooper is a susceptible variety to leaf blotch, but environmental conditions were not favorable for disease development. Disease levels were low, even in the untreated plots, at the time of fungicide application and throughout the season.

Scouting wheat fields for the presence of plant diseases and environmental conditions for foliar diseases continues to be a powerful production and economic tool for Ohio wheat growers for 2010. For the complete on-farm research report, please visit: http://agcrops.osu.edu/research/On-FarmResearchReports.php

E) Alfalfa Weevil Update - Ron Hammond, Andy Michel, Bruce Eisley

Heat units have continued to accumulate in Ohio, and based on the numbers, most of alfalfa in Ohio should now be scouted for alfalfa weevil. The only part of the state not yet reaching sufficient heat units is the northeast section of Ohio, but we would expect that area to reach the required number later this week or early next week. As of April 11, southern locations in Ohio are around 350 HU, central Ohio around 275, northwest and north central sites between 250 and 300, with northeast only around 200. See last week's C.O.R.N. newsletter on how to scout for alfalfa weevil in alfalfa. For more information on the weevil, see the OSU Alfalfa Weevil Fact Sheet http://ohioline.osu.edu/ent-fact/pdf/0032.pdf .

F) Video on Scouting for Slug Eggs - Ron Hammond, Andy Michel, Bruce Eisley

As we get into mid and late April, the time is upon us to begin searching for slug eggs in no-till fields that have had previous problems. Although there are no thresholds available on how many eggs will lead to a slug problem in the spring, knowing that eggs are present in relative low or high numbers will allow growers to better manage potential slug problems. If slug eggs are easy to find, those field should be planted as early as possible to allow for crop germination and early growth before slugs begin their heavier feeding. These fields will have a higher potential for problems. Additionally, those fields should be monitored more closely after crop emergence for later slug feeding. If eggs are not present or in low numbers (assuming you are comfortable with your ability to find eggs), those fields probably have a lesser chance of problems and could be planted later. We now have a video available on our Agronomic Crops Insects web page that is available through the C.O.R.N. newsletter. The video at http://entomology.osu.edu /ag/pageview3.asp?id=2087 , shows how to sample and what to look for.

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C.O.R.N. is a summary of crop observations, related information, and appropriate recommendations for Ohio Crop Producers and Industry. C.O.R.N. is produced by the Ohio State University Extension Agronomy Team, State Specialists at The Ohio State University and Ohio Agricultural Research and Development Center. C.O.R.N. Questions are directed to State Specialists, Extension Associates, and Agents associated with Ohio State University Extension and the Ohio Agricultural Research and Development Center at The Ohio State University.