CORN
Growth and Development

Current GDD/day have returned to normal. They are about 20/day now and will increase to 26/day later in the week for a week’s average of about 22/day. The long-term average for early August of 21.5 GDD/day. Hopefully “normal” to cooler than normal degree day activity will persist in August to enhance grain fill during corn’s reproductive stages.

For a map of current GDD, go to: http://mesonet.agron.iastate.edu/GIS/apps/coop/gsplot.phtml  

Current GDD from May 1 in northeast Iowa is about is about 1,775 along Hwy 20 and 1675 along Hwy 9. Of course hybrids planted along Hwy 9 might be a bit shorter in relative maturity then hybrids planted along Hwy 20. Full season corn in northeast Iowa requires about 2,600 GDD. It takes about 1,400 GDD from planting to R1, and another
1,200 GDD from R1 to maturity (R6). Within the 1,200 GDD from R1 to maturity, it takes about 650 GDD to reach beginning dent stage (R5) and the next 550 GDD to reach physiological maturity (R6 stage – black layer).

Corn growth & development reproductive stages.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description of stage</th>
<th>Comments</th>
<th>Time to next stage</th>
<th>GDD</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1</td>
<td>Silk</td>
<td>Maximum plant height</td>
<td>~ 10 days to R2</td>
<td>220</td>
</tr>
<tr>
<td>R2</td>
<td>Blister (clear liquid in developing kernel)</td>
<td>Maximum vegetative dry matter. Minimal grain dry matter.</td>
<td>~ 8 days to R3</td>
<td>170</td>
</tr>
<tr>
<td>R3</td>
<td>Milk (white liquid in developing kernel)</td>
<td>Outside of kernel is yellow. Starch accumulation increasing.</td>
<td>~ 6 days to R4</td>
<td>125</td>
</tr>
<tr>
<td>R4</td>
<td>Dough</td>
<td>Starch accumulation increasing. Kernel moisture starts decreasing.</td>
<td>~ 7 days to R5 (dent stage)</td>
<td>135</td>
</tr>
</tbody>
</table>

If growing conditions are stressful during R2–R3 stages, we would see yield reductions from loss of kernels (kernel abortion via tipping back of the ears). Once corn reaches the R4 stage, kernel number is established and yield reductions caused by stress would be from a decrease in kernel size.

SOYBEANS

Growth and Development

A new leaf appears about every 3 days. Soybean fields always show remarkable growth this time of season. From mid-July to mid-August, soybeans produce about 70% of their total season’s plant dry weight. The majority of soybeans are R3-R4 stage with some of the earliest planted soybeans at an early R5 stage.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description of stage</th>
<th>Comments</th>
<th>Time to next stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>R3</td>
<td>A pod at least 3/16-inch long at 1 of the 4 uppermost nodes of the main stem with a fully developed leaf.</td>
<td>Most popular stage for foliar fungicide applications other than for White Mold control where R1 stage is recommended, and in some cases R1 + R3 stage applications for White Mold control.</td>
<td>About 9 days to R4 stage.</td>
</tr>
<tr>
<td>R4</td>
<td>A pod a pod at least 3/4-inch long at 1 of the 4 uppermost nodes on the main stem with a fully developed leaf.</td>
<td>Beginning of the most crucial period of plant development in terms of stress influencing seed yield. Rapid and steady dry weight accumulation by the pods. Still a timely stage for fungicide application for Frogeye leaf spot &amp; Cercospora leaf blight.</td>
<td>About 9 days to R5 stage.</td>
</tr>
<tr>
<td>R5</td>
<td>Seeds are 1/8-inch long in the pod at one of the four uppermost nodes on the main stem with a fully developed leaf.</td>
<td>By R5.5 stage, plants obtain max. height, leaf area and node number. Rapid and steady seed dry weight accumulation.</td>
<td>About 15 days to R6 stage.</td>
</tr>
</tbody>
</table>

ALFALFA

“Fall” Alfalfa Seeding

Late summer seeding of alfalfa and other perennial forages should be done in August. Ideally by August 10 in the northern third of Iowa and by August 20 in the central third of Iowa. The following article provides basic information to successfully establish a forage stand now: [http://www.extension.iastate.edu/CropNews/2010/0719barnhart.htm](http://www.extension.iastate.edu/CropNews/2010/0719barnhart.htm) Later plantings into late August and even early September often work too, but they are much more dependent on very favorable fall weather. The rule of thumb is to have at least 6 to 8 weeks from emergence to the first killing frost.

INSECTS

Bt-Resistant Western Corn Rootworm – repeat from last week
Once again we are finding Bt-resistance issues in northeast Iowa. Western corn rootworm resistance to multiple corn rootworm Bt-traited corn is being investigated. The most immediate concern with these fields is to be sure that pollination takes place. These fields with poor rootworm control can exhibit very high beetle pressure (photos above and below) which threaten excessive silk clipping before pollination is complete. *If you are having similar problems, I would appreciate a call.*

**Bird Cherry-Oat Aphid in Corn**

*I appreciate receiving reports from farms about the occurrence of this pest.* So far reports are concentrated in Chickasaw, Howard and Clayton counties, but most with very spotty activity in the fields. As mentioned in the last Crop Notes, this insect appears to be hybrid specific, highly populating some hybrids while not developing a high population on others. We do not know why. We also do not know why with some of these high population situations the aphids might be found in just small areas of a field or across the most of the field. If found early at threatening populations over most of the field (i.e. > 500 per plant average and moving up to the husk), a foliar insecticide application may be warranted. Photos were included in last week’s Crop Notes.

**Potato Leafhopper (PLH)**

Continue scouting this pest through August. Scouting and threshold information is provided at: [http://crops.extension.iastate.edu/cropnews/2014/06/managing-potato-leafhoppers-alfalfa](http://crops.extension.iastate.edu/cropnews/2014/06/managing-potato-leafhoppers-alfalfa)

**Japanese Beetles and Other Defoliators – repeat from last week**

They and other defoliators need to reach about 20% defoliation in early reproductive stage soybeans to warrant treatment. That refers to the entire plant, not just the upper leaves and not just along the headlands. We almost never see this level of activity. Defoliation charts are available in many resources including this recent article: [https://crops.extension.iastate.edu/cropnews/2018/06/japanese-beetle-adults-emerge-southern-iowa](https://crops.extension.iastate.edu/cropnews/2018/06/japanese-beetle-adults-emerge-southern-iowa). As soybeans reach R4-R5 stages, I could make an argument to lower this threshold to 10% defoliation by comparing it to crop insurance hail charts on defoliation and yield loss. See figure 9 in *Hail on Soybean in Iowa:* [https://store.extension.iastate.edu/product/14792](https://store.extension.iastate.edu/product/14792)  Even so, it would be rare for this to occur. And for the home front… FYI Japanese Beetle information for yard, garden and ornamentals: [https://hortnews.extension.iastate.edu/japanese-beetle](https://hortnews.extension.iastate.edu/japanese-beetle) (p.s. they are continuing their assault on my raspberry patch).

**Soybean Aphid**

Aphid migration is occurring into northeast Iowa, most likely from MN and WI. Populations I have found are very low, but the weather is quite favorable for increasing populations. The most immature fields (latest planted) will be the most attractive to the winged aphid migration. The easiest scouting method is to use Speed Scouting. Speed Scouting instructions can be found at: [https://www.ent.iastate.edu/soybeanresearch/files/page/files/2009_speed_scouting_blank_form.pdf](https://www.ent.iastate.edu/soybeanresearch/files/page/files/2009_speed_scouting_blank_form.pdf)  We should scout until soybeans reach the R5.5 stage which will be around mid-August for earlier planted soybeans, and the end of August for late planted soybeans.

**DISEASES**

**Foliar Fungicide Time? – repeat from last week**

Iowa Soybean Association field trials prove that to just apply without a reason is likely not profitable. They have conducted 537 trials in corn and 505 trials in soybeans over the last 13 years and results showed an average of 3.3 bu./ac. increase in corn and 1.9 bu./ac. increase in soybeans.

[https://www.iasoybeans.com/programs/isa-research/results/strip-trials-database/](https://www.iasoybeans.com/programs/isa-research/results/strip-trials-database/)  On average this is an economic loss. Some applications did much better and some did worse. With scouting and good reasoning you can improve your chance of a positive economic response to only apply fungicides on those fields with a better chance of economic return. Consider the following:

- Crop rotation vs. continuous cropping – Greater chance of disease survival to re-infect with continuous cropping.
- No-till vs. tillage – Most diseases overwinter on crop residue remaining on the surface, thus tillage reduces this cause and effect.
- Field history/record keeping – What has been the prevalence of disease in certain fields in recent years.
- Type of disease and variety/hybrid resistance – What are the various disease ratings from the seed company. You may have selected for High resistance of Northern corn leaf blight (NCLB) because that tends to be our greatest threat in northeast Iowa, but the hot and humid 2018 has been much more favorable for Gray leaf spot (GLS) then for NCLB.
- Climate – Certain diseases only do well in certain climates. *i.e.* This June and July has been just right for GLS and too hot for NCLB. However, Elwynn Taylor said El Nino should start up in August which should mean more moderate temperatures for the rest of the crop season favoring NCLB and Eyespot over GLS development. Thus the back and forth guesswork of treating or not. But consider the other bullet items as well in your decision making process.

Very good resources on corn and soybean diseases are recently updated ISU Extension publications: [https://store.extension.iastate.edu/product/3975](https://store.extension.iastate.edu/product/3975) and [https://store.extension.iastate.edu/product/2940](https://store.extension.iastate.edu/product/2940) They are $5 each. The free on-line route includes a couple of websites providing photos and a short explanation of each disease (description, scouting and management) at: [https://crops.extension.iastate.edu/corn-diseases-symptoms-scouting-and-management](https://crops.extension.iastate.edu/corn-diseases-symptoms-scouting-and-management) and [https://crops.extension.iastate.edu/soybean-diseases-symptoms-scouting-and-management](https://crops.extension.iastate.edu/soybean-diseases-symptoms-scouting-and-management)

**Soybeans – Late Season Leaf Diseases**
Northeast Iowa has two particular soybean leaf diseases (Frogeye leaf spot and Cercospora leaf blight) that usually don’t show up (if they show up at all) until R4 stage soybeans. They are not frequent wide-spread disease problems, but under favorable environmental conditions, a foliar fungicide treatment at R4 to early R5 stage can still be timely. **Frogeye leaf spot** is a bit more prevalent in southern Iowa because it requires consistent levels of high humidity. **Cercospora leaf blight** is more prevalent in northern Iowa. Since you probably never treated soybean fields much later than R3 stage, if these diseases have caused you problems in the past you should have had some good visual evidence in the past. If you have good variety resistance, don’t worry about them. Otherwise, scout for early signs of these diseases all the way into mid-August. Here’s some photos and more information about **Frogeye leaf spot** [https://crops.extension.iastate.edu/frogeye-leaf-spot](https://crops.extension.iastate.edu/frogeye-leaf-spot) and **Cercospora leaf blight** [https://fyi.uwex.edu/fieldcroppathology/2014/07/23/cercospora-leaf-blight-and-purple-seed-stain-of-soybean/](https://fyi.uwex.edu/fieldcroppathology/2014/07/23/cercospora-leaf-blight-and-purple-seed-stain-of-soybean/) Advanced Frogeye leaf spot management… the University of Illinois provides an update on Frogeye management including developing resistance to strobilurin fungicides, available at: [http://cropdisease.cropsciences.illinois.edu/?p=776](http://cropdisease.cropsciences.illinois.edu/?p=776)

**CALF MANAGEMENT**
**Free Training Videos for Employees**
Free training videos on calf management are now available in both English and Spanish. This new series of resources is available through ISU Extension and the University of Nebraska-Lincoln to provide training in calf management including; newborn calf care, colostrum management, calf nutrition, animal handling, automatic calf feeder management and hygiene and sanitation. Each of the videos are less than 3 minutes in length, utilizing video demonstration of on farm practices to emphasize key calf management practices. Each video is available on DVD or flashdrive. To request a copy, go to: [https://goo.gl/forms/J4HVOfHvc37iindA2](https://goo.gl/forms/J4HVOfHvc37iindA2) or contact Jennifer Bentley at jbentley@iastate.edu, 563-382-2949 or Kim Clark at kimclark@unl.edu, 402-472-6065. Funding for this project was provided by the North Central Risk Management Education Center, the USDA National Institute of Food and Agriculture under Award Number 2015-49200-24226.

**EVENTS**
**Aug. 7-27, Farmland Leasing Meetings, many dates & locations across Iowa**
Check the following website for dates, times and locations of upcoming meetings: [https://www.extension.iastate.edu/agdm/info/meetings.html](https://www.extension.iastate.edu/agdm/info/meetings.html)
Here is a list of most meetings in northeast Iowa:
Aug. 7, 9:00 am to 12:00 pm, Decorah
Aug. 7, 1:30 pm to 3:30 pm, Tripoli
Aug. 8, 1:00 pm to 4:00 pm, Charles City
Aug. 9, 9:00 am to 11:30 am, Manchester
Aug. 9, 1:30 pm to 4:00 pm, Elkader
Aug. 10, 9:00 am to 12:00 pm, Osage
Aug. 13, 1:00 pm to 4:00 pm, Waterloo
Aug. 14, 1:00 pm to 4:00 pm, New Hampton
Aug. 15, 1:00 pm to 3:00 pm, Waukon
Aug. 16, 9:00 am to 12:00 pm, Fayette
Aug. 16, 1:30 pm to 3:30 pm, Cresco
Aug. 21, 1:00 pm to 4:00 pm, Epworth
Aug. 22, 6:00 pm to 9:00 pm, Cedar Rapids
Aug. 23, 1:30 pm to 4:30 pm, Allison
Aug. 23, 7:00 pm to 9:00 pm, Grundy Center
Aug. 27, 1:00 pm to 4:00 pm, Monticello

Aug. 9, Focus on Nitrogen Field Day, ISU Research Farm, Nashua
10:00 am to 2:00 pm at the ISU Northeast Research Farm. Farmers and those who advise them are invited to attend “Focus on Nitrogen: Managing Nitrogen for Maximum Profit and Minimum Water Quality Impact.” Being one of the country’s most prestigious water quality research facilities, we will kick off the day with a field tour by Ken Pecinovsky, farm superintendent, which will highlight nitrogen management strategies and water quality testing practices being conducted on the farm. Brian Lang and Terry Basol, ISU agronomists, will discuss the nitrogen fertilizer recommendations for corn, split application of nitrogen, and cover crops as it pertains to making crop production decisions. The day will conclude with a manure applicator distribution demonstration and nitrogen management discussion (as it relates to manure) by Kapil Arora, ISU ag engineer, and Terry Basol. **Free program, free lunch, free CCA credits.** The program is free and open to the public with lunch provided for those that pre-register. Pre-register at 641-435-4864 to secure a spot. Free CCA credits available. Directions: From Nashua at the Jct. of Hwy 218 (Exit 220) and Co. Rd. B60, go west on B60 1.1 miles to Windfall Ave., then south 1 mile to 290th St., then east 0.2 miles to the farm.

Aug. 21-23, Iowa Drainage School, ISU Northeast Research Farm, Nashua
A 3-day program to train stakeholders in sub-surface drainage concepts, planning and laying out drainage systems including surveying a profile, laying out the system, calculating tile line sizes and spacing using actual field data, making connections, and setting up drainage control structures, NRCS program requirements, and fixing common drainage system issues. It is a combination of hands-on training, lecture and discussion, and problem solving using examples. For more details and registration, go to: [http://www.aep.iastate.edu/ids/](http://www.aep.iastate.edu/ids/)

Aug. 28, Annie’s Project (Women’s Farm Management Program), New Hampton
5:30 PM - 9:00 PM on Aug. 28, Sept. 4, 11, 18, 25, and Oct. 2. Annie’s Project is a six-week program “intended to educate and empower farm women to be better business partners by managing and organizing critical information, improving decision-making skills, and networking with other farm women. The program starts on Aug. 28 in New Hampton at the ISU Extension office. The class meets for six consecutive evenings from 6:00 to 9:00 pm, with a light supper served at 5:30 pm. Registration is $75 for the 18-hour program and includes all materials as well as the light supper. Class size is limited to 25 women. For more information go to: [http://www.aep.iastate.edu/womeninag/2018/newhampton.html](http://www.aep.iastate.edu/womeninag/2018/newhampton.html), and/or contact Val Horner, 641-394-2174, email: vhorner@iastate.edu

Aug. 28-30, Farm Progress Show, Boone

Sept. 5, Annual Fall Field Day at the ISU Northeast Research Farm near Nashua
1:00 PM to 4:15 PM starting at the Borlaug Learning Center - ISU Research Farm near Nashua. We have four specialist to speak at the event starting at 1:00 pm with Steve Johnson:

- Steve Johnson, ISU Extension Farm Management Specialist, “What's in your crop marketing plan?”
- Dr. Antonio Mallarino, ISU Extension Soil Fertility Specialist, “Research updates on liming soils and the use of high rates of gypsum”
- Dr. Daren Mueller, ISU Extension plant pathologist, “Managing corn and soybean crop diseases in 2018”

Free snacks and educational materials. CCA credits available. For more information please contact Brian Lang, bjlang@iastate.edu, 563-387-7058.

**Sept. 6, Annual Fall Field Day at the ISU Southeast Research Farm near Crawfordsville**

1:30 PM to 3:30 PM, details to be provided at: https://www.extension.iastate.edu/Pages/eccrops/meetserc.html

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**Brian Lang**  
**Iowa State University Extension Agronomist**  
325 Washington St., Suite B, Decorah, IA 52101  
Office 563-382-2949; Cell 563-387-7058; Fax 563-382-2940  
[https://crops.extension.iastate.edu/](https://crops.extension.iastate.edu/)