CROP NOTES for August 17, 2018
Iowa State University Extension Information for Northeast Iowa
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Past issues of Crop Notes are posted at:
http://www.extension.iastate.edu/winneshiek/page/crop-notes-brian-lang
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CORN
Growth and Development
This week will run right at normal for GDD at an average of 19/day. Other long-term normal are 17.5/day for late Aug. and 15/day for early Sept.

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 2,200 along Hwy 20 and 2,100 along Hwy 9. That falls into R4 (Dough) to R5 (Dent) stage. Corn silage harvest starts about one week after initial dent stage.
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>
<th>Accumulated GDD from 1,400 (R1)</th>
</tr>
</thead>
<tbody>
<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>
<td>1,915 (R4)</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>
<td>2,050 (R5)</td>
</tr>
<tr>
<td>R5</td>
<td>Dent</td>
<td>Hardening starch causes a depression (dent) in butt end of kernel. The kernel hardens from butt to tip causing a visual horizontal “milk line” on the kernel.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>¼ milk line</td>
<td>Often begin silage harvest for bunkers. Whole plant is about 70% moisture. 65% DM in kernel.</td>
<td>~ 9 days</td>
<td>175</td>
<td>2,225</td>
</tr>
<tr>
<td></td>
<td>½ milk line</td>
<td>Often a target for silage harvest for upright stave silos. Whole plant is about 65% moisture. 90% DM in kernel.</td>
<td>~ 10 days</td>
<td>175</td>
<td>2,400</td>
</tr>
<tr>
<td></td>
<td>¾ milk line</td>
<td>97% DM in kernel. Grain is about 37% moisture</td>
<td>~ 14 day</td>
<td>200</td>
<td>2,600 (R6)</td>
</tr>
<tr>
<td>R6</td>
<td>Physiological maturity (black layer)</td>
<td>100% DM in kernel. Grain is about 35% moisture.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Grain Yield Estimates**

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. Yield estimates based on kernel counts can be made starting at R4 stage.

**Kernel Count Method:** Once corn reaches R4 stage, it will not abort kernels, so the kernel count method could be used. However, if the crop is under stress from R4 stage to maturity, kernel size could be affected and the standard kernel weight of 90,000 kernels per bushel used in this formula could over estimate yield. Formula: \[(\text{number of primary ears per 1/1000th acre}) \times (\text{number of kernels per row}) \times (\text{number of rows of kernels}) \] \times 0.01116 = bushels per acre

Primary ear population per 1/1000th acre:
- 26 feet 2 inches for 20-inch rows
- 17 feet 5 inches for 30-inch rows
- 14 feet 6 inches for 36-inch rows
- 13 feet 9 inches for 38-inch rows

This method assumes a standard kernel weight of 90,000 kernels per bushel, so results can vary with the hybrid, test weight, kernel depth, etc. For a complete description of this process please read the following article:

**CORN SILAGE HARVEST**

**Harvest Moisture Determination and Harvesting Tips**

Provided in the August 6 Crop Notes:
https://www.extension.iastate.edu/winneshiek/sites/www.extension.iastate.edu/files/winneshiek/CropNotes/Crop%20NotesAugust%206%202018.pdf
Pricing Corn Silage
1. For a ballpark estimate of pricing silage based on corn grain value see the ISU Extension publication “Pricing Forage in the Field” http://www.extension.iastate.edu/agdm/crops/pdf/a1-65.pdf
2. For a more detailed approach to pricing corn silage, there is an Excel spreadsheet from ISU Extension called “Silage Pricer”. It is on the following Ag Decision Maker website about two-thirds of the way down the page: http://www.extension.iastate.edu/agdm/decisionaidscd.html
3. There is also a mobile app from the University of Wisconsin for pricing corn silage. For details and the app links go to: https://fyi.uwex.edu/forage/new-extension-mobile-app-for-pricing-standing-corn-silage/

SOYBEANS
Growth and Development
The majority of soybeans are R5 stage with some in R6 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>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>
<tr>
<td>R6</td>
<td>Pods contain green seeds that fill the pod to capacity at one of the four uppermost nodes on the main stem with a fully developed leaf.</td>
<td>Period of rapid, steady seed dry weight accumulation continues until R6.5 stage. Rapid leaf yellowing begins shortly after R6 (lower canopy spreading upward). R6.5 is good timing for aerial cover crop seeding, applying seed to the ground before extensive leaf drop occurs.</td>
<td>About 18 days to R7 stage, physiological maturity.</td>
</tr>
<tr>
<td>R7</td>
<td>One pod on the main stem has reached a mature color (tan or brown).</td>
<td>Beginning maturity. Very little yield loss (&lt;2%) if a killing frost occurs at this stage.</td>
<td>About 9 days to R8.</td>
</tr>
<tr>
<td>R8</td>
<td>95% of pods have reached a mature color.</td>
<td>Full maturity.</td>
<td>About a week to &lt;15% moisture.</td>
</tr>
</tbody>
</table>

Grain Yield Estimates
Formula: [(number of plants/ac) x (avg. number of pods/plant on 10 random plants)] x [(2.5 seeds/pod ÷ 2,500 seeds/lb)] ÷ 60 lbs/bu = bu/ac

a) This equation uses 2.5 seeds/pod; 2,500 seeds/lb; 60 lbs/bu
b) You can substitute whatever you think are appropriate numbers for bushel weight, seed size, etc. Because of the difficulty in estimating these factors, most intelligent people don’t take soybean yield estimates too seriously.
c) Examples: With an average of 25 pods/plant and a plant population of 130,000 per acre…
(1) 2.5 seeds/pod; 2,500 seeds/lb; 60 lbs/bu = 54 bu/ac.
(2) 2.5 seeds/pod; 3,000 seeds/lb; 60 lbs/bu = 45 bu/ac.
COVER CROPS
Planning for Establishment
With crop maturity running ahead of normal, some may choose to establish cover crops using a drill behind the combine rather than aerial seeding. If aerial seeding, for soybeans… it’s good to accomplish this at about R6.5 stage, before too much leaf drop occurs. We like to get the seed in contact with the soil and covered by the leaf drop, not land on top of the leaf drop. If aerial seeding in corn, reaching initial R6 stage or “black layer” provides good timing for the task. As far as what cover crops and seeding rates to use, the possibilities are many. If this management is new to you, start simple. The NRCS has a very basic publication on cover crops with suggested seeding rates and seeding windows. Go to:
There is no one best method of establishment. Its whatever fits your particular situation. Although, there is always some risk to surface broadcast seed compared to drilling seed. Good seed-to-soil contact ensures stand establishment.

INSECTS
Soybean Aphid
The most immature fields (latest planted) have the greatest threat of developing a problem. 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  We should scout until soybeans reach the R5.5 stage. Aphid activity has increased quit a bit in southern MN, but they also reported some populations are crashing do to entomopathogenic (insect killing) fungi developing under a good rainfall/high humidity environment. Diseased aphids have a fuzzy appearance with either a reddish-brown, black or pinkish-white color.

Potato Leafhopper (PLH)
Continue scouting this pest through August. Once August nighttime temperatures cool down, PLH populations will drop off. Scouting and threshold information is provided at: http://crops.extension.iastate.edu/cropnews/2014/06/managing-potato-leafhoppers-alfalfa

DISEASES
Sudden Death Syndrome
This disease is very good at moving its production of toxins in the roots up to the leaves under climatic conditions of above average soil moisture in August. Selective areas are starting to show problems in some fields, while others already have issues over nearly entire fields. Some farmers see this and assume the field is just advancing in maturity, but sorry that is not the case. Advancement in maturity during the R6 stage will have leaves yellowing first in the mid- to lower canopy before leaf yallowing starts to occur in the upper canopy.
Field-wide SDS, but if you look close, you’ll see some dicamba injury as well.

Above, the white pith (down the middle of the stem) with a discolored cortex region is classic symptoms of SDS, whereas Brown Stem Rot would have a brown pith and white cortical region. The interveinal chlorosis leaf symptoms are identical for those two diseases. Scout and take notes for better choices in varietal selection next time the field is planted to soybeans. Here’s a link to more details about SDS and Brown Stem Rot: https://crops.extension.iastate.edu/sudden-death-syndrome-sds

MANURE
Preparing for Fall Manure Applications
Publications to provide tips for improving the performance of a distribution manifold and calibration for land application of liquid manure.
1. Distribution of Liquid Manure Application: https://store.extension.iastate.edu/product/14891
2. Calibrating Liquid Tank Manure Applicators: https://store.extension.iastate.edu/product/6499
A series of publications about Hydrogen Sulphide Safety
1. Manure Agitation:  [https://store.extension.iastate.edu/Product/15107](https://store.extension.iastate.edu/Product/15107)
2. Monitoring:  [https://store.extension.iastate.edu/product/15106](https://store.extension.iastate.edu/product/15106)
3. Barn Ventilation at Cattle Facilities:  [https://store.extension.iastate.edu/Product/15108](https://store.extension.iastate.edu/Product/15108)
4. Swine Barn Ventilation:  [https://store.extension.iastate.edu/Product/15109](https://store.extension.iastate.edu/Product/15109)
5. Practices to Reduce Hydrogen Sulfide from Livestock Operations:  [https://store.extension.iastate.edu/product/6472](https://store.extension.iastate.edu/product/6472)

**WEEDS**

**An Annoying Weed in 2018 – Wild Cucumber**

Last year Wild Parsnip got a lot of attention growing very well in road ditches and other areas. This year its Wild Cucumber having a banner season growing up trees and shrubs, along fence lines and beyond. Wild Cucumber is an annual, so it will winterkill, but it will also have produced a large crop of seed for future annoyance. Apparently it grows very well in warm and wet environments. Fortunately it doesn’t encroach near as much into crop fields as its very troublesome relative Burcucumber. It is shallow rooted and easily pulled out of the ground, which is the generally preferred method to stop its advancement up trees and shrubs around the homestead. For the fence lines and road ditches, a product like 2,4-D is effective; although what’s out there now is already flowered and setting seed. The herbicide works much better at earlier growth stages.

**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 of the remaining meetings in northeast Iowa:

- **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. 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 provided at: [https://www.extension.iastate.edu/Pages/eccrops/meetserc.html](https://www.extension.iastate.edu/Pages/eccrops/meetserc.html)

**Sept. 6, Annual Fall Field Day at the ISU Northern Research Farm near Kanawha**
9:30 to Noon. The focus of this field day will be on cover crops. We will discuss cover crop species selection, seeding rates, nematode impacts from cover crops, soil health benefits from cover crops, termination strategies, cover crop impacts on crop diseases and nitrogen management. Stay tuned for more details.

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