

IOWA STATE UNIVERSITY

Extension and Outreach

CROP NOTES for August 11, 2020

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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GROWTH & DEVELOPMENT

Corn

Stage	Description of stage	Comments	Time to next stage
R2	Blister (clear liquid in developing kernel)	Maximum vegetative dry matter. Grain dry matter is just starting. Ear is at maximum length. If growing conditions become stressful during R2 and R3 stages, yield reductions would occur from kernel abortion via tipping back of the ears.	~ 8 days to R3
R3	Milk (white liquid in developing kernel)	Outside of kernel is yellow. Starch accumulation increasing.	~ 6 days to R4
R4	Dough	Starch accumulation increasing. Kernel moisture starts decreasing. Once corn reaches R4 stage, kernel number is established and yield reductions caused by stress would be from a decrease in kernel size. Time to start in-field yield estimates.	~ 7 days to initial R5 and 3 more days to ¼ milk line
R5	Dent	Hardening starch causes a depression (dent) in the butt end of kernel. The kernel hardens from butt to tip causing a visual horizontal “milk line” on the kernel face that progressively moves from the butt end to the tip end of the kernel.	
	¼ milk line 	Often begin silage harvest for bunkers. Whole plant is ~70% moisture. 65% DM in the kernel. Grain is ~52% moisture.	~6 days or 120 GDD to ½ milk line
	½ milk line 	Often a silage harvest target for upright stave silos. Whole plant is ~65% moisture. 90% DM in the kernel. Grain is ~40% moisture.	~10 days or 175 GDD to ¾ milk line
	¾ milk line	97% DM in the kernel. Grain is ~37% moisture.	~12 days or 175 GDD to R6

R6	Physiological maturity (black layer)	100% DM in the kernel. Grain is ~35% moisture. This is also good timing for aerial cover crop seeding.	R1 to R6 is ~31 days or 545 GDD
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Soybeans

Stage	Description of stage	Comments	Time to next stage
R4	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.	Rapid and steady dry weight accumulation by the pods. Yield is most sensitive to stresses during R4 to R5.5 stage. Still a timely stage for fungicide application for Frogeye leaf spot & Cercospora leaf blight.	About 10 to 11 days to R5 stage.
R5	Seeds are 1/8-inch long in the pod at 1 of the 4 uppermost nodes on the main stem with a fully developed leaf.	By R5.5 stage, plants obtain maximum height, leaf area and node number. Rapid and steady seed dry weight accumulation.	About 16 days to R6 stage.
R6	Pods contain green seeds that fill the pod to capacity at 1 of the 4 uppermost nodes on the main stem with a fully developed leaf.	Period of rapid, steady seed dry weight accumulation continues until R6.5 stage. Shortly after R6 stage begins, rapid leaf yellowing starts from the lower canopy spreading upward. R6.5 is good timing for aerial cover crop seeding, applying seed to the ground before extensive leaf drop occurs.	About 20 days to R7 stage, which is near physiological maturity.

Seed and pod abortion can occur all the way through R7 stage. That's one more reason why early yield estimates for soybean fields is not very accurate.

Estimating Yield in the Field

Corn

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.

Yield estimate formula: [(number of primary ears per 1/1000th acre) x (number of kernels per row) x (number of rows of kernels)] x 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: <https://crops.extension.iastate.edu/cropnews/2017/08/estimating-corn-yields-using-yield-components>

Soybeans

Seed and pod abortion can occur all the way through R7 stage which is one more reason why early yield estimates for soybean fields is not very accurate.

Yield estimate formula: [(number of plants/ac) x (avg. number of pods/plant on 10 random plants)] x [(2.5 seeds/pod ÷ 2500 seeds/lb.)] ÷ 60 lbs./bu. = bu./ac.

- This equation uses 2.5 seeds/pod; 2500 seeds/lb.; 60 lbs./bu. 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.*
- Examples: With a plant population of 130,000 per acre, 25 pods/plant, 2500 seeds/lb., and 60 lbs./bu.
 1. With 2.5 seeds/pod the estimated yield = 54 bu./ac.
 2. With 3 seeds/pod the estimated yield = 65 bu./ac.

CORN SILAGE HARVEST

Both corn and soybean crops are maturing a bit ahead of normal. I staged some corn fields last week at R3 (milk). It usually takes about 2 weeks to go from R3 to R5 (beginning dent stage), and then a few more days to get to ¼ milk line, thus we might start checking some corn fields whole plant moisture content by later next week.

Harvest Tips (compiled from articles by the University of Wisconsin and University of Minnesota)

- Optimum silage moisture harvest ranges for different structures are: 50-60% for upright oxygen-limiting silos, 60-65% for upright stave silos, 60-70% for bags, and 65-70% for bunkers. Silage too wet may not ferment properly and can lose nutrients through seepage. Silage is too dry when harvested has lower digestibility because of harder kernels and more lignified stover. It also does not pack as well.
- Due to variability among hybrids and growing conditions, use of a commercial forage moisture tester or microwave oven is highly recommended. The kernel milk line can still be used as a guideline when to start sampling plants from the field for more accurate moisture testing. A chipper-shredder and commercial forage moisture tester work well for this. Begin moisture testing when the milk line is 20% of the way down the kernel for horizontal silos, and 40% of the way down the kernel for vertical stave silos. An approximate dry-down rate per day is about 0.5-0.6% per day.
- For unprocessed corn, recommended chop length is 0.375" theoretical length of cut.
- For processed corn, recommended settings are a 0.75" theoretical length of cut with 0.08 to 0.12" roll clearance. The increased cut length reduces horsepower requirements while maintaining optimum particle size. Breakage of cobs and kernels increases surface area which improves digestibility, reduces cob sorting, and results in higher density silage that packs better. A crop processors greatest benefit may be when there are harder kernels resulting from delayed harvest or drought. While crop processors are not cheap, they

generally provide a higher-quality silage product that can increase milk production by about 300 pounds per cow per year.

- Recommended cutting height is generally 4 to 6”, as it maximizes silage yield and milk per acre. Cutting height can be used to adjust moisture content. Cutting at 12 inches decreases forage moisture 3-4%, decreases yield 10-15%, but increases forage quality 8-12%. So overall Milk per acre is only reduced by about 3-4%. This type of management could be significant when working with a custom chopper on their schedule.
- There is potential for high nitrates in drought-stressed silage, especially if harvested within 10 days of rainfall (since rainfall increases crop uptake of soil N). If there is any doubt about nitrate content, test the feed. Silage with high nitrate levels can be managed by dilution with other feeds and also by increasing the cutting height to 12”.
- When harvest begins, fill silos rapidly to reduce exposure of silage to oxygen and to reduce fungal growth. For bunker silos, pack silage as tightly as possible in progressive wedges in depths of 6” or less.

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/>

INSECTS

Second Generation Bean Leaf Beetle (BLB) – *not too concerned*

Early to mid-August is the beginning of increasing populations the 2nd generation BLB. Since 1st generation populations were barely noticeable, 2nd generation populations will likely not be a threat. The threat of damage with 2nd generation BLB is defoliation of leaves (20% threshold) and/or pod clipping (10% threshold).

Potato Leafhopper (PLH) – *stay on top of this pest*

Continue scouting through August. Scouting and management tips are available at: <http://www.extension.iastate.edu/CropNews/2009/0615hodgson.htm> The only way to properly scout for PLH is with a 15-inch diameter sweep net. Once we get into late August with 2 or 3 cool night temperatures the potato leafhopper populations will drop-off.

Soybean Aphid – *spotty outbreaks*

Our typical window for scouting of soybean aphid in northeast Iowa is mid-July through August. ***Speed scouting is the preferred method for scouting. It's simple and quick.*** A free scouting card with instructions is available at:

https://www.ent.iastate.edu/soybeanresearch/files/page/files/2009_speed_scouting_blank_form.pdf

FYI, here's my aphid counts per week for 30 random plants in a local field near Decorah. This field and one other that I have been scouting have a considerably higher infestation than for all other fields that I have scouted in the area. There are always a few 'hot spots' relative to the general pest distribution, thus another reason to scout rather than just treat a field with an insecticide. When scouting, it is easiest to randomly pull a plant out of the ground and hold it underside down to view aphid presence throughout the plant. The majority of the aphids will be in the mid- to lower canopy on the underside of leaves and will be rather small with a whitish color. FYI, photo below. If the 250 threshold is not reached by R6 stage, the field is usually safe from a significant economic loss without treatment.

Date	Crop stage	% infestation	Avg. aphids/plant of infested plants
July 13	R3	62	7
July 20	R4	96	12
July 27	R4	100	54
Aug. 3	R5	100	189
Aug. 10	R5.5	100	507

Threshold is >80% infestation with >250 aphids/plant.



Small white aphids on mature leaves (above) vs. more active aphid activity on developing leaves (below). We count all of them to determine threshold.



DISEASES

Scouting Corn Leaf Diseases

My findings last week:

- Gray leaf spot (GLS) is still the most common of the 3 most threatening leaf diseases in corn (GLS, TS, NCLB).
- Tar spot (TS) findings are still few and far between. Light occurrence in very few fields in Clayton and Dubuque counties in northeast Iowa, and also two fields in Filmore

County, MN. See county postings for Tar spot on the Corn IPM PIPE Network at: <https://corn.ipmpipe.org/tarspot-2/>

- I finally found some Northern corn leaf blight (NCLB), even fewer occurrences than for Tar spot in northeast Iowa.
- Eyespot is in the lower canopy in most every field as it usually is, but in some fields it has advanced nicely to the ear leaf and above.
- I found a couple of occurrences of Southern corn rust last week. It does not overwinter in Iowa, so while it has the potential to be a serious leaf disease, its usually slow to develop this far north. See county postings for Southern rust on the Corn IPM PIPE Network at: <https://corn.ipmpipe.org/southerncornrust/>
- Common rust occurrence is low this season, but otherwise very common to find in northeast Iowa. However, every year it is a minimal threat to yield.

Scouting Soybean Diseases

Take notes in August and September on late season occurrence of diseases like Sudden death syndrome (SDS), Brown stem rot (BSR) and White mold (WM). Note location, severity, soybean variety and field practices. This is important for future selection of variety resistance or other management tactics when planting back into this field. SDS and BSR have identical leaf symptoms of interveinal chlorosis.



You need to split the stem. The above photo is SDS. The pith remains white, but the cortical region can become discolored, especially in the lower stem. The photo below is BSR with a discolored brown pith, but a normal cortical region.



Here is one more photo to compare to two diseases.



FORAGES

Are You Planning a Late Summer Perennial Forage Seeding?

With the recent rainfalls on Sunday and Monday, do we have the moisture to start a late summer seeding? Obviously a judgement call which varies by location. Planting in the first half of August is the usual target in northeast Iowa to start a new alfalfa, alfalfa-grass, or perennial grass stand for forage for next year. The typical steps in the process are provided in a recent ICM News article at: <https://crops.extension.iastate.edu/cropnews/2020/07/planning-late-summer-perennial-forage-seeding>

WEBINARS

Essential Row Crop Management Webinar Series

In July the universities of Iowa State and Minnesota ran a webinar series on some crop production topics. Each 30-minute webinar included a short discussion on a key topic followed by time for questions and answers. If you missed the series when it was first announced, you can view the recorded events at the following link: <https://extension.umn.edu/courses-and-events/essential-row-crop-management-online>

Topics include:

- Tar spot identification and management
- Soybean aphid IPM
- Corn rootworm management
- Soybean gall midge update.

UPCOMING EVENTS

Aug. 6 - Aug. 20, Drought Webinar Series

More than half of Iowa is considered “abnormally dry” and nearly 40% of the state is in moderate to severe drought, with the worst conditions in the west central portion of the state. The webinars will run from 1:00 to 2:00 PM on Aug. 6, Aug. 13 and Aug. 20. Topics will include a general weather update, drought monitor updates, pasture and hay shortages, preparing for silage and nitrates, yield estimates, and end-of-year considerations related to grain quality and storage. Registration is free but is required for participation. For more details, please go to: <https://www.extension.iastate.edu/news/drought-webinars-begin-iowa-july-30>

Aug. 10 & 14, Farm Leasing & Management Webinars for Northeast IA

Free 90-minute webinars, but pre-registration is required at least 24 hours prior to the webinar.

Monday Aug. 10 from 6:00 to 7:30 PM, register at:

<https://register.gotowebinar.com/register/9083678393274286091>

Friday Aug. 14 from 9:30 to 11:00 AM, register at:

<https://register.gotowebinar.com/register/8121407806877403403>

Topics include:

- Farmland management issues
- Legal aspects of farmland leases and terminating a lease
- Cash rental rate and farmland value survey results
- Cost of production considerations
- Methods for determining fair 2021 cash flexible rent
- Tenant – landlord communication
- Submit questions by virtual chat

More information at: <https://iastate.app.box.com/s/n6kdtljqsvvm9pnmgag0c0lhpapwxb2h>

Other meetings across the state at: <https://www.extension.iastate.edu/agdm/info/meetings.html>

Aug. 11-13, Beef Feedlot Short Course, Ames

At the Hansen Agriculture Student Learning Center in Ames. The short course is designed specifically for feedlot managers, employees and industry. The \$350 per person registration fee includes program materials and meals listed on the agenda. The registration deadline is midnight, Aug. 4 or when the course limit of 30 is reached, whichever occurs first. All registrations must be done online. See the short course website for registration, requirements, and other information at: www.aep.iastate.edu/feedlot. The event will follow ISU guidelines to ensure health and safety of all participants. Nearly half of the program is on-farm with other sessions at the ISU Beef Nutrition Farm and Couser Cattle Company in Nevada, Iowa. The program runs from 12:30 PM on Tuesday, Aug. 11 through noon on Thursday, Aug. 13.

Topics include:

- Bunk management and the basics of starting cattle on feed.
- Feed mixing demonstration and evaluation.
- Managing and identifying cattle health issues in the feedlot.
- Facility design and cattle handling.
- Data management.

Aug. 19-28, Swine Building Maintenance Webinar Series

ISU Extension is joining industry partners to offer a 5-part webinar series on the maintenance issues faced by facility managers and maintenance crews. The sessions are geared toward livestock producers, livestock building owners and contractors, facility managers, maintenance crew members, engineers, designers and others interested in techniques for better ventilation, concrete and truss management, and maintenance of swine buildings. Each session is offered from 1:00 to 2:00 PM by Zoom videoconference.

- Aug. 19 – It Is Your Concrete Pit as Well.
- Aug. 21 – Maintenance of Concrete Pits and What to Look For.
- Aug. 24 – Gable End Attic Air Intakes for Roof and Moisture Management.
- Aug. 26 – General Maintenance Tips for Swine Buildings.
- Aug. 28 – Building Truss Management.

The series is offered in collaboration with the Iowa Department of Natural Resources and sponsored by Ag Property Solutions, AgVICE, Hills Bank, Hog Slat, Iowa Pork Producers Association, Marcus Lumber and Pinnacle. Advance registration is required to participate and must be completed by midnight, Aug. 17. Registration is \$20 for all 5 sessions. Payment is online with credit card only. Online registration and additional information is available at www.aep.iastate.edu/building

Aug. 25, Industry Experts Discuss Dairy Outlook, Webinar

Free program, no registration required, starts at noon. The I-29 Moo University Consortium welcomes Rabobank's global dairy strategist Mary Ledman and Vice President of Dairy Research Ben Laine for a discussion on the outlook for the global and United States dairy markets. For more information and the Zoom link go to:

<https://www.morningagclips.com/industry-experts-to-discuss-dairy-outlook/>

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