

CROP NOTES for September 3, 2019

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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WEATHER

Temperature

National Weather Service (NWS) says this week is cooler than normal, and next week is warmer than normal.

Corn GDD for northeast Iowa

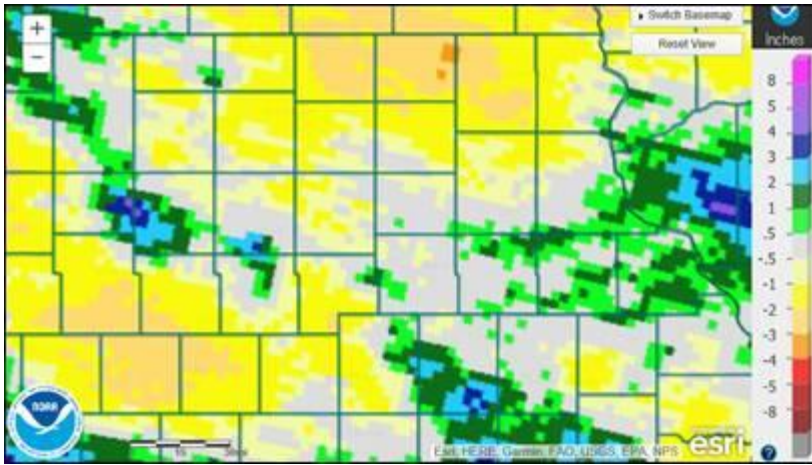
September, week of

	Long-term average GDD/day	2019 expected GDD/day
2-8	15/day, or 105/wk	13/day or 91/wk
9-15	12.5/day, or 88/wk	16/day or 112/wk

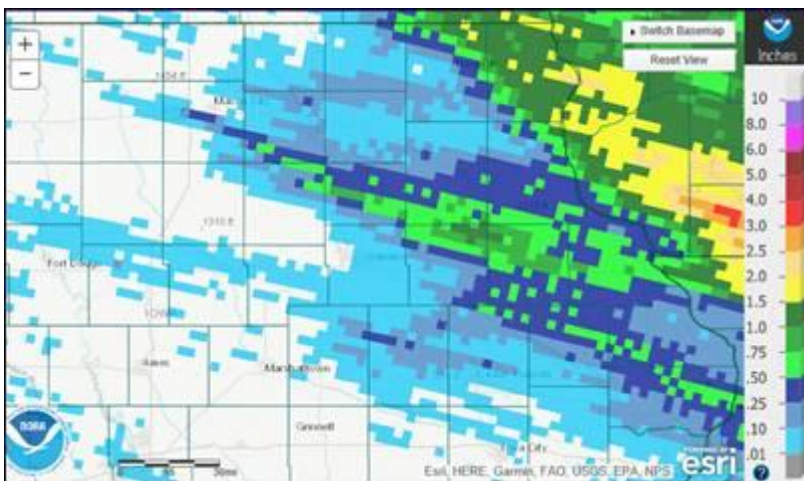
So, in northeast Iowa we can expect about 203 GDD over the next 2 weeks which is about 10 GDD above normal. Nothing ground breaking, but at least it's on the warmer side. And, again, regardless of what you read in the popular press, NWS still says it is absolutely impossible at this time to provide any predictions on frost. The 30-day forecasts show nothing colder than 41F nightly low throughout September, but not that you can really trust a 30-day forecast.

Rainfall

Below is the departure from normal rainfall for August. Some northern tier counties fell short 2-3 inches out of a normal 4.3 inches for the month. Having a full subsoil moisture profile in early summer helped avoid most drought stress problems, but light soils have been showing signs.



The early morning rainfall today helped some areas (map below), but NWS rainfall outlook for fall continues to be quite limited.



SOIL FERTILITY & DRY SOIL CONDITIONS

Soil Sampling Dry Soils Affect Soil K & Soil pH Test Results

This is a really complicated subject to which I will incredibly over simplify and maybe do an injustice to the subject, but... in general... collecting soil samples from a dry soil environment following droughty weather will likely provided soil tests for K and pH below what they would normally test under normal soil conditions, thus providing an under estimation of soil test levels and possibly and higher fertilizer and lime recommendation then what is needed.

Soil pH test readings from a dry soil could be 0.1 to 0.6 units lower than normal. For example, the “normal” reading could be 6.9 and thus no lime requirement, but the reading in a droughty soil could incorrectly be down around 6.4 which could trigger a lime application recommendation. At least 2 inches of rain following the droughty conditions should be enough to bring the soil testing situation back to “normal”.

Soil K test; there are a few issues:

1. Droughty soil conditions increase field crop variability and K soil test level variability. Collecting enough soil samples per unit area will help reduce some of the variability (i.e. one sample per four acres or so, grid-sampling, point sampling, etc.), In addition use yield monitor data to calculate crop nutrient removal information to help interpret field variability.
2. Following droughty weather, it’s better to wait with soil sampling until 2 or more inches of rainfall occur; or wait to soil sample in spring.
3. Regardless of a drought or not, it’s best to wait for at least 1 inch of rain after soybean harvest, and at least 2 inches of rain after corn harvest to account for the K leaching from plant residues in the field to pick that up in the soil test. Soil sampling right behind combine harvest will not provide the best representation of soil K levels in the field. Don’t get me wrong... I am not saying everyone has to wait for rain after harvest to soil sample. Time could be limiting. Let’s just be sure to remember these potential issues when interpreting soil tests and making recommendations. The best thing we could do is develop a long-term trend of soil test results (at least once every 4 years) and crop yields (crop nutrient removal data). Plotting out this data over time would smooth out the year-to-year variability that we often see. Year-to-year variability will always occur. It’s the nature of the beast. Develop and maintain a long-term trend data base and make the year-to-year soil fertility recommendations from that.

CORN

Growth and Development

Always make a note of R1 stage (Silk date) of a corn field or hybrid. Seed companies usually state for their hybrids how many GDD are required from R1 to R6 (physiological maturity or ‘black layer’). The table below provides a rough average of this for different corn relative maturities (RM). For northeast Iowa, average GDD for September is 350. Early October averages about 7.5 GDD/day. And, the average first killing frost (28°F) in northeast Iowa is October 12.

Corn RM, days	Average GDD from R1 to R6 is generally 55 to 65 days
105	1218
103	1192
100	1155

98	1129
95	1091
90	1027

Corn growth & development for reproductive stages assuming silk date of July 22 for 105 RM corn.

Stage	Description of stage	Comments	Days to next stage	GDD to next stage
R5	Dent	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 face the progressively moves from the butt end to the tip end of the kernel.		
	¼ milk line with all kernels initially dented	Often begin silage harvest for bunkers. Whole plant is about 70% moisture. 65% DM in kernel.	~ 10 days	185
	½ milk line	Often a target for silage harvest for upright stave silos. Whole plant is about 65% moisture. 90% DM in kernel.	~ 10 days	175
	¾ milk line	97% DM in kernel. Grain is about 37% moisture	~ 14 days	200
R6	Physiological maturity (black layer)	100% DM in kernel. Grain is about 35% moisture.		

Corn Silage Harvest Tips from UW

See their August 2019 article “*The Normal Pattern of Corn Forage and Grain Development*”. It includes a few nice silage harvest tips such as the one below copied from the following article.

<http://corn.agronomy.wisc.edu/AA/pdfs/A132.pdf> “At some point forage yield is no longer as important as timing harvest at the correct moisture for the storage structure to ensure proper fermentation and preservation. The wettest plant part on corn is the lower stalk, which is also of poor quality (low NDFD) and is high in nitrates. The driest plant part is grain. By raising the chopper cutter bar 12 inches, forage moisture decreases 3 to 4% points. Also, the wettest, poorest quality plant part is left in the field. Forage yield is decreased about 10 to 15%, but forage quality increases 8 to 12%, so that overall Milk per acre is only reduced about 3 to 4%. The effect on forage moisture is significant when the field is scheduled to be harvested by a custom chopper. By adjusting cutting height, the operator can better achieve the optimum moisture for the storage structure. About a one-week shift in harvest timing can be achieved (assuming 0.5% per day drydown rate).”

SOYBEANS

Growth and Development

Soybean growth & development for reproductive stages R5-R8.

Stage	Description of stage	Comments	Time to next stage
R5	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.	By R5.5 stage, plants obtain max. height, leaf area and node number. Rapid and steady seed dry weight accumulation. Final scouting for soybean	About 15 days to R6 stage.

		aphids. If they do not reach 250/plant by R5.5, we ignore them.	
R6	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.	Period of rapid, steady seed dry weight accumulation continues up to the R6.5 stage. Rapid leaf yellowing begins shortly after R6, from the lower canopy spreading upward. Aerial seeding of cover crops usually timed ~R6.5 stage. Drop seed before too much leaf drop.	About 18 days to R7 stage.
R7	Physiological maturity. One pod on the main stem has reached a mature color (tan or brown).	Beginning maturity. Very little yield loss (<2%) if a killing frost occurs at this stage.	About 9 days to R8.
R8	95% of pods have reached a mature color.	Full maturity.	About 7 days to <15% moisture.

K Deficiency Symptoms in Soybeans – Consider Numerous Possible Causes

Some soybean fields are exhibiting K deficiency symptoms in parts of the fields. The symptom is yellowing of the leaf margins that usually begins at the leaf tip and extends down the margins toward the leaf base. Potassium deficiency symptoms develop because plants cannot extract enough K from the soil to meet plant demands. There can be multiple causes.

(1) The most common reason is that soil-test K is lower than optimum for plant growth. A soil test can determine if this is the case.

(2) Anything limiting root development which can limit K uptake could be a cause. Dig plants and evaluate for normal root growth, nodulation, and signs of soybean cyst nematode (SCN).

(a) Root rot; you could send a plant sample to the plant disease clinic: <https://www.ent.iastate.edu/pidc/>

(b) Soil compaction

(c) SCN; when collecting soil for a K soil test, split the soil sample in half and send the other half to the plant disease clinic for an SCN test: <https://www.ent.iastate.edu/pidc/>

(d) Extended wet or dry soil conditions interfere with K uptake by plants

K uptake peaks just before flowering begins. Then K taken up by the vegetative mass is used to supply the large amount of K transferred to the seed during seed development. As much as 60% of total plant K found in the vegetative tissue is transferred to the developing seed. On a weight basis, this results in the soybean seed containing more than twice the K of corn seed. For this reason, deficiency symptoms often are observed during the period from late flowering (late R2) to seed fill (R5 & R6 stages).



ALFALA

Fall Harvest

This time of season there are always questions on when that last cut could be made and still allow enough time to build root carbohydrate before the killing frost. The answers to these questions are usually something like... “its fine to harvest through the first week of September”, and... “we recommend harvesting at least 6 weeks before the killing frost”. On average, the alfalfa killing frost (25°F) in northeast Iowa occurs in the 3rd week of Oct. So there is minimal risk harvesting alfalfa through about Sept. 10 in northeast Iowa. FYI killing frost for the last few years: Oct. 31, 2014; Oct. 17, 2015; close on Oct. 13, 2016 & definite on Nov. 12, 2016; Oct. 28, 2017, Oct. 21, 2018.

While those “good old answers” still work, the more correct answer actually deals with growing degree days (GDD), not the calendar. Researchers now define a risk assessment of fall harvest based on alfalfa GDD. The research basically says as long as the plants accumulate at least 500 GDD from harvest to killing frost, plants should have stored enough root carbohydrate to survive the winter. A nice summary of this research is available at the following web site. The data from Lancaster and Beloit, WI (southern WI) would apply quite nicely to northeast Iowa. <https://fyi.uwex.edu/forages/files/2015/04/Late-Summer-Cutting-Management-of-Alfalfa.pdf> The Lancaster & Beloit data suggest alfalfa harvested through the first week of September is very low risk of winter injury, having plenty of time to replenish root carbohydrates going into the winter. A September 15 harvest could start providing some risk, and a September 21 harvest even more so. These risks do not mean that you will lose the entire stand, but rather would likely lose a percentage of plants and reduction in first crop yield next season because of winter injury and slowed plant recovery in spring.

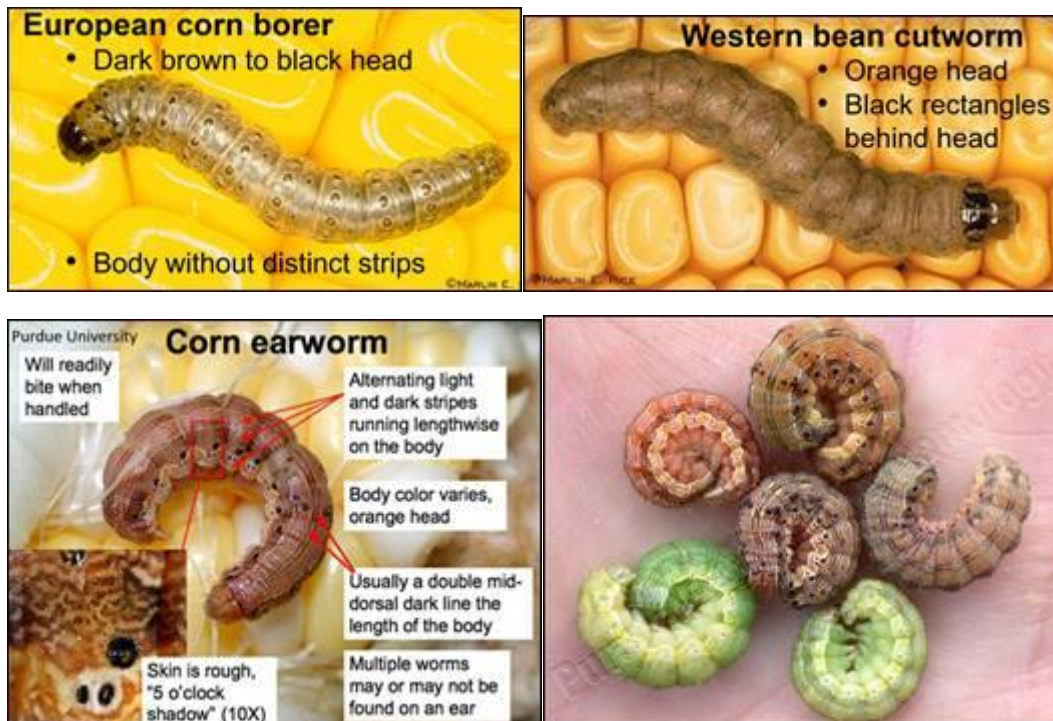
What if you chose to harvest “after the killing frost”? The GDD research says as long as the plants do not accumulate more than 200 GDD from after harvest to before the killing frost, the plants should still overwinter just fine. This means that you do not have to wait for the actual killing frost to occur as long as you are close enough to it when you harvest. *i.e.* Oct. 15 is a good cut-off date where if the killing frost has not occurred yet, it likely will soon, and the weather in late Oct. is usually cold enough that 200 GDD will not accumulate in the time remaining in the fall. A critical issue with harvesting after a killing frost is that little to no regrowth will occur following the harvest, so you want to cut high, leaving a good stubble height (~6 inches) to help trap snow and insulate the plants.

INSECTS

Corn Earworm (CEW)

Late planted corn is a favorite target for CEW moths. If you find heavy CEW pressure in any Bt-traited corn marketed for CEW control, we (ISU & USDA) would be very interested in hearing from you, and possibly spend a day collecting some CEW insects from that field. Bt-traited products marketed for CEW can be found in the “Handy Bt-Trait Table” at: <https://agriflife.org/lubbock/files/2019/05/BtTraitTable-May-2019.pdf>

FYI, CEW identification tips vs. European corn borer (ECB) and Western bean cutworm (WBC). Key features for CEW is an orange colored head, alternating light and dark colored stripes along the body, with body color varying from shades of green to orange to brown. ECB has a black head. WBC has an orange head, but dark rectangles behind the head.



For more information about corn earworm issues with Bt corn, go to:

<https://www.canr.msu.edu/news/identifying-late-season-caterpillars-feeding-in-corn-ears>

DISEASES

Corn

Tar Spot. If you let me know of a suspected Tar spot sighting in your corn field, I am willing to collect a leaf disease sample to send to the Plant Diagnostic Clinic for ID and other research purposes. FYI, Tar spot ID and other information: <https://crop-protection-network.s3.amazonaws.com/publications/tar-spot-filename-2019-03-25-120313.pdf>

Soybeans – Late Season Disease Development

SDS and White Mold. With the late season development we are seeing Sudden Death Syndrome and White Mold. Take notes for future crop planning. Fortunately these diseases are coming in late, and will have considerably less impact on yield reductions than if they started development earlier in the season.

Cercospora Leaf Blight. This disease usually does not show up until R5 stage, maybe late R4 stage in a bad situation or not until R6 stage in a not so bad situation. FYI, photos and information: <https://www.soybeanresearchinfo.com/diseases/cercosporaleafblight.html> Again, take notes, just like with SDS and White Mold. Varietal selection can help with this disease. Because of its late development, it is difficult to target this disease with typical foliar fungicide applications.

EVENTS

Sept 5, ISU Research Farm Field Day, Kanawha

The event starts at 9:30 AM. Topics will include thistle caterpillars, soybean gall midge and soybean aphid management; late season corn diseases; the impact of the late planting and summer growing conditions on crop development; and cover crop management for 2020. Details available at:

<https://www.extension.iastate.edu/news/northern-iowa-research-farm-association-plans-field-day>

Sept 5, ISU Research Farm Field Day, Crawfordsville

The event begins at 5:30 PM with a complimentary meal, and the tour starts at 6 PM. Topics will include water quality improvements, the market facilitation program and an outlook on harvest issues. Details available at:

<https://www.extension.iastate.edu/news/isu-southeast-research-farm-hold-fall-field-day-tour>

Sept 13, Field Day at the Welsh Family Organic Farm, Lansing

The event starts at 10:30 AM with lunch at noon. Topics include: 1) Corn plot tour, 2) Soil improvements, 3) Weed control. The farm is located at 1509 Dry Ridge Drive, Lansing, IA. Contact is Gary Welsh 563-535-7318.

Great River Graziers Pasture Walk Events in Southwest WI

See the full schedule for details at: <https://crawford.extension.wisc.edu/files/2019/04/FINAL-GRGKGI-PASTURE-WALK-SCHEDULE-2019.pdf>

Upcoming events:

Sept 7 near Genoa, WI. Rotational Grazing with Goats: A primer for those interested in working with goats and/or mixed species.

Sept 10 near Soldiers Grove, WI. Discuss silvo-pasture management progress since the pasture walk in 2017, and soil improvement/fertility issues.

Oct 22 near Prosper, MN. Discuss evaluation of grazing and pastures for fall and planning for spring. Considerations for Karst geology/water quality in the Driftless region.

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