

CROP NOTES for July 30, 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>

To be removed from this email newsletter, please email me the request.

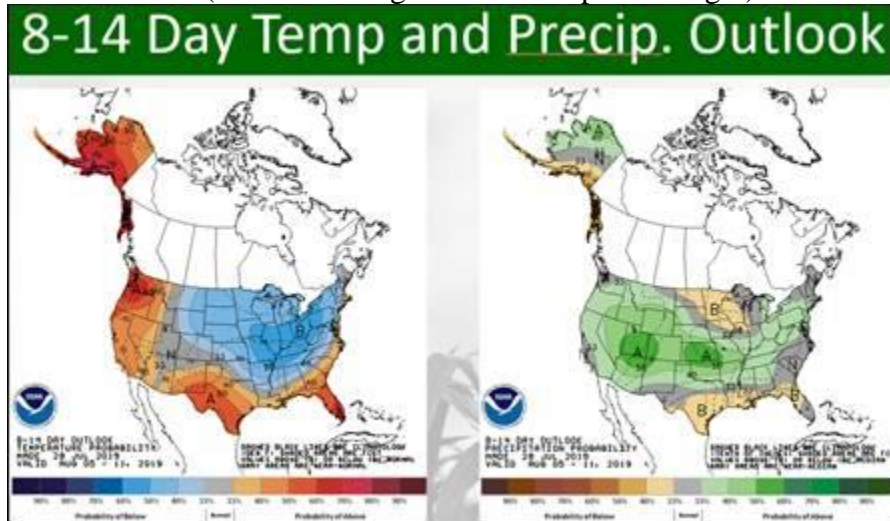
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WEATHER

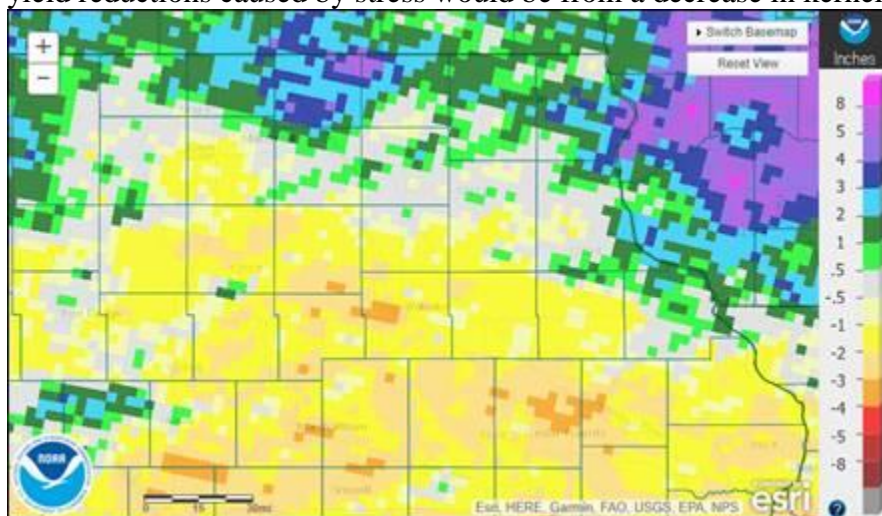
Temperatures Back to Normal or Cooler, and Drier

For the next two weeks northeast Iowa will have slightly cooler than normal GDD/day averaging about 19.2/day this week and 19.4/day for next week, where normal for this week and next week would be 22/day and 21/day, respectively. The outlook also points to a probability of less than normal rainfall for this period for northeast Iowa (tan colored region on the map to the right).



8-14 Day Temp and Precip Outlook 1

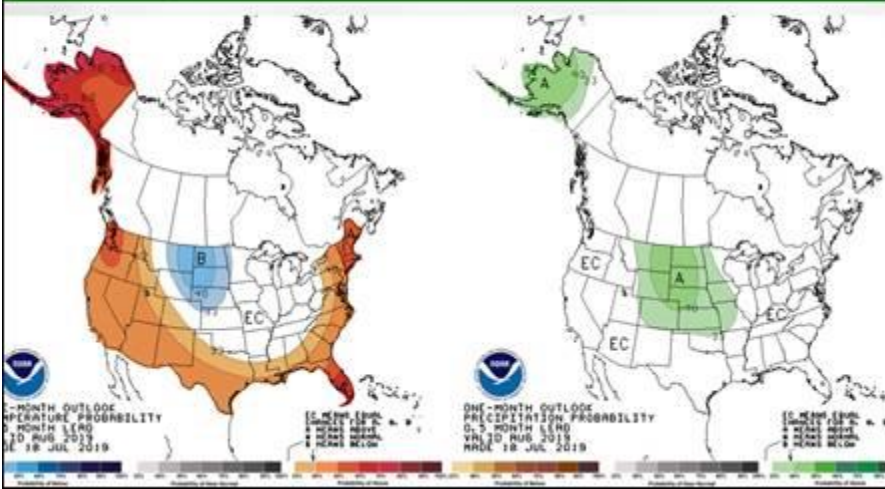
The National Weather Service (NWS) shows July monthly rainfall in northeast Iowa ranged from more than 50% above to more than 50% below normal (Figure below). Counties with a brownish color are getting on the dry side, although subsoil moisture levels are still in pretty good shape and daily high temperatures are moderate. If you see corn leaf rolling, it is conserving water. This is good for extending overall survival, but it can impact yield potential. Every 12 hours of leaf roll probably reduces yield about 1%, and maybe up to 2% as it gets closer to tassel. Towards tassel and through brown silk the yield loss can be anywhere from 5 to 10% for every 12 hours of leaf roll. If growing conditions are stressful during R2–R3 stages, yield reductions are from 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.



July monthly rainfall in Northeast Iowa 1

The 30-day outlook forecasts equal chances of normal, above normal or below normal temperatures, and chances of normal to above normal rainfall. And, regardless of what you read in the popular press, NWS says it is absolutely impossible to provide any frost predictions at this time.

30 Day Temp and Precip. Outlook



30 Day Temp and Precip Outlook 1

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, the average GDD for the month of August is 600, and September is 351. Early Oct. averages about 7.5 GDD/day. And, the average first killing frost (28°F) in northeast Iowa is October 12.

Corn RM, days	Avg. GDD from R1 to R6. 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	Time to next stage	GDD
R1	Silk	Maximum plant height	~ 10 days to R2	220
R2	Blister (clear liquid in developing kernel)	Maximum vegetative dry matter. Minimal grain dry matter.	~ 8 days to R3	170
R3	Milk (white liquid in developing kernel)	Outside of kernel is yellow. Starch accumulation increasing.	~ 6 days to R4	125
R4	Dough	Starch accumulation increasing. Kernel moisture starts decreasing.	~ 7 days to R5 (dent stage)	135
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	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.	Total of 65 days	Total of 1210 GDD

SOYBEANS

Growth and Development

Most soybeans are currently R3 stage, with some late planted soybeans still at R2 stage. A new leaf appears about every 3 days. Soybean fields show remarkable growth this time of season. Timely planted soybeans will produce about 70% of their total season's plant dry weight from mid-July to mid-August. In regards to the lack of rainfall in July in some regions... soybeans respond to drought stress by flipping their leaves so the underside is turned up. If it gets serious, vegetative growth can be diminished, and flowers or pods may be aborted. However, soybeans can set new flowers and pods when conditions improve.

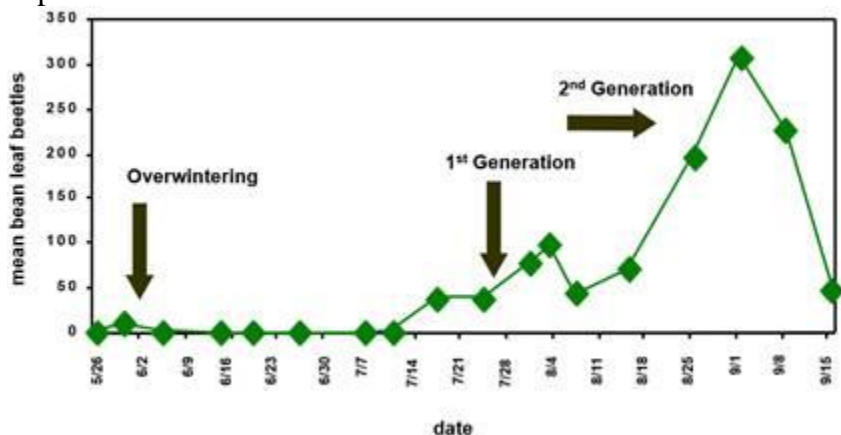
Soybean growth & development for reproductive stages R2-R6.

Stage	Description of stage	Comments	Time to next stage
R2	Open flower at 1 of the 2 uppermost nodes of the main stem with a fully developed leaf.		About 10 days to R3 stage.
R3	A pod at least 3/16-inch long at 1 of the 4 uppermost nodes of the main stem with a fully developed leaf.	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.	About 9 days to R4 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.	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 & Cercospora leaf blight.	About 9 days to R5 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 aphids. If they do not reach 250/plant by R5.5, we ignore them.	About 15 days to R6 stage.
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.	About 18 days to R7 stage, physiological maturity.

INSECTS

Bean Leaf Beetle (BLB)

With BLB, the 2nd generation tend to be the largest threat. The defoliation threshold is 20% defoliation, but there can also be pod clipping in the August-September window. For this we have a threshold using a sweep net explained below.



Sweep net method:

- Walk 100 ft in from field edge and scout each field and each variety separately.
- Take 20 sweeps and determine the number of beetles per sweep. A sweep is about 3 ft. along and into a row of soybeans.
- Repeat the procedure four times for each 20 acres of the field.
- Table 1 shows the average number of beetles per sweep that justifies insecticide treatment for the 2nd generation adults.
- If the number of beetles is below the economic threshold, sample the fields again in another 7 to 10 days.

Table 1. Bean leaf beetle economic thresholds in reproductive-stage soybean.*

Management Cost (\$/acre)									
	\$10	\$11	\$12	\$13	\$14	\$15	\$16	\$17	
\$/bu	Adult beetles per sweep								
\$7	4.45	4.89	5.34	5.78	6.22	6.67	7.11	7.56	
\$8	3.89	4.28	4.67	5.06	5.45	5.84	6.22	6.61	
\$9	3.46	3.80	4.15	4.50	4.84	5.19	5.53	5.88	
\$10	3.11	3.42	3.73	4.05	4.36	4.67	4.98	5.29	
\$11	2.83	3.11	3.40	3.68	3.96	4.24	4.53	4.81	
\$12	2.59	2.85	3.11	3.37	3.63	3.89	4.15	4.41	
\$13	2.39	2.63	2.87	3.11	3.35	3.59	3.83	4.07	
\$14	2.22	2.45	2.67	2.89	3.11	3.33	3.56	3.78	



*Economic thresholds are based on a row spacing of 30 inches and a plant population of eight plants per foot of row. For narrow-row soybeans (8-inch rows) and a plant population of three plants per foot of row, multiply the above economic thresholds by 0.7.

Bird Cherry-Oat Aphid (BCOA)

I received a text yesterday of a BCOA on a corn plant. Now is the time to include this insect with your scouting activity. It's a very spotty pest that will heavily populate only certain corn hybrids. Why? We don't know! It starts its population at the base of the plant, and as the population increases, it moves to the husks. We still lack research on this pest regarding thresholds and best treatments, but suggest that if populations are over 500 per plant and starting to move to the husks, that we should treat. For additional information, and photos well past threshold and a timely treatment, go to: <https://crops.extension.iastate.edu/cropnews/2018/08/check-your-corn-aphids>

Corn Rootworm – Evaluate root injury typically in late July

ISU researchers evaluate CRW trials in late July using the Node-Injury Scale. Dig some plants, knock off the loose soil, put them in a bucket of water for a while (I like to let them soak for 30 minutes or so, then they wash off easy), wash off the soil with a garden hose, and evaluate roots via the node injury scale.

Node Injury Scale:

0 = no injury

0.5 = approximately 5 roots pruned to within 1.5 inches of the stalk.

1 = one complete node (approximately 10 roots) is pruned to within 1.5 inches of the stalk

2 = two complete nodes (approximately 20 roots) are pruned to within 1.5 inches of the stalk

3 = three complete nodes (approximately 30 roots) are pruned to within 1.5 inches of the stalk

FYI, nice color node-injury rating card from the University of Wisconsin my help with your evaluations:

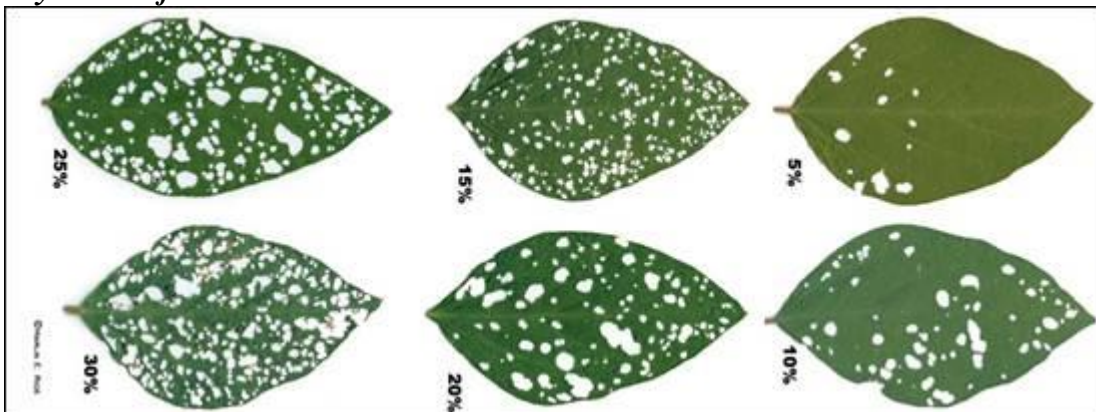
<https://ipcm.wisc.edu/download/pubsPM/Corn-rootRate-card2015hx.pdf> The ISU root injury scale is linear and directly related to plant lodging and yield loss. Root injury that exceeds 0.25 is likely causing economic loss. For Bt hybrids, any injury ratings that exceed 1 would be considered unexpected with suspected resistance issues to the Bt trait. If corn plants are lodging, always confirm the reason why... follow the instructions above to check for node-injury, or maybe it was just lodging due to strong winds.

Japanese Beetles (JB)

Japanese beetle adults are now prevalent across the state and will be here basically through August. Adults emerge from grass in early July and immediately begin to feed on low-lying plants such as roses and shrubs. Adults eventually move to trees and field crop foliage to feed and mate. Mated females move back to grass areas in August and September to lay small egg masses in soil cavities. Just like any defoliator, as we move into R-stage soybeans, 20% defoliation is considered economic threshold. That threshold includes the sum total of any and all defoliators (caterpillars, beetles, grasshoppers). For JB identification, go to:

<https://hortnews.extension.iastate.edu/japanese-beetle>

Soybean Defoliation Chart



In corn, as it starts to tassel, we scout for silk clipping by Japanese Beetles. I don't recall ever having to treat for this yet, but we don't know what the populations will be like for this season. An insecticidal treatment should be considered during silking if:

- There are 3 or more beetles per ear,
- Silks have been clipped to less than ½ inch, AND
- Pollination is less than 50% complete.

Potato Leafhopper (PLH) – Very active

Scout for PLH in alfalfa through August. Scouting and management tips are available at: <https://crops.extension.iastate.edu/cropnews/2019/07/potato-leafhopper-management-alfalfa>

Soybean Aphid

Not much to say about these in that we have found very few fields with some aphids, and in those fields the aphids have remained spotty and at low numbers. However, in early August historically we have experienced a migration of winged Soybean aphids from the north and west into northeast Iowa. Current reports out of Minnesota and northwest Iowa indicate low numbers of soybean aphids, thus the migration threat is low. Even so, it's now time to add soybean aphid to our scouting repertoire until either reaching threshold (250/plant) or reaching R5.5 stage. For scouting, there is the alternative method called "Speed Scouting" which lives up to its name. Its quick and easy, and is explained at:

https://www.ent.iastate.edu/soybeanresearch/files/page/files/2009_speed_scouting_blank_form.pdf If you reach threshold, take into consideration reports of soybean aphid resistance to pyrethroid insecticides (Group 3A). You might want to choose a different chemical family. There are no reports of soybean aphid resistance to organophosphates (Group 1B) and other options just approved by EPA this month, which include: Transform (Group 4C, a sulfoximine), Sinanto Prime (Group 4D, a butenolide), and Sefina (Group 9D, a pyropene). Sefina is labeled specifically for soybean aphid, but not chewing insects. However, it is a safer product to use around bees, other pollinators, and other beneficial insects.

Spider Mites

This insect is never a problem in seasons with regular rainfall. However, they are always worth scouting for in a drought. Will we move into a drought, or will rainfall return? Here is a link to tips on scouting and treatments: <http://cropwatch.unl.edu/2016/managing-spider-mites-corn-and-soybean> In the past, we only used insecticides to control spider mites, but now miticides are also available as control options (Zeal, Oberon, and Onager) and do a better job at controlling eggs and immature stage spider mites.

Thistle Caterpillar

2nd generation activity in progress in mostly in the southwest quarter of the state, but also noted in northwest Iowa. Still light activity in northeast Iowa. Economic threshold for reproductive stage soybeans is 20% defoliation of any and all defoliating insects (caterpillars, Japanese beetles, Bean leaf beetle, Grasshoppers, etc.). Here's some photos and more information about this pest: <https://crops.extension.iastate.edu/thistle-caterpillar>

DISEASES

I am currently finding some Gray leaf spot in many fields, and high levels of Gray leaf spot in a few fields. The current lack of rain in the forecast doesn't favor much advancement of most any leaf disease, but for how long???

Foliar Fungicide Efficacy Table Publications for Corn and Soybeans

These publications are a free download from the *Crop Protection Network*, <https://cropprotectionnetwork.org/resources/publications> You can find most any crop disease information in the latest updated publication at this website.

Soybeans: <https://crop-protection-network.s3.amazonaws.com/publications/fungicide-efficacy-for-control-of-soybean-foliar-diseases-filename-2019-03-25-121546.pdf>

Resistance concerns... A concern with foliar diseases in soybeans is that strobilurins are no longer recommended for *Frogeye Leaf Spot* and *Cercospora Leaf Blight* due to resistance issues. And the strobilurins are of questionable performance on Brown Spot (*Septoria brown spot*).

Corn: <https://crop-protection-network.s3.amazonaws.com/publications/cpn-2011-corn-fungicide-efficacy-for-control-of-corn-diseases.pdf>

Leaf Disease ID for Corn & Soybeans

There are many resources for leaf disease ID. My favorites include Iowa State's IPM 4 "Soybean Diseases" & IPM 5 "Corn Diseases". At \$5 each they can be ordered from your County Extension office, or on line at <https://store.extension.iastate.edu/Product/3975>

For immediate access to disease ID, here is a list of common diseases and excellent photos from the Crop Protection Network <https://cropprotectionnetwork.org/>

Corn Leaf Fungal Diseases

Tar spot: <https://crop-protection-network.s3.amazonaws.com/publications/tar-spot-filename-2019-03-25-120313.pdf>

Gray leaf spot: <https://cropprotectionnetwork.org/resources/articles/diseases/gray-leaf-spot-of-corn>

Eyespot: <https://cropprotectionnetwork.org/resources/articles/diseases/eyespot-of-corn>

Northern corn leaf blight: <https://cropprotectionnetwork.org/resources/articles/diseases/northern-corn-leaf-blight-of-corn>

Common rust: <https://cropprotectionnetwork.org/resources/articles/diseases/common-rust-of-corn>

Southern rust: <https://cropprotectionnetwork.org/resources/articles/diseases/southern-rust-of-corn>

Corn Leaf Bacterial Diseases

Goss's wilt: <https://cropprotectionnetwork.org/resources/articles/diseases/gosss-wilt-of-corn> (sometimes confused with Northern corn leaf blight)

Bacterial leaf streak: <https://cropprotectionnetwork.org/resources/articles/diseases/bacterial-leaf-streak-of-corn> (a look-a-like to Gray leaf spot)

Soybean Leaf Fungal Diseases

Septoria brown spot: <https://cropprotectionnetwork.org/resources/articles/diseases/septoria-brown-spot-of-soybean>

Frogeye leaf spot: <https://cropprotectionnetwork.org/resources/articles/diseases/frogeye-leaf-spot-of-soybean>

Cercospora leaf blight: <https://cropprotectionnetwork.org/resources/articles/diseases/cercospora-leaf-blight-of-soybean>

EVENTS

July 30-Aug 26, 2019 Farmland Leasing Arrangements Meetings, 16 locations in northeast IA

A comprehensive 2.5 to 3 hour workshop that includes: Updated land values & cash rental rates; USDA Farm Bill highlights; Writing and terminating a farm lease; Family & Landlord-Tenant communication; Trends, outlook in farmland leasing; Production costs lease considerations; Methods to set fair rents, flexible leasing. The workshop includes an extensive workbook and other resources. Registration Fee is \$20 per person if pre-registered, and \$25 per person at the door.

- July 30, 1:00 to 3:30 PM, Decorah, at Bank of the West, register 563-382-2949
- July 30, 6:00 to 8:30 PM, Cresco, at Howard County Extension office, register 563-547-3001
- July 31, 1:30 to 4:00 PM, Waukon, at Allamakee County Extension office, register 563-568-6345
- Aug 1, 9:00 to 11:30 AM, Fayette, at Fayette County Extension office, register 563-425-3331
- Aug 1, 1:00 to 3:30 PM, New Hampton, at Chickasaw County Extension office, register 641-394-2174
- Aug 1, 1:30 to 4:00 PM, Mason City, at NIACC, register 641-423-0844

- Aug 6, 1:00 to 3:30 PM, Epworth, at Epworth City Hall, register 563-583-6496
- Aug 6, 6:30 to 9:00 PM, Manchester, at Fairgrounds Community Center, register 563-927-4201
- Aug 8, 9:00 AM to Noon, Charles City, Floyd County Extension office, register 641-228-1453
- Aug 8, 1:00 to 4:00 PM, Tripoli, Bremer County Extension office, register 319-882-4275
- Aug 9, 6:00 to 8:30 PM, Cedar Rapids, Linn County Extension office, register 319-337-2145
- Aug 13, 1:00 to 3:30 PM, Waterloo, Hawkeye Community College, Tama Hall, register 319-234-6811
- Aug 14, 6:00 to 9:00 PM, Elkader, at the Freedom Bank, register 563-245-1451
- Aug 15, 1:00 to 3:30 PM, Osage, at Mitchell County Extension office, register 641-732-5574
- Aug 22, 1:30 to 4:00 PM, Allison, Butler County Extension office, register 319-267-2707
- Aug 26, 1:00 to 3:30 PM, Monticello, Jones County Extension office, register 319-337-2145

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

July 31 & Aug 1, Planning for Profitability in a Changing Dairy Industry, Decorah (July 31) & Rock Rapids (Aug 1)

9:00 AM to 2:00 PM on July 31 at Pinter's Gardens located at 2475 State HWY 9, Decorah; and on Aug. 1 at the Forster Community Center in Rock Rapids.

Key presentations include:

- Cash versus accrual accounting and how it will be affected by changes in the tax laws – presented by Tom Thaden, Eric Hofland and Reggie Hostetler, Agriculture Consultants from the Northwest Iowa Farm Business Association
- Using FINBIN and DHIA data to predict financial success on small-medium sized dairies – presented by Joleen Hadrich, Extension Economist and Associate Professor of Applied Economics at the University of Minnesota
- The value of a risk management strategy – presented by Cassie Monger, Dairy Industry Specialist with Compeer Financial
- Dairy Market Outlook – presented by Fred M. Hall, Northwest Iowa Dairy Specialist with ISU Extension and Outreach.

For more details about the program, registration, etc., go to: <https://www.morningagclips.com/planning-for-profitability-program/>

Aug 3, Home Demonstration Garden Tour Field Day, Nashua

Starting at 4 PM. Discuss 2019 vegetable & flower cultivars, gardening tips, food-bank project. Emphasis on growing cut flowers, sweet corn and tomatoes. Here's the news release with additional information:

<https://www.extension.iastate.edu/news/demonstration-garden-field-days-will-offer-tips-statewide>

Aug 15, Crop Disease Clinic at the Field Extension Education Laboratory near Boone

9:00 AM to 3:30 PM. A one-day clinic focusing on understanding common crop diseases of corn and soybeans, their identification, and management options. Details available at: <http://www.aep.iastate.edu/disease/>

Aug 20-22, Iowa Drainage School, Nashua

Three-day workshop on design, installation and maintenance of drainage systems held at the Borlaug Learning Center on the ISU Northeast Research near Nashua. For more information, go to:

<https://www.extension.iastate.edu/news/iowa-drainage-school-focuses-drainage-systems>

Aug 21, Dairy Pasture Walk, Garnavillo

11:00 AM to 2:30 PM at the Andy Schaefer farm, 25037 Lake Rd., Garnavillo, IA. Participants will get an up-close look at pasture renovation, brush control and the overall economics of dairy grazing. For more information, please read the news release at: <https://www.extension.iastate.edu/dairyteam/dairy-pasture-walk>

Aug 28, ISU Research Farm Field Day, Nashua

1:00 to 4:20 PM at the ISU Northeast Research Farm, 3327 290th St., Nashua, IA.

Agenda:

- 1:05 pm, Steve Johnson, Farm Management Specialist, “Crop Price Risk & Cash Flow Management”.
- 1:55 pm, Prashant Jha, Weed Specialist, “ISU weed science research and extension program: 2019 and beyond”.
- 2:45 & 3:30 pm, Antonio Mallarino, Soil Fertility Specialist, “How results from long-term PK rate studies influence soil tests and interpretations”.
- 2:45 & 3:30 pm, Erin Hodgson, Entomologist, “Concerns with corn and soybean insect pest resistance to insecticides and Bt-traits, and update us on 2019 Soybean gall midge research”.

The field day is free and open to the public. It starts at the Borlaug Learning Center Headquarters on the ISU Northeast Research Farm and Demonstration Farm. 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. Free CCA credits will be available (1 CM, 1 NM, 2 PM). For more information about the event, call Terry Basol at 641-426-6801.

Sept 5, ISU Research Farm Field Day, Kanawha

More information to follow.

Sept 5, ISU Research Farm Field Day, Crawfordsville

More information to follow.

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