

VEGETABLE CROPS HOTLINE

A newsletter for commercial vegetable growers prepared by the Purdue University Cooperative Extension Service



Issue: 650
August 30, 2018

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Downy Mildew Update

(Dan Egel, egel@purdue.edu, (812) 886-0198)

Cucurbit downy mildew has been observed on cucumber in LaPorte County and LaGrange Counties, in northern Indiana and Knox County in the southwest. Downy mildew of cucurbits has also been reported in Kentucky and Michigan. See this article (<https://vegcropshotline.org/article/cucurbit-downy-mildew/>) in the last *Hotline* issue about details of downy mildew.

Whether growers manage for downy mildew at this late date will depend on when last harvest is anticipated. Cantaloupe and watermelon growers who plan a final harvest at or close to Labor Day should not have to apply any specialized fungicides. Pumpkin growers often start to harvest in early September. Such growers will have little to worry about from downy mildew. However, cucurbit growers who anticipate harvesting fruit that is still developing may want to consider products that were discussed in the last issue of the *Hotline*. Remember, downy mildew doesn't affect the fruit directly. Downy mildew affects fruit development by reducing foliage. Note that jack-o-lantern pumpkins require 60 to 90 days from pollination to market maturity. First frost over much of Indiana will occur in mid-October.

Plectosporium Blight of Pumpkins

(Dan Egel, egel@purdue.edu, (812) 886-0198)

Before writing this article, I went back to an old article from 2015. In 2015, I had written, Plectosporium blight was more severe than normal. In 2018, I have also observed more Plectosporium blight than usual. It is not clear to me why this disease seems to be more widespread compared to recent seasons. However, it makes sense to review Plectosporium blight here.

I would rank Plectosporium blight behind powdery mildew, bacterial leaf spot and Phytophthora blight in economic damage caused. The occurrence of this disease is usually sporadic. However, when it occurs, it can cause yield loss if left uncontrolled. Plectosporium blight can be recognized from the light tan spindle shaped lesions on stems and leaf petioles (Figure 1 and 2)



Figure 1. Plectosporium blight can cause spindle shaped lesions on the stems of pumpkins.



Figure 2. Plectosporium blight may cause fruit quality loss due to lesions on handles.



Figure 3. Plectosporium lesions on pumpkin fruit are less common.

Lesions on leaves may be dimple like. Lesions may also occur on the fruit (Figure 3), although these symptoms are less common. Yield loss is most often caused by lesions on the stem adjacent to the fruit—the pumpkin handle (botanically known as the peduncle). Yellow squash and zucchini squash are also affected. When lesions occur in large numbers they can give a light gray or white appearance to the foliage. Usually, the lesions affect only the appearance of the foliage or fruit. Infrequently, the lesions can become so severe on young plants that individual leaves or vines may wilt.

This disease may be managed through a combination of cultural and fungicide treatments. Crop rotations of 3-4 years and fall tillage will help keep the crop residue to a minimum. A regular contact fungicide program will also help to keep Plectosporium blight in check. My fungicide schedule [purdue.ag/pumpkinfs](https://ag.purdue.edu/arge/swpap/Documents/fungicide%20Schedule%20pumpkin%20Updated%20March%202018.pdf) (<https://ag.purdue.edu/arge/swpap/Documents/fungicide%20Schedule%20pumpkin%20Updated%20March%202018.pdf>) for pumpkins lists the systemic fungicides Cabrio[®], Inspire

Hollowheart of Watermelons

(Wenjing Guan, guan40@purdue.edu, (812) 886-0198)

Hollowheart of watermelons is a physiological fruit disorder. Flesh separates inside of the fruit, typically forming three gaps (Figure 1 and 2). In severe cases, hollowheart could cause watermelon load rejection.

Watermelon fruit that has hollowheart tends to be triangular shaped. Poor pollination is the primary reason causing hollowheart. Scientists were able to prove that seedless watermelons are more likely to develop hollowheart when the pollenizer plants (diploid watermelons) are located further away from the seedless plants. The study found hollowheart incidence starts to increase when the distance between the seedless plant and the pollenizer plant is more than 6 feet.



Figure 1. A minor symptom of hollowheart.



Figure 2. A severe case of hollowheart watermelon. Note the fruit is triangular shaped.

Cold weather and the lack of bee movement during pollination period causes poor pollination and increases the chance of hollowheart. Some growers use mixed pollenizer plants with different flowering peaks to ensure availability of pollen matching the blooming period of seedless plants.

Bumblebees, in addition to honeybees, are sometimes used; bumblebees are relatively more active at relatively low temperatures and low light intensity conditions.

In addition to poor pollination, water and fertility management are also believed to affect the incidence of hollowheart. The assumption is that hollowheart is caused when the fruit inner cells can not keep pace with the expansion rate of the rind. This situation is more likely to occur on 'forced' plants, for example, plants with excessive fertilizers.

Incidence of hollowheart occurs more frequently in crown-set fruit compared to lateral-set fruit. Part of the reason is that crown-fruit have larger intercellular spaces with fewer and larger cells. Another reason is that crown-fruit set earlier in the season when environmental factors such as low temperatures are more likely to affect pollination.

Although hollowheart symptoms are observed on both seedless and seeded watermelons, seedless watermelons tend to have more hollowheart than the seeded watermelons. Under the same environmental conditions, yellow and orange-fleshed watermelon varieties tend to have the most severe hollowheart symptoms. Among typical seedless watermelon varieties, a negative correlation existed between watermelon flesh firmness and the ratings of hollowheart. Firmer fleshed-watermelons tend to have lower ratings of hollowheart.

Corn Earworm Late Moth Flight Quite Impressive

(John Obermeyer, obe@purdue.edu)

Corn earworm moth numbers have been relatively low this season until recently, as numbers have exploded in pheromone traps. These moths will lay their eggs on numerous crops, with late-market sweet corn being particularly vulnerable at this time. Tomato and pepper growers should also be aware of the potential for earworm (also called fruitworm) damage, especially if these crops are surrounded by cornfields that are drying down and are no longer attractive for egg laying.



Hartstack trap for corn earworm in sweet corn field. (Photo by: Kira Albright)

High Salinity Levels May Affect Tomato Production in High Tunnels

(Wenjing Guan, guan40@purdue.edu, (812) 886-0198)

I visited a few high tunnels around the state recently and used a hand-held soil electrical conductivity (EC) meter to test soil salinity levels inside of the structures. Although the hand-held EC meter may not give ratings as accurate as a soil test lab could provide, I had comparative ratings from several farms. Interestingly, by talking to growers, I found tomatoes grown in the high tunnels that have relatively high EC ratings seem to suffer more problems in the past season. In most cases, the unhealthy plants have been taken out of the tunnels by the time I visited (in early August). In one situation, the farmer reported flower abortion and a lot of blossom end rot. In another situation, the farmer described a widespread leaf spot symptom that was not a disease. He followed the recommendation based on plant tissue analysis, but the problem was not solved. In the third situation, tomato plants were still growing in the tunnel, but the plants were stunted and they were suffering from

several pest problems. Although these problems may be not directly caused by high soil salinity, it is likely that the high salt levels in the soils facilitate the development of these problems. Since excessive fertilizers applied inside high tunnel/greenhouse can not be washed away by natural rains, high salinity is more likely become a problem inside these structures.

Effects of salinity on plant growth

Salinity reduces water availability for plant use, inducing water stress, which could cause stunted plant growth and other plant physiological issues. Another effect of high salinity on plant growth is when the excessive amount of salt enters the plant, it disturbs the nutrient balance and injures plant leaf cells.

Salinity problem may be overlooked on established tomato plants

Salinity problems normally can be detected if the level was in an extremely high range that injures or kills the newly planted seedlings. Earlier this season, we saw a greenhouse with tomatoes that did not develop any new roots after having been planted for a month (Figure 1). In this situation, the soil salinity level turned out to be very high. Salinity problems may be overlooked, however, when tomato plants have been established. Partly because other issues such as disease, insect or nutritional disorders may accompany the less healthy plants at this stage.



Figure 1. Stunted growth of tomato plants due to salt damage.

Soil test and data interpretation

If growers suspect the soils inside the high tunnel/greenhouse have high salinity, soil samples should be sent to soil labs for the salinity test. Most soil test labs provide service for basic soil salinity test. However, this service is not always included in the soil test packages. Growers need to be sure to select the test package that includes salinity test.

Correctly interpreting the results are also very important. Information about soil salinity tolerant levels of different

crops is widely available, however, the information is developed from the saturated paste test that mimic soil water contents of the field condition. It is not always practical for soil test labs to conduct the test with saturated paste. Some labs may use 1:2 or 1:1 soil-to-water ratio for measuring electrical conductivity. It is very important for growers to know the method the lab used, and interpret the numbers accordingly. Interpretations of the EC values from soil extracts of 1:2 soil-to-water ratio and the saturated paste can be found in the tables below. These tables were adapted from the University of Georgia Extension '*Soil Salinity, Testing, data interpretation and recommendations*'.

Interpretation of electrical conductivity (mmhos/cm) data from soil extracts (1:2 soil-to-water ratio).

Electrical Conductivity	Rating	Interpretation
0-0.15	Very low	Plants may be starved of nutrients.
0.15-0.50	Low	Plant may be starved of nutrients if soil lacks organic matter. Satisfactory if soil is high in organic matter.
0.51-1.25	Medium	Okay range for established plants.
1.26 - 1.75	High	Okay for most established plants. Too high for seedlings or cuttings.
1.76 - 2.00	Very high	Plants usually stunted or chlorotic.
more than 2.00	Excessively high	Plants severely dwarfed; seedlings frequently killed.

Interpretation of electrical conductivity (mmhos/cm) data from saturated paste extract.

Electrical Conductivity (mmhos/cm)	Rating	Interpretation
0 - 2	Low	Very little chance of injury on all plants.
2 - 4	Moderate	Sensitive plants and seedlings of others may show injury.
4 - 8	High	Most non-salt tolerant plants will show injury; salt-sensitive plants will show severe injury.
8 - 16	Excessive	Salt-tolerant plants will grow; most others show severe injury.
more than 16	Very Excessive	Very few plants will tolerate and grow.

In Search of Aphids

(Laura Ingwell, lingwell@purdue.edu)

Entomologists are looking for the lettuce aphid, *Nasonovia ribis-nigri*. If you are growing lettuce, or other leafy greens, including under protected agriculture structures, please keep your eyes out for aphids. We will be using these insects in research examining pest management strategies in hydroponic vegetable production systems. We are aiming to develop low-input IPM strategies, compatible with organic production, to effectively manage aphid pests. Contact Dr. Laura Ingwell at (765) 494-6167 or lingwell@purdue.edu. Live specimens are needed, we will verify the identification of the species.

Produce Safety Alliance Grower Training

(Scott Monroe, jmonroe@purdue.edu, (812) 886-0198)

Purdue Extension will be hosting a Produce Safety Alliance (PSA) Grower Training on September 28th. The training will be held in the basement of the SWPAP building at the Southwest Purdue Agricultural Center, 4369 N. Purdue Rd., Vincennes, IN 47591.

This program meets the training requirements of the Food Safety Modernization Act Produce Safety Rule. Cost is \$100 and covers course manual, completion certificate, and lunch. Register by going to www.SafeProduceIN.com and clicking on the "Get Trained" option. Participants must pre-register. Registration will be closed on 9/26/18.

For more information, contact Scott Monroe at (812) 886-0198.

The 2019 North Central Region – Sustainable Agriculture Research & Education Grant Opportunities

Farmer Rancher Program

These grants are for farmers/ranchers to explore innovative sustainable agriculture solutions to production, marketing, labor, and other problems. There are three types of competitive grants: individual grants (\$9,000 maximum), Team of Two grants for two farmers/ranchers from separate and distinct operations who are working together (\$18,000 maximum), and Group grants for three or more farmers/ranchers from separate and distinct operations who are working together (\$27,000 maximum). Projects may last up to 24 months. Interested applicants can find the call for proposals online as well as useful information for completing a proposal

at <https://www.northcentralsare.org/Grants/Our-Grant-Programs/Farmer-Rancher-Grant-Program>. Proposals are due on December 6, 2018.

Partnership Program

The Partnership Grant program funded by the North Central Region Sustainable Agriculture Research and Education (NCR-SARE) program is intended to foster cooperation between agriculture professionals and small groups of farmers and ranchers to catalyze on-farm research, demonstration, and education activities related to sustainable agriculture. Partnership Grants are funded for up to 24 months. Up to \$40,000 total funding request per application is allowed. The deadline for Partnership Program proposals is October 24, 2018. Interested applicants can find the call for proposals

online <https://www.northcentralsare.org/Grants/Our-Grant-Programs/Partnership-Grant-Program>

Sustainable farming funding opportunities, find out more, at free S.A.R.E. workshops

Purdue Extension and Indiana SARE will offer free workshops for those interested in applying for a SARE grant. The workshops will take place:

9/11/18: Purdue Extension-Johnson County-First Financial Bank, 1250 N Emerson Avenue, Greenwood, IN 46142, 6-8 pm

9/24/18: Purdue Extension -Hancock County, 802 Apple St., Greenfield, IN 46140, 6-8 pm

10/3/18: Purdue Extension -Monroe County, 3400 South Walnut St. Bloomington, IN 47401, 6-8 pm

10/9/18: Purdue Extension- Newton County, Government Center, 4117 S 240 W Suite 600, Morocco, IN 47963-0678, 2-4 pm

9/25/18: Online webinar/ conference call. Available by phone or computer- 10:00 am- *log in instruction will be sent via return e-mail. Recording to be made available to registrants.*

To register, please complete the registration form located here: <http://bit.ly/INSAREGRANTS2019> or by calling (812) 349-2575. The registration deadline is three days prior to each specific workshop.

If you have questions about the grants and workshops, please contact Roy Ballard, Indiana SARE Coordinator by calling (317) 462-1113 or by e-mail at rballard@purdue.edu. Please contact Roy if you need a hard copy or an email version of the call for proposals. Revisions are made to calls for proposals each year, which means it is crucial to use the most recent call for proposals and application.

Upcoming Events

Southwest Indiana Melon and Vegetable Growers' Technical Meeting

Date: November 15, 2018 5:00 pm to 8:00 pm (EST)

Location: Southwest Purdue Ag Center (SWPAC), 4369 N. Purdue Road, Vincennes, IN

The meeting will start at 5:00 p.m. for board members to discuss topics for the March meeting, which will be held in French Lick, IN. Any member who wants to participate in the discussion is welcome. At 6:00 pm, dinner will be served. Following that, we will showcase variety trials conducted at SWPAC in 2018, which includes seedless watermelons, melons, seeded watermelons, and personal-sized watermelons. Any grower interested in becoming a member is invited to attend. Membership dues are \$15 per year and can be paid at the meeting. To register please call (812) 886-0198. Registration is due by Nov. 7. Any questions, please contact Wenjing Guan guan40@purdue.edu

Save the Date
Southwest Indiana Melon & Vegetable Growers
Winter Meeting
November 15, 2018 5:00 PM
Southwest Purdue Ag Center, Vincennes, IN
(HWY 41 North of Vincennes)

For more information, contact the
Southwest Purdue Ag Program
812-886-0198



Greenhouse and Indoor Hydroponics Workshop

Date: Sept. 5, 2018, 8:00 am-3:00 pm

Location: 625 Agriculture Mall Drive, West Lafayette, IN 47907

The work shop is free. Register at
<https://tinyurl.com/yaxd4k2z>

PURDUE
UNIVERSITY

Extension
HORTICULTURE AND LANDSCAPE ARCHITECTURE

Greenhouse and Indoor Hydroponics Workshop

Wednesday, September 5, 2018
8:00am-3:00pm
(Lunch provided)

Classroom sessions 8am-noon

Deans Auditorium
Pfendler Hall- PFEN 1159
Purdue University, 715 W State St
West Lafayette, IN 47907

Hands-on activities/tours 1:00-3:00 pm

Horticulture Greenhouse
625 Agriculture Mall Drive
West Lafayette, IN 47907



You will learn about best varieties, nutrient recipes, production systems, artificial lighting and temperature needs for hydroponic lettuce produced in greenhouses and indoors. Attendees will tour our latest state-of-the art greenhouse and indoor hydroponic facilities (built this year!) and experience many hands-on activities. Hurry up! Seating is limited!

Registration is free but required

Register Here

<https://tinyurl.com/yaxd4k2z>

Questions? Contact Lori Jolly-Brown
ljollybr@purdue.edu, 765-494-1296 or
Dr. Krishna Nemali, knemali@purdue.edu

Workshop sponsored by:

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2018 Pumpkin Field Day

Date: Sept. 6, 2018 starting at 10:00 am

Location: University of Illinois Extension Ewing Demonstration Center. 16132 N. Ewing Rd; Ewing, IL 62836 (Located 20 minutes south of Mt. Vernon, IL)

The field day is free. Please register by calling (618) 687-1727 or online at <https://go.illinois.edu/pumpkinday2018> by Aug. 31, 2018.

2018 Pumpkin Field Day

Thursday September 6, 2018

Starting at 10:00 a.m.

**University of Illinois Extension
Ewing Demonstration Center**

16132 N. Ewing Rd; Ewing, IL 62836
(Located 20 minutes south of Mt. Vernon, IL)



Presentations Including:

- Variety Trials
- Insect Pest Management
- Pollinator Stewardship
- Disease Management
- Weed Management
- Ornamental Mini Popcorn Variety Trial



Come join us for the 2018 Pumpkin Field Day! In addition to field demonstration plots on disease and weed management, the pumpkin variety trial has expanded to include 75 varieties. Hear from Extension Specialists and Educators on a variety of topics relating to pumpkin production and visit with industry vendors. Make plans today to attend!

Pumpkin Field Day is FREE to the public and lunch is included. However, registration is required. Please register by calling 618-687-1727 or online at: <https://go.illinois.edu/pumpkinday2018> by Friday, August 31, 2018.

Directions:
From I-57, take exit 77 IL 154/Sesser. Head east on IL 154 to IL 37. Turn left (north) on IL 37 for about ¼ of a mile and turn right on Ewing Rd. Take this approximately 3 miles to Ewing and turn left on N. Main St (N Ewing Rd.) in Ewing. Travel about ½ mile and the road to the Ewing Demonstration Center will be on the right. Look for signs.

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COLLEGE OF AGRICULTURAL, CONSUMER
& ENVIRONMENTAL SCIENCES

University of Illinois—U.S. Department of Agriculture—Local Extension Councils Cooperating.
University of Illinois Extension provides equal opportunities in programs and employment.

If you need a reasonable accommodation to participate in this program, contact U of I Extension at 618-687-1727.

Midwest Mechanical Weed Control Field Day

Date: Sept. 26, 9:30 -4:00

Location: PrairiErth Farm, 2073 2000 Ave, Atlanta, IL 61723

Registration is \$20, register online at
www.thelandconnection.org/farmers



2nd Annual
**Midwest
Mechanical
Weed Control
FIELD DAY**

Wednesday, Sept. 26, 9:30 - 4:00

@ PrairiErth Farm
2073 2000 Ave, Atlanta, IL 61723

Registration is \$20 - Lunch Included
Register online at www.thelandconnection.org/farmers

For questions, or to register by phone, please contact Sam Hitchcock Tilton at (414) 213-5337

Come learn the principles and tools for precise mechanical weed control from farmers and researchers.

Demonstration Equipment on display:

Cultivating Tractors:

Hefty G | IH274 | Super C | Oggun
Walk-behind Tractors | all manner of Allis G's

Tools:

Finger Weeders | William's Toolbar System
Reigi/Eco-Weeder | Steerable Tool Bar
Propane Flame Weeder | Lilliston
Flex-tine Weeder | Torsion Weeders
Walk-behind Tractor Cultivators
...AND MORE!!

- See in-row cultivation tools demonstrated in vegetables
- Learn about cultivation in Europe
- Hear from Farmers who are using in-row tools
- Meet with and learn from other growers and company reps

Check us out on Facebook:
[/mechanicalweedcontrol](https://www.facebook.com/mechanicalweedcontrol)



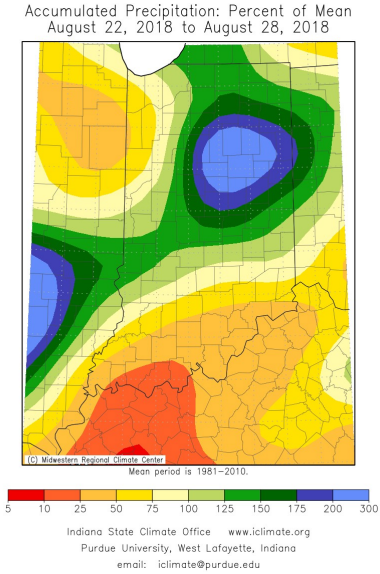
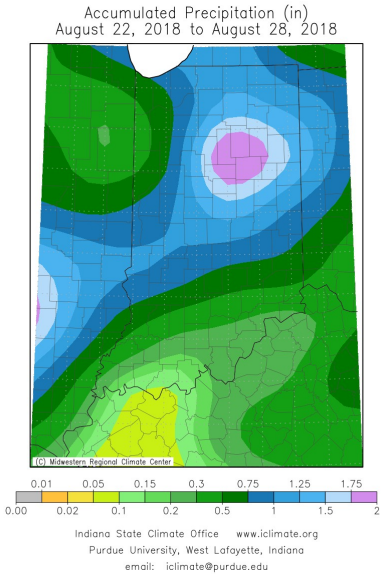
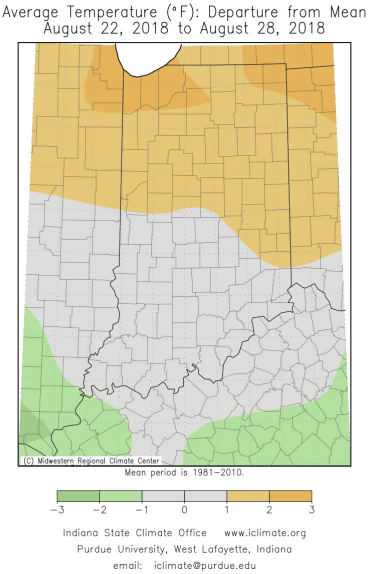
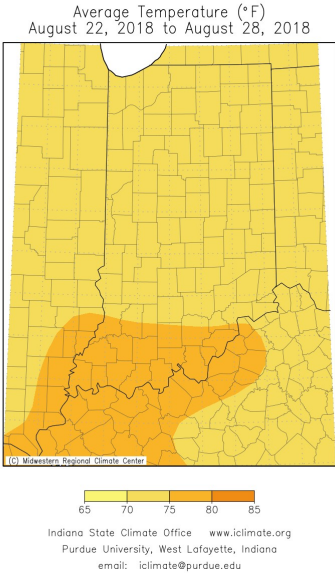
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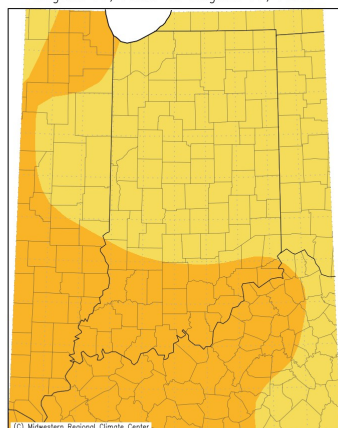


Temperature and Precipitation Aug. 22 and Aug. 28



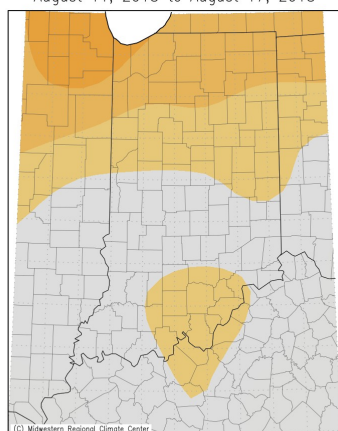
Temperature and Precipitation Aug. 11 and Aug. 17

Average Temperature (°F)
August 11, 2018 to August 17, 2018



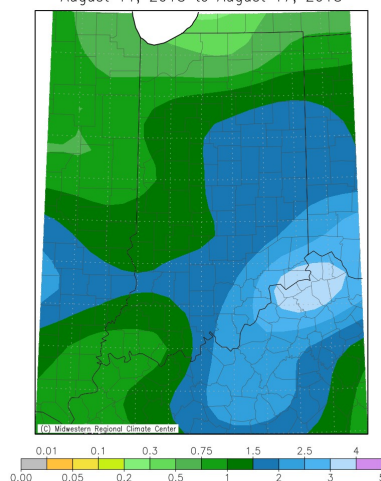
Indiana State Climate Office www.iclimat.org
Purdue University, West Lafayette, Indiana
email: iclimat@purdue.edu

Average Temperature (°F): Departure from Mean
August 11, 2018 to August 17, 2018



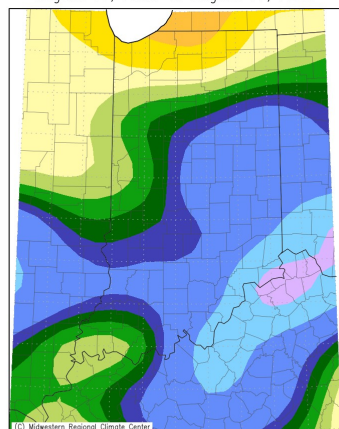
Mean period is 1981-2010.
Indiana State Climate Office www.iclimat.org
Purdue University, West Lafayette, Indiana
email: iclimat@purdue.edu

Accumulated Precipitation (in)
August 11, 2018 to August 17, 2018



Indiana State Climate Office www.iclimat.org
Purdue University, West Lafayette, Indiana
email: iclimat@purdue.edu

Accumulated Precipitation: Percent of Mean
August 11, 2018 to August 17, 2018



Mean period is 1981-2010.
Indiana State Climate Office www.iclimat.org
Purdue University, West Lafayette, Indiana
email: iclimat@purdue.edu



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