

VEGETABLE CROPS HOTLINE

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



Issue: 645
June 21, 2018

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Black Root Rot of Watermelon

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

The wilted and dead leaves of the watermelon transplants in Figure 1 could have several causes. Above ground symptoms such as wilts and leaf death may be caused by problems underground. When I investigated the plants in Figure 1, I found that many of the plants had a root rot. The dark area at the base of the stem (technically, the hypocotyl) is caused by a fungus that is growing in the plant (Figure 2). The fungus also can be found on the roots of the plant.



Figure 1. Black root rot of watermelon can cause the wilt and decline of watermelon transplants.



Figure 2. The dark area at the base of the stem is a result of infection by the fungus *Thielaviopsis basicola*, causal agent of black root rot of watermelon.

This disease is known as black root rot of watermelon. The fungus that causes this disease is *Thielaviopsis basicola*. This fungus causes a similar disease on carrot, tobacco, pansies and many more crops. The dark area on the base of the stem is actually a 'sign' of the disease since the fungus that causes the disease is visible. The wilting and decline of the plant is a 'symptom' of the disease since it is a result of the infection.

This disease can best be controlled by good sanitation. In this situation, the soil-like mix, the plastic transplant trays and/or a piece of equipment became contaminated with the fungus. When the watermelon were seeded in the trays, the fungus began to attack the plants. To avoid black root rot, start with clean soil-like mix and clean or well sanitized equipment and trays.

Tomato Leaf Curling

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

We have received several calls recently reporting observations of leaf curling on tomatoes. Although several factors (disease, insect, herbicide,

environmental stress etc.) could cause leaf curling, in late spring and early summer, we notice the majority of the leaf curling is caused by physiological factors that in general do not directly affect tomato yield and fruit quality.

In a similar way to other vegetables, hot and dry conditions may cause leaf curling on tomatoes. In late spring and early summer, plants that are actively growing and developing fruit have a high demand for water. Under hot and dry conditions, plants respond by rolling the leaves to reduce the surface area exposed to high radiation. Lower leaves on a tomato plant are often affected first, they may recover if environmental stresses are reduced. But with some varieties, leaf curling may occur on most leaves of a plant and last for the entire season. As we mentioned earlier, leaf curling itself due to the environmental stresses is not a significant concern, but if the stress condition continues, it may eventually lead to blossom end rot fruit and decreased yield. There is a great variation among tomato varieties in terms of whether observation of leaf curling suggest the plant is suffering water stress that may eventually affect yield and quality. But as leaf curling is relatively easy to notice, it would be a good idea to check developing fruit for potential blossom end rot if severe leaf curling is detected.

Excessive nitrogen can also cause leaf curling, and the rolled leaves are often thicker and become dark green. The symptom is often noticed on heavily pruned tomato plants and plants that lose growing points. In Figure 1, the tomato plant was pruned and trellised to be grown with two main leader system. One part of the plant showed significant leaf curl because the growing point of this part of the plant was accidentally removed. As long as there are other growing points remaining, the plant can recover, and the leaf curling will only be a temporary observation.



Figure 1. One part of the tomato plant shows leaf curling because of the loss of a growing point.

Except for the margins of the leaves which are rolled up, the leaves generally appear normal for the above-mentioned leaf curling situations. However, if the curling leaves are severely deformed or twisted, herbicide damage may be a concern. In Figure 2., leaf curling is likely caused by a hormone-type herbicide damage (such as 2,4-D and dicamba). The symptom was more pronounced on top of the plants, where new growth occurs. Tomato plants are extremely sensitive to herbicide damage. Depending on the level of the injury, some plants may not be able to recover. There are no remedies for herbicide damage.



Figure 2. Tomato leaf curling which is likely caused by a hormone-type herbicide damage.

Insect or disease damage may also cause tomato leaf rolling. Other symptoms such as mosaic, chlorosis or the signs of the insect itself may accompany with the leaf curling symptom. If you suspect the leaf curling was caused by these biotic factors. Samples should be sent

to Plant and Pest Diagnostic Laboratory for pest identification before taking actions.

Blackleg of Potato

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

This disease has been observed in southern Indiana. Symptoms often begin with dark, wet-looking lesions on the stem (Figure 1). These lesions may extend up the stem and result in the wilt and death of the plant (Figure 2). Occasionally, opportunistic microorganisms invade the stem and produce a disagreeable rotten odor.



Figure 1. Aerial blackleg of potato may start as a small dark lesion on the stem.



Figure 2. Aerial blackleg of potato may cause a dark lesion that extends up the stem.

The conditions that may favor aerial blackleg include dense canopies and warm, wet weather. Overhead irrigation can also be a factor in promoting aerial blackleg.

The bacteria which cause aerial blackleg are *Dickeya*

and *Pectobacterium* spp. These bacteria are often introduced by infected seed potatoes. The bacteria may then spread into the soil and be splashed into wounds or leaf scars. Conversely, the bacteria have been reported to survive 2 years or less in crop debris.

It is important to note that while symptoms of aerial blackleg do not include rot of the seed piece, blackleg may start on the seed piece and travel up the plant. Therefore, examine the seed piece to see where the blackleg symptoms started.

Since the most common method of introducing the bacterium into the field is through potato seed pieces, it is important to consider seed source. Use seed from potato certification programs. Clean and sanitize seed storage facilities. Be careful not to spread the bacteria during cutting operations. Take care to harvest potatoes in good condition.

To minimize aerial blackleg, avoid excessive irrigation and nitrogen fertilization. Products with the active ingredient copper may slow the progress of areal blackleg.

Extension Food Safety Specialist: Consumers can be Confident about Indiana Melon Crop

WEST LAFAYETTE, Ind. – Following the recall of pre-cut melon products sold in eight states – including Indiana – due to possible Salmonella contamination, [Scott Monroe, Purdue Extension](#) food safety educator, is reassuring consumers about the safety of the state's melon crop.

"The recalled melons were grown elsewhere," Monroe said. "The 2018 Indiana cantaloupe and watermelon crops are planted and growing in the southwestern part of the state, but are not yet ready for harvest."

Indiana producers take food safety very seriously, he added.

"There are a variety of practices that reduce the risk of contamination at the farm level," Monroe said. "Among these are testing irrigation water, use of sanitizers in wash water, and employee training programs."

[Amanda Deering](#), clinical assistant professor in Purdue's [Department of Food Science](#), noted that most Indiana watermelons and cantaloupes are produced on

farms where food safety practices are monitored by third-party audits.

"Growers are audited annually to ensure that they are implementing and maintaining aggressive food safety programs on their farms," she said. "In most cases, the requirements of the third-party audits are more stringent than current Food and Drug Administration guidelines."

Monroe said Hoosier melon producers were looking forward to safe, bountiful crop.

"Our Indiana growers are doing everything they can to reduce the risk of on-farm contamination by a foodborne pathogen to the lowest possible level," he said. "In spite of the recent recall, watermelon and cantaloupe lovers across the state will be able to purchase and enjoy Indiana melons with confidence once the 2018 crop is ready for harvest."

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[Agriculture News Page](#)

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Agriculture News

Upcoming Events

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

2018 Indiana Hort Society Summer Field Tour

Date: June 26, 2018

Location: Garwood Orchards, 5911 W 50 South,
LaPorte, IN 46350

Summer Field Tour – fruits and vegetables

Tuesday June 26, 2018
Garwood Orchards
5911 W 50 South
LaPorte, IN 46350

Following the success of last year's Summer Field Tour at Tuttle Orchards, this year we are again planning a combined summer field tour with the Indiana Horticultural Society, the Indiana Vegetable Growers' Association and the Indiana Farm Market Association. We will be hosted by Garwood Orchards in La Porte, IN. While we encourage membership in these industry organizations, all those who are interested are welcome and invited to attend, regardless of membership status.



Garwood Orchards is one of the largest and best managed orchards in the state. It may seem puzzling that they can manage such a large operation and manage it so well. That's why we're visiting – to not only be inspired but learn a few of their tricks and see how they do it. They have aggressively planted new

cultivars and crops and have been on the forefront of adopting new technologies. They are major producers of fruits and vegetables and in recent years have greatly expanded their farm market.

It may seem like quite a drive to travel to the meeting this year, especially for those in southern parts of the state, but I'm confident you'll pick up some good ideas to implement at your farm making the trip worthwhile.

Registration starts at 8:30 a.m.

More information about the field tour can be found at <https://vegcropshotline.org/article/summer-field-tour-fruit-and-vegetables/>

Small Farm Education Field Day

Date: Aug. 30, 2018

Location: Purdue Daniel Turf Center (1340 Cherry Lane, West Lafayette, IN 47907) and Purdue Student Farm (1491 Cherry Lane, West Lafayette, IN 47906)

Registration is \$10. Register here

<http://www.cvent.com/d/hgqx6g> For questions or reasonable accommodation needs, contact Lori Jolly-Brown ljollybr@purdue.edu, (765) 494-1296.



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Extension
HORTICULTURE AND LANDSCAPE ARCHITECTURE

Small Farm Education Field Day

Thursday, August 30th 8:30am-2:00pm

Purdue Daniel Turf Center 8:30-11:30am
1340 Cherry Lane
West Lafayette, IN 47907

Purdue Student Farm noon-2pm
1491 Cherry Lane
West Lafayette, IN 47906



The Purdue University Student Farm is a working small farm. We grow vegetables and herbs using the principles that naturally govern balanced eco systems, including emphasis on diversity, healthy soil, healthy plants, and healthy people. Our educational work is all about food: how to grow it on a small, ecological scale, the art of production and marketing produce for profit, understanding how food intersects with environment, economy and community. The Purdue Student Farm is proud to host its first Small Farm Field Day. The event is packed with educational sessions during the morning, followed by a tour and practical experiences on the farm. Topics of discussion throughout the day include Small Farm Design, Hoop House Production, Organic Nutrient and Pest Management, Social Media and Marketing, Food Safety (Good Agricultural Practices and Fresh Produce Safety - FSMA), and Small Farm Implements. Lunch will be provided by Juniper Spoon.

\$10 registration

Register here <http://www.cvent.com/d/hgqx6g>

For questions or reasonable accommodation needs, contact Lori Jolly-Brown ljollybr@purdue.edu, 765-494-1296



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HORTICULTURE AND LANDSCAPE ARCHITECTURE

Greenhouse and Indoor Hydroponics Workshop

Date: Sep. 5, 2018

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

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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

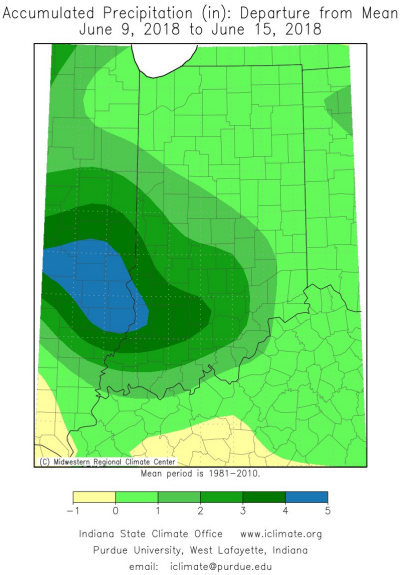
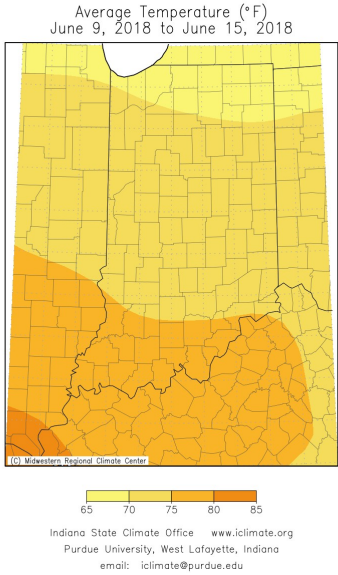
Dr. Krishna Nemali, knemali@purdue.edu

Workshop sponsored by:

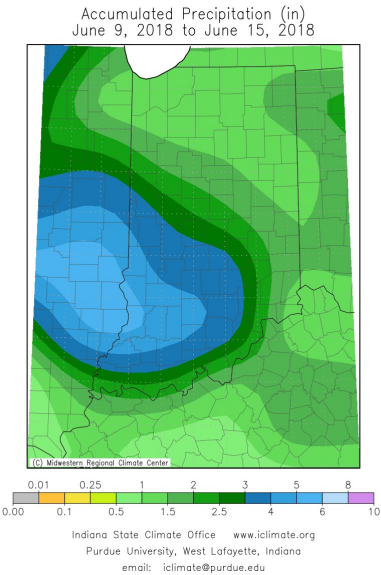
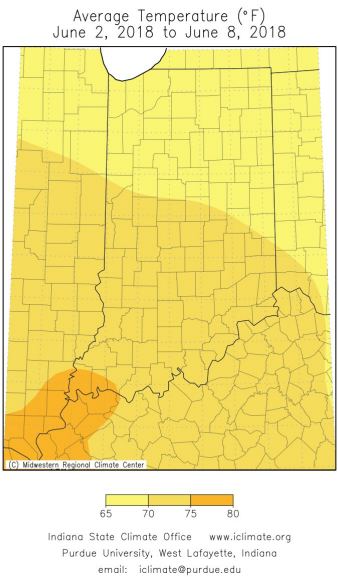
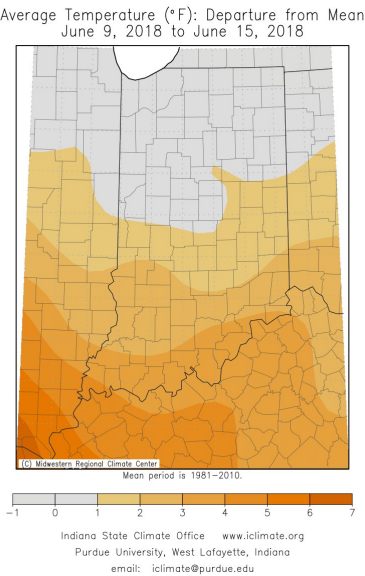
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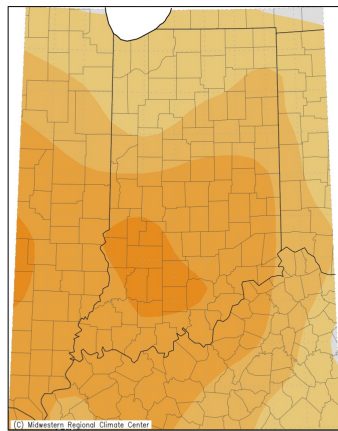
Temperature and Precipitation June 9 and June 15



Temperature and Precipitation June 2 and June 8

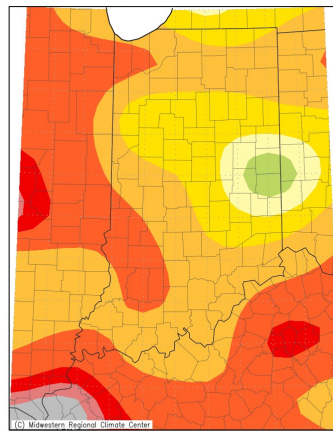


Average Temperature (*F): Departure from Mean
June 2, 2018 to June 8, 2018



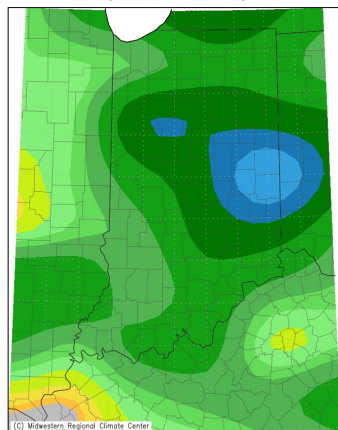
0 1 2 3 4 5
Indiana State Climate Office www.iclimat.org
Purdue University, West Lafayette, Indiana
email: iclimat@purdue.edu

Accumulated Precipitation: Percent of Mean
June 2, 2018 to June 8, 2018



0 2 5 10 25 50 75 100 125 150 175 200
Indiana State Climate Office www.iclimat.org
Purdue University, West Lafayette, Indiana
email: iclimat@purdue.edu

Accumulated Precipitation (in)
June 2, 2018 to June 8, 2018



0.01 0.05 0.15 0.3 0.75 1.25 1.75
0.00 0.02 0.1 0.2 0.5 1 1.5 2
Indiana State Climate Office www.iclimat.org
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