

VEGETABLE CROPS HOTLINE

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



Issue: 646
July 5, 2018

In This Issue

- [Spider Mites on Cucurbit Crops](#)
- [Powdery Mildew of Cucurbits](#)
- [Upcoming Events](#)
- [Temperature and Precipitation June 23 and June 29](#)
- [Temperature and Precipitation June 17 and June 23](#)

Spider Mites on Cucurbit Crops

(Laura Ingwell, lingwell@purdue.edu), (Rick Foster, fosterre@purdue.edu, (765) 494-9572) & (Dan Egel, egel@purdue.edu, (812) 886-0198)

Despite the wet start to the summer that we are experiencing, we have some growers reporting spider mites in field watermelons (Figure 1). This pest is typically associated with hot, dry weather and can be especially problematic in crops grown under protection, such as in high tunnels. Spider mites often move into a field from an adjacent fencerow or rye strip.



Figure 1. Spider mite damage can be recognized by the inter-veinal chlorosis on the leaves, such as on these watermelon plants.

Two-spotted spider mites (Figure 2.) are most commonly a problem on watermelon and cucumbers in high tunnels, but also affect muskmelons. They can be detected by observing the yellowish discoloration on the upper side of the leaves or using a 10x hand lens and scouting on the underside of the leaf for the pest. Alternatively, you may use a white sheet of paper and tap the leaves above the paper to dislodge the

mites; you will see them moving about on the sheet of paper.



Figure 2. Eggs, larvae, nymphs and adult two spotted spider mites.
(Photo by J. Obermeyer)

Because mites often migrate into a field from adjacent habitat, begin scouting on field margins. Dust on plants, from an adjacent gravel road, also provide a thriving habitat for this pest, so scout these areas. Mite populations are often localized within a field, so targeted treatment of the infested area and 100 feet around the outbreak should contain the mites and decrease the costs of treatment. While there is currently no threshold for mite populations, stressed plants can tolerate far fewer mites than healthy plants.

In hot, dry weather mite populations can increase rapidly, up to 70X in a week! Heavy infestations result in a thick webbing appearing on the plant (Figure 3). Therefore, scouting should be done often. Crops that are not irrigated tend to be more susceptible because the nutrients are concentrated in the leaves and the mites can increase more quickly, adding to the already water-stressed damage in the plant. Mite feeding can lead to defoliation in as little as a week or can result in direct damage to the fruit, lowering yield. Mites can feed directly on the fruits themselves, and result in a sandpaper-like texture to the rind.



Figure 3. Webbing produced on heavily infested cucumber leaves by two-spotted spider mite.

There are a number of miticides labeled for cucurbit production and listed in the *Midwest Vegetable Production Guide for Commercial Growers* (ID-56) <https://ag.purdue.edu/btny/midwest-vegetable-guide/Pages/default.aspx>. Agri-Mek® has consistently provided good to excellent control and is a good choice if you have a serious infestation. We have seen good control on cucumbers using Portal®. We have also seen excellent results with one of the newer reduced-risk miticides, Oberon®. For high tunnel applications, be sure to check the label for use in greenhouses; if the label prohibits use in greenhouses it may not be used in high tunnels.

Powdery Mildew of Cucurbits

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

Powdery mildew is a common disease of cucurbits in Indiana. This disease is more common on cantaloupe and pumpkin. However, we have observed powdery mildew more frequently on watermelon in recent years. We have also observed this disease on cucumber in high tunnels. If left uncontrolled, this disease can cause loss of foliage, loss of yield and lower quality fruit. This article will discuss the biology and management of powdery mildew of cucurbits.

Powdery mildew is relatively easy to recognize; talc-like lesions occur on both sides of the leaf (Figure 1). The fungus that causes powdery mildew, *Podosphaera xanthii*, does not require leaf wetness for infection of leaves, only high humidity. The optimum temperature for disease development is 68 to 81°F. *P. xanthii* may survive for a period in crop residue as a resilient fungal structure, but the disease is so easily windborne, that crop rotation is not always a practical control measure. The fungus that causes powdery mildew of cucurbits does not cause powdery mildew on other plant families. In the same way, powdery mildew of other plant families does not affect cucurbits.



Figure 1. The bottom pumpkin leaf has the disease powdery mildew. The top leaf is healthy and has a variegated pattern primarily along the veins.

Fortunately, commercial varieties of pumpkin, cantaloupe and cucumber exist with partial resistance to powdery mildew. Most growers, however, find it necessary to apply systemic fungicides to manage powdery mildew, even when using partially resistant varieties. As far as I know, there are no differences in the susceptibilities of watermelon varieties to powdery mildew.

To avoid additional sprays, cantaloupe, pumpkin and watermelon growers who are worried about powdery mildew and wish to apply fungicides may want to choose products that are effective on more diseases than just powdery mildew. For example, Luna Experience® should be effective on powdery mildew and gummy stem blight. Merivon® should be effective on anthracnose and powdery mildew. Aprovia Top® has proven effective on powdery mildew of cucurbits plus it is labeled on anthracnose and gummy stem blight. However, I don't have any information about how effective Aprovia Top® is on the latter two diseases. Inspire Super®, may not be as effective as the products listed above on powdery mildew, however it should be effective against both anthracnose and gummy stem blight. Similarly, fungicides with the active ingredient tebuconazole (e.g., Monsoon®, Onset®, Toledo®, Vibe®) should have good efficacy against gummy stem blight and moderate efficacy against powdery mildew. For cucumber growers in high tunnels, Luna Experience®, Inspire Super® (label specifies cucumber only for greenhouse use), Monsoon®, Quintec® and Torino® are labeled for greenhouse use. Note that the use of Quintec® may result in a bit of leaf spotting in a greenhouse situation.

More information about powdery mildew management can be found in the *Midwest Vegetable Production Guide 2018* mwvegguide.org. Fungicide schedules for cantaloupe,

watermelon and pumpkin can be found at purdue.ag/melonfs and purdue.ag/pumpkinfs. More information about powdery mildew can be found at

<https://vegcropshotline.org/article/powdery-mildew-of-cucurbits/>. Information about organic powdery mildew control can be found at <https://vegcropshotline.org/article/organic-powdery-mildew-control/>. Finally, always read the label!

Upcoming Events

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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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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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

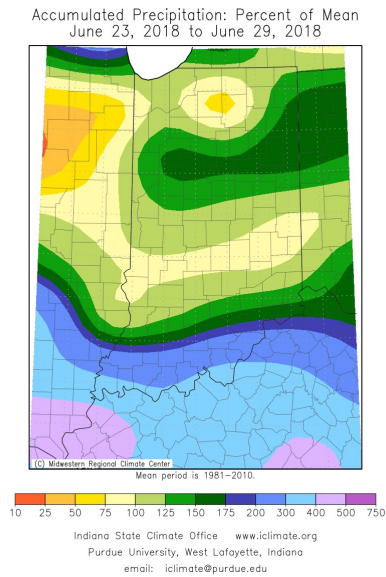
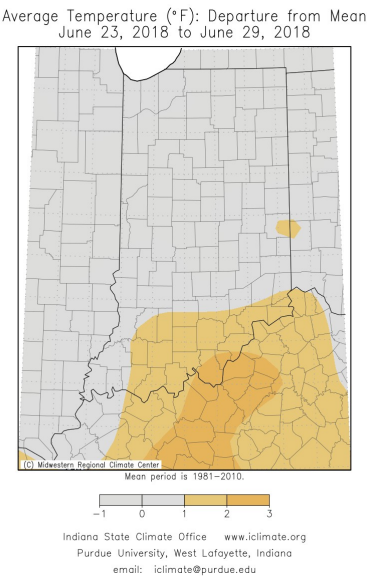
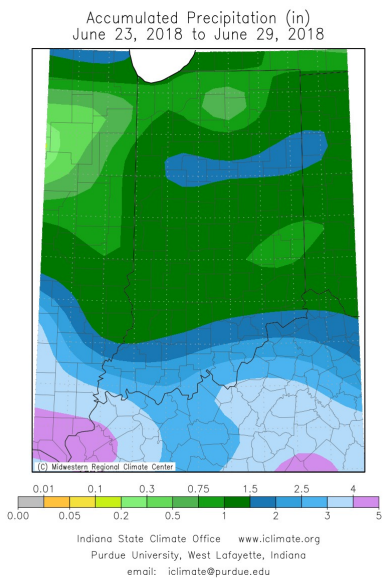
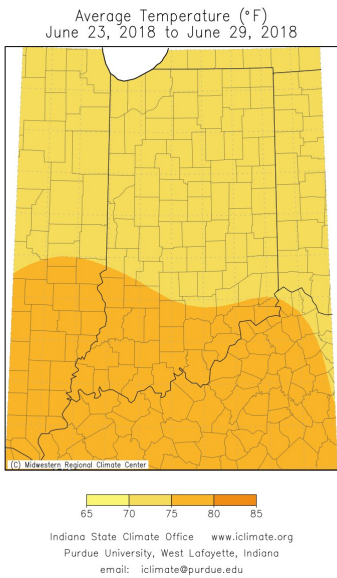
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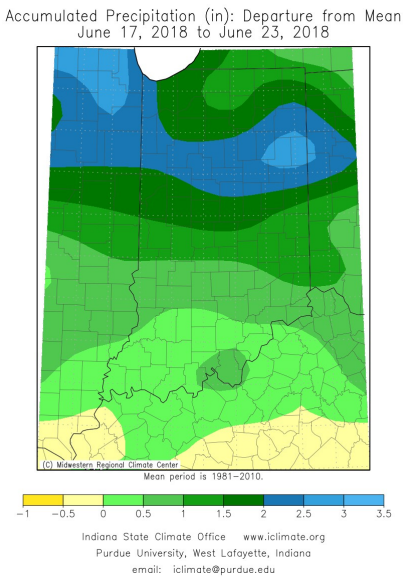
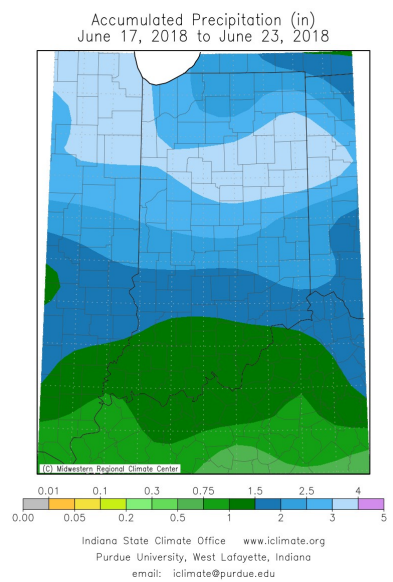
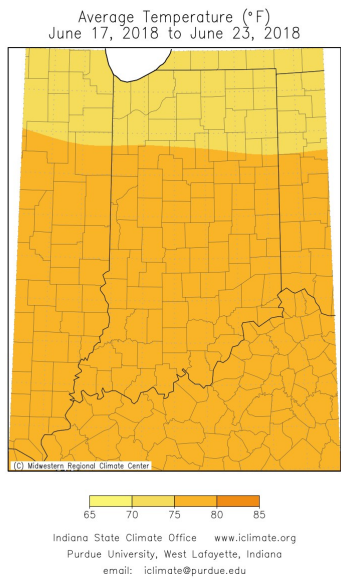
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Temperature and Precipitation June 23 and June 29

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Temperature and Precipitation June 17 and June 23



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