

VEGETABLE CROPS HOTLINE

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



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Do You Need to Squash those Bugs on Your Pumpkins?

(Elizabeth Long, eylong@purdue.edu, (765) 796-1918)

You may be seeing a few “stink bug-like” insects crawling around on your cucurbit crops this time of year. However, these slightly more slender insects are *not stink bugs*, they are actually *squash bugs*. Similarly to stink bugs though, they do give off quite an odor when crushed!

Squash bug adults and nymphs (immatures) (Figures 1 - 3) attack all cucurbit vine crops, especially squash, pumpkin, cucumber, and melon. These insects feed by sticking their needle-like mouthparts into plant parts to sip on sap. Feeding damage by adults and nymphs can cause significant damage to the fruit and foliage: damaged fruits are disfigured and discolored, and leaves may wilt and become brittle and discolored as well.



Figure 1. Adult squash bug laying eggs. Photo by John Obermeyer.

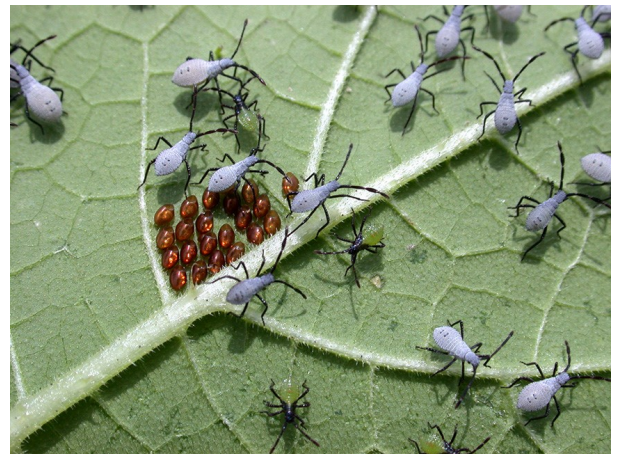


Figure 2. Squash bug nymphs and eggs. Photo by John Obermeyer.



Figure 3. Squash bug nymph on pumpkin. Photo by Liz Maynard.

Generally, squash bugs are not a problem if controlled earlier in the season with insecticides. If not however, it's still possible to see adults, nymphs, and even egg masses on plants as we move into the fall. Feeding by nymphs and adults can still cause serious damage and reduce the marketability of pumpkins. So if you have doubts, continue to scout your pumpkins for all life stages through September. If insecticides are necessary, options include organic products with an active ingredient like Azadirachtin + pyrethrins (for example Azera®), and conventional products with active ingredients Carbaryl (for example Sevin XLR Plus®), Permethrin (for example Ambush®), Bifenthrin (for example

Brigade®), and Esfenvalerate (for example Asana XL®). Insecticides should be focused on nymphs, as they are the most susceptible life stage. Please be sure to consult pesticide labels for pre-harvest intervals.

If you find that you don't need to *squash those bugs*, great! But a task still remains for you: now is the time to focus on removing any excess cucurbit fruits, foliage, or any other plant debris from your fields. This is important because it will eliminate food sources and sheltered places in the field where adults can survive the winter. While nymphs are killed by freezing temperatures, adult squash bugs can survive the winter in protected sites (like plant debris!). Here's to hoping squash bugs won't get in the way of a happy harvest!

Considerations as You Prepare for Winter Production

(Laura Ingwell, lingwell@purdue.edu, (765) 494-6167)

As the days grow shorter and those of you who adventure into winter production begin to prepare your seed starts, keep an eye out for unwanted invaders. Pests such as thrips, mites and aphids may be on the move as our field production dwindles, and nothing is tastier than a tiny new plant! In order to increase the success of winter production, be sure that you are starting with clean plants before you tuck them away under those cozy row covers! Controlling weeds, which can serve as alternative hosts to the aphid pests, will lessen problems of re-infestation. Scout with diligence for aphids, they can be one of the most damaging and hard to control pests during the winter months in high tunnels.

The first step to managing aphids is to develop a scouting plan. Aphids reproduce clonally and develop quickly leading to very large population build-up in a short period of time. When examining plants be sure to look at the growing point and underside of leaves, where aphids prefer to colonize (Figure 1). Outbreaks commonly begin on the outer rows or the start of the row so these are places to be sure to focus your scouting efforts.



Figure 1. Aphids on kale crop. Photos by Liz Maynard.

As you scout, look for those natural enemies, which can help make your job easier. They are also abundant this time of year and would love to overwinter in the comforts of your high tunnels! Lady beetles (Figure 2) have been reported as effective, offering control throughout the colder months, if you can keep them inside

on the crop. In early fall green lacewing larvae (*Chrysoperla carnea*) (Figure 3) may be an additional option for controlling populations. Releasing eggs is not recommended at this time because the cooler temperatures increase the time to hatch, delaying control. Larvae will begin eating aphids when they are released. The cold tolerance of green lacewings has not been examined but we have conducted experiments showing that adults are active and still lay eggs at 11C (51.8°F). Parasitoid effectiveness declines under cooler temperatures and growers have expressed concerns regarding removing aphid mummies from the vegetables and therefore are not recommended (Figure 4).



Figure 2. Lady beetle larvae on spinach leaf. Photo by Liz Maynard.



Figure 3. Lacewing larvae.



Figure 4. Aphid parasitoid on spinach leaf. Photo by Liz Maynard.

When to Stop Spraying Fungicide

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

Many vegetable growers are closing in on the final harvest. Several growers have asked me about fungicide applications late in the season. In this article, I want to address when to stop. To limit the scope of this article, I will concentrate on tomato, cantaloupe and watermelon crops. These are crops where the fruit is consumed, not the foliage.

For most vegetable crops, there is no need to apply a fungicide shortly before the final harvest. Foliage needs to be protected to preserve fruit quality. A plant with reduced foliage will produce a smaller fruit and/or fruit that have fewer sugars and other desirable compounds. I don't know how much foliage needs to be reduced to affect fruit size or quality. However, I do know that for many foliar diseases, symptoms will not be obvious for a week to 10 days. It will take even longer for the foliar disease to significantly reduce foliage. Therefore, for many diseases, it doesn't make much sense to spend good money for a fungicide on a crop that is 2 to 3 weeks before the final harvest.

Examples of diseases that affect foliage, but not fruit directly include: powdery mildew of cantaloupe or tomato, early blight of tomato, Septoria leaf blight of tomato, gummy stem blight of watermelon or cantaloupe, Alternaria leaf blight of cantaloupe. With some rare exceptions, these diseases reduce yield or fruit quality by affecting foliage, not by attacking fruit directly.

Diseases that affect fruit directly may need fungicide applications closer to harvest. A disease that can cause a lesion directly on a fruit can ruin the marketability of the fruit or even cause the fruit to begin to rot in transit. However, most fungicides will remain active in or on the plant for 6 to 7 days even during the most conducive weather. Therefore, an application of a fungicide to protect fruit from direct infection from disease is probably not necessary within 7 days of the final harvest.

Examples of diseases that may affect fruit directly include:

- Anthracnose of watermelon-this disease can cause loss of foliage, but also lesions on the fruit. An infection on the day before harvest could, theoretically, cause a lesion in transit. During weather that is conducive to disease, it makes sense to keep a fungicide on the plant surfaces during the last several days before harvest. Growers that are using the MELCAST system will be able better judge when the weather is conducive for anthracnose.
- Phytophthora blight-this disease affects foliage as well as fruit. As with anthracnose above, a lesion that develops before harvest could start to rot the fruit in transit. Specialized fungicides applied 7 to 10 days before final harvest should protect the fruit.
- Bacterial spot or speck of tomato-lesions of these diseases that occur on the fruit can ruin marketability. Applications of a copper product should help to protect the fruit during the last week or so. Warm, wet weather shortens the disease cycle and increases the likelihood of infection.
- Bacterial spot of pumpkin-this disease can cause pimple-like lesions that may ruin marketability. However, the disease affects fruit during the first 14 days or so after pollination. After this period, infection is much less likely due to changes in fruit maturity. Therefore, copper applications during the last weeks before harvest make little sense.

Blossom-end rot-trick term! BER is not a disease at all. Instead, BER is a calcium deficiency often brought about by uneven moisture in the soil around the root. No amount of fungicide at any timing will help to slow BER. The point is to know what the fruit problem is so that you will know what to do and what not to do to reduce the problem.

Pre-harvest Interval (PHI) – when applying fungicides close to the final harvest or any harvest keep in mind the PHI. Often growers will need to change what fungicide is used when vegetables reach harvest stage. For example, cantaloupe growers may decide to use a fungicide with the active ingredient mancozeb PHI 5 days early in the season (examples include, Dithane[®], Manzate[®], Penncozeb[®], Roper[®]). As harvest grows near, however, a fungicide with the active ingredient chlorothalonil might be used since it has a 0 day PHI (examples of products with chlorothalonil include Bravo[®], Equus[®], Initiate[®]). The PHI for each crop can be found in the fungicide label with the appropriate crop grouping.

Finally, one should be realistic about applying fungicides late in the season. Which fruit have a realistic chance of maturing before the season is over. For many growers, a late season application of a fungicide is not useful.

I am glad to discuss any special circumstances about deciding when to make the final fungicide application.

Purdue Extension Food Safety Training Hub Open House

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

Please join us for the grand opening of the Purdue Extension Food Safety Training Hub, located in the newly constructed Vincennes University Agricultural Center. Located on Highway 41 adjacent to SWPAC, the new facility features lab and office space, a large postharvest research area, classroom and audio-visual room for use in food safety programming.

The event will be held on November 4 from 3:00 – 5:00 pm and will include guided tours, as well as remarks from individuals involved in the project. Light refreshments will be served. Those attending are asked to RSVP at

<http://bit.ly/FoodSafetyGrandOpening> by October 21.



Planning for Educational Programs is Underway: What do You Want to Hear?

(Liz Maynard, emaynard@purdue.edu, (219) 548-3674)

Purdue Extension is planning educational sessions for the Illiana Vegetable Growers Symposium (Jan. 7, 2020 in Schererville), Indiana Horticultural Conference (Feb. 11-13, 2020, in Indianapolis), and others. Your suggestions for topics and speakers that will be useful for your operation help us plan the programs. Phone (219) 548-3674, email emaynard@purdue.edu or text (219) 508-1644 your ideas to us soon! Thanks!

Grant Opportunities from NC-SARE Farmer Rancher Program

This program is for farmers/ranchers to explore innovative sustainable agriculture solutions to production, marketing, labor, and other problems.

This grant is offered as individual (\$9,000 maximum), team of two farmers or ranchers (\$18,000 maximum), or group (\$27,000 maximum). Projects may last up to 24 months. Proposals are due December 5, 2019.

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>

Partnership Program

This 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, 2019. Interested applicants can find the call for proposals online at <https://www.northcentralsare.org/Grants/Our-Grant-Programs/Partnership-Grant-Program>

Indiana Climate and Weather Report

(Beth Hall, hall556@purdue.edu)

The initial cool wave of September is likely over as we welcome warmer temperatures for the next several weeks. The Climate Prediction Center is showing strong confidence for above-normal temperatures through September 24th, which should help accumulate growing degree days and move agricultural production further along (Figure 1). Outlooks are showing significant probabilities for above-normal precipitation over the next few weeks, but it is uncertain how much and when that precipitation will occur. The 3-month (September-November) climate outlook is indicating significant probabilities for above-normal temperatures (Figure 2). This will hopefully discourage any cold waves passing through from causing an earlier-than-desired hard freeze event. However, keep in mind that predictions are still too far in the future to provide any certainty and climate outlooks are unable to account for a brief (1-to-3-day) event from passing through with temperatures low enough to cause a frost. Primary message: still too soon to predict when the first fall frost will occur.

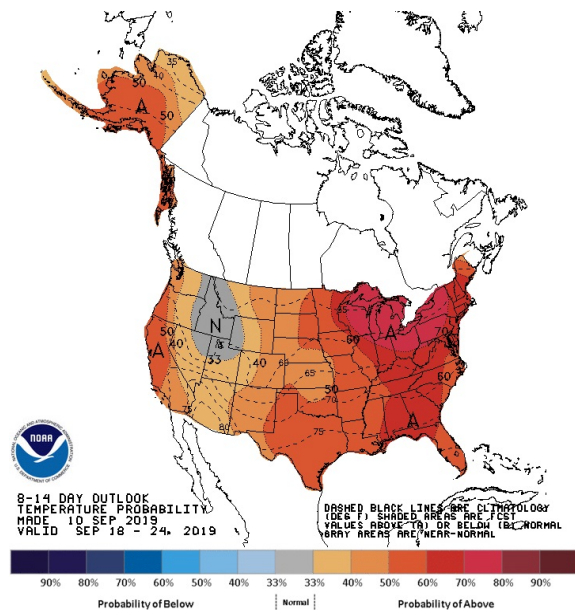


Figure 1.

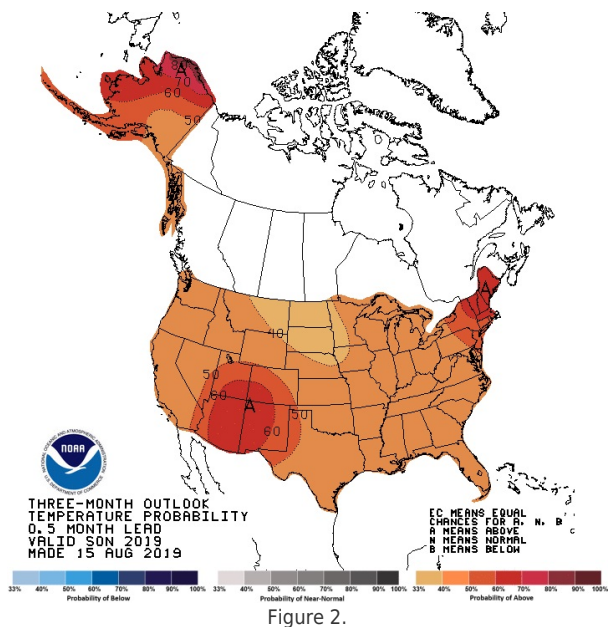


Figure 2.

Upcoming Events

Northwest Indiana Food Council 2019 FarmHop: Local Farm Tour

Date: September 21, 2019, 9 to 4 pm Central Time

Location: Valparaiso or Gary, IN

Valparaiso, IN departure - This widely diverse tour will take you to a lively family farm with nearly 600 egg-laying chickens; an organic tilapia farm; a biodynamic farm producing vegetables, fruits, and flowers; and a homestead with incredible diversity including fruit production, heritage breed animals, and value-added products.

Gary, IN departure - See several thriving urban farms with unique solutions for community food access, a beautiful aquaponics system, an urban farmstead with exotic plants and medicinal garden and a church changing the face of farming with

an abundant supply of homegrown produce!

Tickets are only \$20 for adults or \$10 for kids 12 and under and include a locally-sourced lunch! Plus, adult ticketholders will receive an added bonuses.

Register at: <https://farmhop2019.eventbrite.com> or call (219) 313-8828.

Southwest Indiana Melon and Vegetable Grower's Technical Meeting

Date: November 14, 2019 5:00 pm (EST)

Location: Southwest Purdue Ag Center (SWPAC) 4369 N. Purdue Road, Vincennes, IN 48591

The meeting will start at 5:00 pm 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 watermelon and melon variety trials conducted at SWPAC in 2019. 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 14, 2019 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



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