ILLINOIS Extension

COLLEGE OF AGRICULTURAL, CONSUMER & ENVIRONMENTAL SCIENCES

Illinois Fruit and Vegetable News

Vol. 24, No. 11, July 6, 2018
Editors: Nathan Johanning & Bronwyn Aly

A newsletter to provide timely, research-based information that commercial fruit & vegetable growers can apply to benefit their farming operations.

Address any questions or comments regarding this newsletter to the individual authors listed after each article or to its editors, Nathan Johanning, 618-687-1727, njohann@illinois.edu or Bronwyn Aly 618-382-2662, baly@illinois.edu.
The ***Illinois Fruit and Vegetable News*** is available on the web at: http://ipm.illinois.edu/ifvn/. To receive email notification of new postings of this newsletter, contact Nathan Johanning at the phone number or email address above.

In this issue…

Upcoming Programs

Check the **Illinois SARE calendar** for a full list of programs and links for registration.
http://illinoissare.org/ and http://illinoissare.org/calendar.php
Also see the **University of Illinois Extension Local Food Systems and Small Farms Team's website** at:
http://web.extension.illinois.edu/smallfarm/ and the calendar of events at
http://web.extension.illinois.edu/units/calendar.cfm?UnitID=629.

- **Southern Illinois Summer Twilight Series: Karl Sweitzer Produce, Monday, July 16, 2018 6 p.m. 50 Aldridge Rd, Cobden, IL 62920.** This third twilight meeting of the summer series will cover vegetable production (summer & fall), succession planting, and marketing through farmers markets. For further information contact Bronwyn Aly at baly@illinois.edu or 618-695-6060. The other dates for the series are listed below:
    - **Cahokia Rice, McClure, IL August 20, 2018**
- **Produce Safety Alliance Grower Training Course, Monday August 13, 2018 8 a.m. – 5 p.m. Jefferson County Extension Office, 4618 Broadway, Mt. Vernon, IL.** For more information on this grower training and to register visit http://go.illinois.edu/PSAMtVernon2018 or contact Laurie George at ljgeorge@illinois.edu or 618-242-0780. Registration will close on July 27, 2018. **There are a limited number of seats available for this training.** Once the course is full, registrations will close.
- **2018 Pumpkin Field Day, Thursday, September 6, 2018, 10 a.m.** Ewing Demonstration Center (located about 20 minutes south of Mt. Vernon, IL) 16132 N. Ewing Rd. Ewing, IL 62836. Pumpkin Variety & Pest Management trials, No-till Production and more! Save the date; more details to come! For additional information contact Nathan Johanning at 618-687-1727 or njohann@illinois.edu.

- **Midwest Mechanical Weed Control Field Day Wednesday September 26, 2018 PrariErth farm in Atlanta, Illinois.** Visit https://thelandconnection.org/farmers/mechanical-weed-control-field-day-2018 for more details and information about the field day as time gets closer.

News and Announcements

Brown Marmorated Stink Bug Management Survey for Commercial Producers

A nation-wide survey is currently underway to gather information from farmers and growers on the economic impact of the brown marmorated stink bug (BMSB) on agriculture. The objective of the survey is to better provide you with the help you need in managing this pest. We'd like to find out when BMSB became a problem for you, where you currently get information on how to control them, how much damage you have suffered, your use of and interest in various management practices, and your feelings about biological control methods and their potential for your operation. The results of the survey will be used by Extension programs across the United States to fine tune management advice for the BMSB and help prioritize research and outreach activities.

If you'd like to participate, the survey should take you about 20-25 minutes to complete. Your individual survey responses will be confidential and the data collected will only be reported in summaries. Your participation is voluntary and you can decide not to answer a given question if you choose.

The link to the on-line survey along with more information about the survey can be found on the StopBMSB.org website (http://stopbmsb.org/go/BfxA).

If you have any questions about the Brown Marmorated Stink Bug Management Survey for Commercial Producers, please contact Jayson Harper by e-mail at jkh4@psu.edu or call 814-863-8638

Illinois Summer Winegrowing Workshop

Coming to a location near you July 17, 18 & 19

This regional winegrowing workshop will be held in three locations; Alto Pass, Ursa and Galena, Illinois. The latest methods will be presented for bringing back weak or winter-injured vines, managing summer fruit rots, selecting grape varieties compatible with both wine making goals and climate stresses, and adapting viticulture practices for rosé production and better soil health. The featured speaker will be Professor Imed Dami from the Ohio State University. Professor Dami has a wealth of research and extension experience with Midwest viticulture and was state viticulturist in Illinois during the rapid expansion period from 1999 to 2004. Additional presentations will be made by Dr. Elizabeth Wahle, University of Illinois Extension Educator; Brad Beam, private consultant and Illinois Rosé project lead; and Associate Professor Brad Taylor, Southern Illinois University. There will be opportunity for participants to share their practical experiences with this season's growing and wine making challenges and walk through the host vineyards. Please take advantage of this great opportunity!

WORKSHOP SCHEDULE:

•JULY 17 @ HEDMAN VINEYARDS, ALTO PASS, IL. 560 Chestnut St.
REGISTRATION OPENS @ 9:00 AM; PROGRAM STARTS @ 10:00 AM & CONCLUDES @ 3:45 PM.

•JULY 18 @ SPIRIT KNOB WINERY, URSA, IL. 2027, 2213 E 640th Pl.
REGISTRATION OPENS @ 10:30 AM; PROGRAM STARTS @ 11:30 AM & CONCLUDES @ 3:30 PM.

•JULY 19 @ GALENA CELLARS VINEYARD, GALENA, IL. 4746 North Ford Road.
REGISTRATION OPENS @ 9:00 AM; PROGRAM STARTS @ 10:00 AM & CONCLUDES @ 3:45 PM.

Advance registration closes at noon July 14, and will be $25 for members of the sponsoring organizations and $35 for non-members. Registration includes lunch. Registration at the door will be $35 and will not guarantee lunch availability.

Register online now at https://illinoiswine.com/event/illinois-summer-winegrowing-workshop-series/

Alternately, email Kelly at IGGVA through: events@illinoiswine.com . Please specify which of the three workshop locations you will be attending.

Sponsored by Illinois Grape Growers & Vintners Alliance and Regional Affiliates, Northern Illinois Wine Growers, Western Illinois Grape Producers Associated Cooperation, Shawnee Hills Wine Grape Association, Southern Illinois University, and University of Illinois Extension.

Regional Reports

From northern Illinois…In Northern Illinois, June proved to be a rainy month for the record books. At one of my offices, we measured a little less than 15 inches of rain for the month. Our wettest weekend saw close to 5 inches of rain. Other weeks saw afternoon storms sometimes bringing 2-3 inches in the course of a couple hours. Because of this weather, bacterial diseases have popped up through the counties. This timing of rain happened in the middle of our strawberry season and may have shortened the season for some. Tart cherries have started to produce the last couple of weeks. Blueberry, raspberry, and currants are moving into production currently at many u-pick operations. With a wet June, we are hoping that things dry out for July. Growers are still reminded to be vigilant this early in the season with insects and diseases. So far, I've not seen a lot of insects but things can change quite fast.

Grant McCarty (815-235-4125; gmccarty@illinois.edu)

From west central Illinois… I sweated it out with the vendors at the last Farmers' Market in Macomb. The high temperatures seemed to hinder the crowds. One farmer lamented on how the cool temperatures last week (65 degrees Fahrenheit!) made for a slow market too. Fortunately, for a few of the vendors I spoke with, they have other clients and orders for their produce. Some are selling to restaurants and grocers; some have their own CSA's, and a few growers work with the local food co-op.

Japanese beetles have been quite variable in the area. We are experimenting with the mass beetle traps in our Macomb and Galesburg food donation gardens. These traps are retrofitted 32-gallon trash cans with a Japanese beetle trap top, including scent and pheromone lures, inserted into the lid of the trashcan. It is still early in the season to tell if these have been successful or not. The Macomb garden has had very light Japanese beetle damage, and the traps are not filling up. In contrast, the Galesburg garden has seen heavier Japanese beetle feeding. Despite having the traps up, we have had to spray the beans to keep them from becoming completely defoliated. The traps in Galesburg are loaded with beetles too. There are massive traffic jams in the trap opening. A stick works well to push the beetles the rest of the way into the trap.

The surrounding land use differs between the Macomb and Galesburg gardens. In Macomb, the garden is in more of a rural setting and is almost surrounded by hay fields. The Galesburg garden is located on a community college campus and is surrounded by more developed land area, with a woodlot to the north.

While Illinois Extension, does not recommend the use of traps to control Japanese beetles, it may prove to be a useful tool in mitigating some damage to crops. We'll see how the summer plays out and I will report on my observations in the future.

Bacterial leaf spot (BLS) on Carmen pepper. Big Bertha seemed to be the most affected of the bell pepper varieties. Whopper and California Wonder were slightly affected. BLS tends to move from the bottom of the plant upward. After pruning off the infected lower leaves, the plants have resumed healthy vigorous growth. BLS was confirmed diagnosis with University of Illinois Plant Clinic. Photos: C. Enroth.

We had a problem with bacterial leaf spot (BLS) in a bed of sweet bell peppers. There are a few different varieties planted in the affected bed, and while they all have BLS symptoms, it is interesting to see the varying levels at which they resist infection. BLS management includes:

- Always use high-quality seed or transplants as this disease can be seedborne.
- Seed treatments in dilute Chlorox or hot water can be used before germination.
- The following pesticides can be used on plants, though some may require a pesticide applicator's license: Agrimycin 17, Mankocide, Serenade Opti, Tanos 50DF, and fixed-copper-containing products (Kocide 3000, Cuprofix). Strains of the bacterium resistant to fixed-copper pesticides are common in the Midwest, so consider using non-copper products if copper products are not effective.
- Rotate to crops outside the tomato family.
- Mulch beds to avoid soil splash from rain or overhead irrigation
- Consider using resistant varieties.

Sweet corn harvest has begun, along with some early field tomatoes. Potatoes have started to die back, and we will crop out beds through the season.

Left: A 32-gal trash can converted into a mass Japanese beetle trap. This trap found in Galesburg, along with three others, appear to be overwhelmed at the entrance with Japanese beetles.
Right: Steel mesh covered openings on both sides vent the ammonia created by decaying Japanese beetles. The pungent smell attracts quite a few flies too. Photos: C. Enroth.

Chris Enroth (309-837-3939; cenroth@illinois.edu)

Also from west central Illinois… We were very fortunate to receive 1.6" of rain the last 10 days of June, they came none too late. However, beginning the first couple of days of July we're starting to see the effects of dry weather again, in that corn is beginning to roll it's leaves and other plants not watered are wilting during the heat of the day.
I'm beginning to sound like a broken record, but if we don't get some rain soon, we won't be harvesting many more crops. The rains the end of June really improved the progress of crop growth. But if there isn't irrigation being provided, there just isn't much to harvest. Non irrigated crops vary widely in maturity, showing the soils ability to hold (or not hold) water. It's amazing the crops have done as well as they have since they looked so poorly for so long before the rains.

Irrigated crops are looking great, very little disease to report. Japanese beetles appeared around June 20, but in the immediate area, they're not too overwhelming. Corn earworm moth catches have dropped to almost 0 since late June, when so much field corn began silking. I had to spray again for spider mites in our tunnels, but no other insect concerns.

The cool weather crops: greens and cole crops, didn't really produce well. It just got too hot too fast. But the summer crops are going great (as long as water is being provided).

Mike Roegge, Retired Extension Educator & Mill Creek Farms (roeggem@illinois.edu)

From the St. Louis Metro-east… The region continues under an excessive heat advisory. I mentioned stifling last issue; this is worse. One has to know it's been hot when the weatherman announces an upcoming daily high will only reach 90º—and that sounds cool! The region did receive much needed rain but it came with damaging winds and localized flooding for some. The rain was good news though for growers with pumpkin seed in the ground just waiting for rain. Japanese beetles are making their presence known. Numbers started showing up in traps around the 10th of June, and are now quite noticeable congregating and feeding on their favored plants—most notably peach, apple, grape, cherry, brambles, pecan, and a number of ornamentals in the rose family. Early sweet corn and field tomato harvest got started in the region last week.

Elizabeth Wahle (618-344-4230; wahle@illinois.edu)

From southern Illinois… The summer heat continues with highs up in the 90s. Last week we had been in a pattern of seemly daily rain and storms as a front was hung up right over the region. We received between 2-3 inches of rain here in Murphysboro but areas down to the south got far more with reports of 5+ inches in some areas. By the end of last week, that pattern finally broke, but only a brief reduction in humidity for a day or so and then back again. The forecast does give us some rain chances into the weekend with a break in the heat and highs in the mid-80s for a few days, but then hot and sunny next week in the mid-90s.

Katie Bell, Maggie Rose, and myself transplanting pumpkins at the Ewing Demonstration Center. Photo: L. George.

The rain had delay our pumpkin planting for pumpkin field day, but by Saturday we were able to get the field ready and get started transplanting. Thanks to Marc Lamczyk, Laurie George, Maggie Rose and Katie Bell who all helped plant at the Ewing Demonstration Center for some long days on Saturday, Sunday, and Monday. We have 75 different pumpkin/gourd/winter squash varieties, a herbicide trial, and a fungicide trial all planted for field day on September 6!

Out in the field, early peaches, and most of our summer vegetables are in harvest! Blueberries are well into the mid to later season varieties. Most pumpkins are in the ground and growing. With the heavy rains in some areas small pumpkins were struggling to deal with the excess water, but hopefully most will be able to recover with drier conditions.

Left: New wavy coulter adapted for on the front of a no-till transplanter. Right: The wavy coulter and subsoiler tooth left loose soil for ideal transplanting. Photos: N. Johanning

I spent my 4th of July transplanting my own pumpkins at home after getting pumpkins set everywhere else. Every year I always seem to find something I want to tweak or adjust on my no-till transplanter. This years it was the coulter in the front. It came with a straight coulter in the very front to cut through any residue before the subsoiler tooth behind it. I have had issues with this coulter not cutting and at times wanting to plug up with straw. Also, that coulter would just slice through, not at all loosening the soil and then the subsoiler tooth would tend to throw out large clods of soil making it hard to have loose soil for the closing wheels in the back. This year my father and I adapted an 8-wave no-till coulter from an old Allis-Chalmers planter to mount in place of the original straight coulter. This new adaptation has planted about 7-8 acres of pumpkins this season and I have been very happy with it. The action of this wide, wavy coulter not only cuts, but also loosens and shatters the soil in that zone. This left more loose soil to close in around plants making for overall better planting.

Nathan Johanning (618-687-1727; njohann@illinois.edu)

From Dixon Springs Ag Center…Cucumber harvest continues, with a slight slow-down in production after a heavy pruning early last week. The majority of the indeterminate tomato varieties have started ripening along with several of the pepper varieties. Still waiting (impatiently) for the two snacking pepper varieties to start showing color. Determinate tomato fruit is sizing very well, with a good first harvest anticipated for late this week/early next week. Cut flowers continue to need cutting once a week (which is what you look for in a good cut flower, lol). We harvested a few of the 'Candy' onions, which were baseball sized, with 'Yankee' looking to be a week behind based on size. Quality was excellent, with no insect or disease issues. We also harvested a few shallots, and again, those looked excellent, with size being slightly bigger than a golf ball. The other crop we harvested last week was fennel. We had never grown fennel before, and it has been interesting to see it progress. The second round of lettuces are growing in both the hydroponic and in-ground production systems, with round three having been seeded late last week. Spider mites have finally found the strawberries and cucumbers in the hydroponic tunnel. A spray of Oberon will hopefully keep these pests in check. Aphids are present again in the cucumbers and peppers, which is not surprising with all of the storm fronts that have blown through in the past 7-10 days. Thankfully, the tunnels received no damage from the storm that passed through southern Illinois on June 28th.

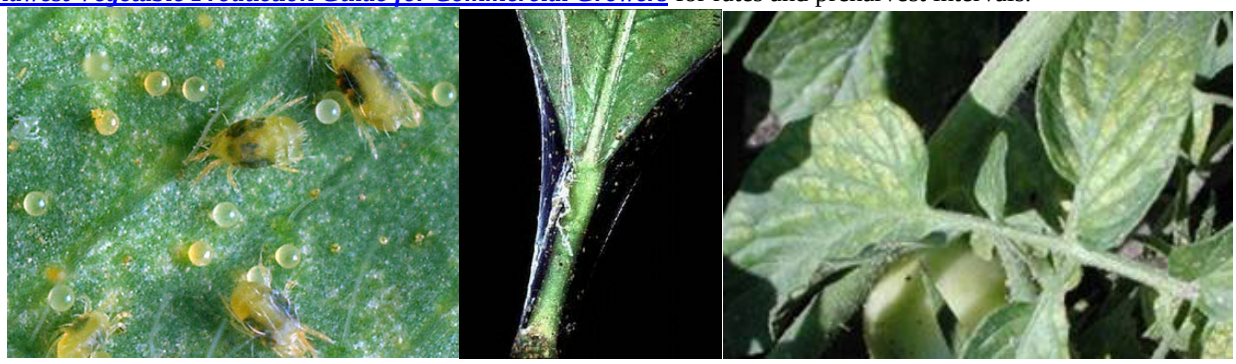
Photos by B. Aly. Clockwise from top left: Onions, shallots, and fennel harvested from the raised bed, in-ground production tunnel.

Bronwyn Aly (618-382-2662; baly@illinois.edu)

Fruit & Vegetable Production & Pest Management

Twospotted Spider Mites on Tomatoes

By late June twospotted spider mite infestations on tomatoes had reached threshold levels in some southern Illinois locations, both in outdoor and high-tunnel plantings. When hen numbers are high, they cause mottling and russeting of leaves, and heavily-infested leaves turn brown and drop. To scout for mites on tomatoes and other vegetables, use a 10-X hand lens and examine the upper and lower surfaces of leaves. Control is warranted if counts exceed 1-2 mites per leaflet. or treat areas where infestations are greatest. Effective miticides include Acramite, Agri-Mek, Nealta, Oberon, Portal, and Zeal. M-Pede is OMRI-listed for organic growers and will provide some mite suppression. See the 2018 ***Midwest Vegetable Production Guide for Commercial Growers*** for rates and preharvest intervals.



Twospotted spider mites on tomato leaves.

Corn Earworm … again

In the June 22, 2018, issue of this newsletter I included a link to a fairly detailed summary of corn earworm biology, trapping (monitoring), and control originally published in 2017 (Volume 23, Issue 3, 2017) and provided a table with an abbreviated version of spray recommendations. Since then, I have received reports of very high corn earworm moth counts (well over 100 per trap per night) in traps in southwestern Illinois. I'll repeat one of my "essential steps for corn earworm control" … Using a pheromone trap is the only way to assess if and how often insecticides should be applied for the control of this insect in sweet corn.

When the "newer" pyrethroid insecticides (Baythroid, Brigade, Mustang Maxx, and Warrior, as well as generic products with the same active ingredients) came to market beginning in the late 1990s, they were much more effective for corn earworm control than any insecticides that preceded them. However, for well over 10 years we have been dealing with variable levels of pyrethroid resistance in corn earworm populations. In general, sweet corn growers have to expect that resistance will reduce the effectiveness of pyrethroids and result in an unacceptable percentage of earworm-infested ears where pyrethroids are used alone in repeated sprays between silking and harvest. This is the reason behind the listings in the table below that recommend using a combination of a pyrethroid and a product with a different mode of action (Lannate, Coragen, or Radiant) or a premix containing a pyrethroid plus another ingredient. So again …

- When to spray …
  - MODERATE PRESSURE: If field corn in the area IS SILKING and traps are catching more than 5-30 earworm moths per night, spray every 3 days, beginning 2 days after first silk and ending 4-5 days before harvest … and always use a combination of a pyrethroid and an alternative chemistry.
  - MODERATE PRESSURE: If field corn in the area IS AT BROWN SILK OR LATER and traps are catching 1-30 earworm moths per night, spray every 3 days, beginning 2 days after first silk and ending 4-5 days before harvest … and always use a combination of a pyrethroid and an alternative chemistry.
  - HIGH PRESSURE: If traps are catching more than 30 moths per night, spray every 2-3 days and always use a combination of a pyrethroid and an alternative chemistry.

- What to spray …

Choose a Pyrethroid + Choose an Alternative		Or use a pre-mix
• Brigade 2 EC at 3 fl oz/A. Limit = 12.8 fl oz/A per season, PHI = 1. REI = 12 h. (Or generic equivalent.) • Mustang Maxx at 3.5 fl oz/A. Limit = 24 fl oz/A/season, PHI = 3, REI = 12 h. • Warrior II at 1.5 fl oz/A. Limit = 30.72 fl oz/A/season, PHI = 1, REI = 24 h. (Or generic equivalent.) • Baythroid XL at 2 fl oz/A. Limit = 28 fl oz/A/season, PHI = 0, REI = 12 h. (Or generic equivalent.)	• Lannate LV at 1.5 pints/A, PHI = 0, REI = 48 h. • Coragen 1.67 SC at 4 fl oz/A, PHI = 1 day, REI = 4 h. • Radiant SC at 5 fl oz/A. Limit = 6 applications /season, PHI = 1, REI = 4 h.	• Besiege at 8 fl oz/A. Limit = 31 fl oz/A/season, PHI = 1, REI = 24 h.

Squash Vine borer and Squash Bug

Squash vine borer tunnels in the vines of pumpkins and summer and winter squash; it rarely is found in cucumbers or melons and cannot complete its development except in squash or pumpkins. The adult is a black and reddish moth called a clearwing moth because large portions of its hind wings lack scales. These moths are ¾- to 1-inch long, with a 1- to 1 ½-inch wing span. They are active during the daytime and superficially resemble wasps as they fly about. Larvae are yellowish-white with a brown head, 3 pairs of thoracic legs, and 5 pairs of fleshy abdominal prolegs that bear tiny hooks called crochets. Fully-grown larvae are about 1 inch long. Brownish pupae are slightly less than 1 inch long, and they are found in the soil inside a dark, silken cocoon.

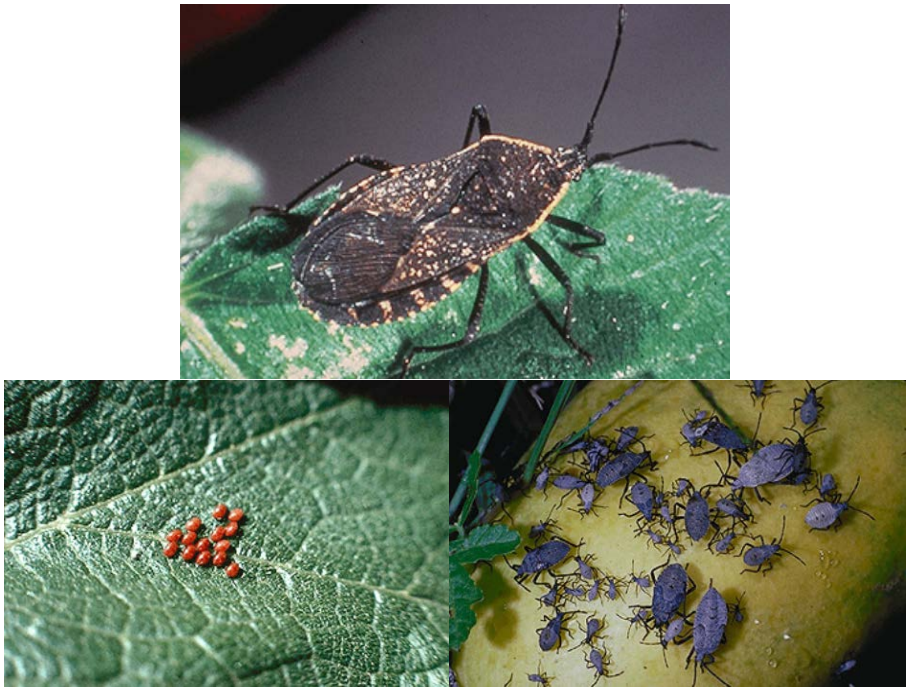
Squash vine borer adult (left) and larva (right).

Squash vine borers overwinter as mature larvae or pupae within cocoons 1 ½ to 3 inches below the soil surface. Moths emerge and begin to mate and lay eggs in June and July in much of the Midwest (earlier, beginning in May, in southern Illinois and similar latitudes). Moths lay eggs singly at the base of plants or on stems and petioles, beginning when plants start to bloom or "run". Larvae feed within stems or petioles for 2 to 4 weeks, leaving brown, sawdust-like frass (droppings) at holes where they entered the stem. In southern Illinois these pupate and produce a second flight of moths in late summer; in the north, larvae or pupae of the first (and only) generation remain in the soil through the winter.

Disking or plowing to destroy vines soon after harvest and bury or destroy overwintering cocoons reduces moth populations within a field in the spring. Staggering plantings over several dates also allows some plantings to escape heaviest periods of egg-laying. Early detection of moths and initial damage is essential for timing insecticide applications. For insecticides to be effective, they must be applied before larvae enter stems or petioles. Look for the day-flaying moths in fields and for entrance holes and frass as soon as plants begin to bloom or vine. Apply insecticides beginning 5 to7 days after moths are first detected and at weekly intervals for 3 to 5 weeks, or begin when injury is first noted and make a second application a week later. See the 2018 ***Midwest Vegetable Production Guide for Commercial Growers*** for listings of registered insecticides.

Squash bug infestations typically begin in late June and July in Illinois. Adults are brownish black, with yellowish to red-orange markings; they appear oval shaped when viewed from above, and somewhat flattened when viewed from the

side. Females lay yellowish-white eggs in small clusters on the upper and lower surfaces of leaves; the eggs quickly darken to a reddish brown color. Eggs hatch to produce grayish-white, wingless nymphs with black legs. The nymphs darken in color as they grow older, and wing pads (the beginnings of adult wings) begin to develop.



Squash bug adult (above), eggs (lower left), and nymphs (lower right.

The squash bug overwinters as an adult, and survival is greatest in plant debris, mulch, and field borders or woods. Adults become active in the spring, mate, and females begin feeding and laying eggs in June and July. Nymphs grow to the adult stage in 5 to 6 weeks, and new females mate and begin laying eggs immediately. Populations are greatest during hot, dry summers. Females that reach the adult stage after late July or early August do not mate or lay eggs but instead enter an inactive stage and seek overwintering sites. Squash bugs may be present as nymphs or adults in pumpkins and squash from June through October. They use piercing mouthparts to penetrate stems, leaves, and fruit and suck sap from plants. This direct damage may cause wilting or even kill plants if populations are great enough.

When adults move into fields and feed on young plants, watch for wilting of seedlings and apply an insecticide if wilting is observed. Scout for eggs of the squash bug on upper and lower surfaces of leaves. If densities exceed one egg mass per plant, use insecticides for control as nymphs begin to hatch. Insecticides labeled for use against squash bug are most effective against young nymphs, and for commercial growers who possess a Pesticide Applicator's License, the pyrethroid insecticides (particularly Brigade, Mustang Maxx, and Warrior) are most effective against squash bug. Organic growers may choose to use floating row covers to exclude squash bugs from young plants, but when row covers have to come off to allow pollination, none of the insecticides approved for use in Certified Organic production systems are truly effective against squash bugs. See the 2018 ***Midwest Vegetable Production Guide for Commercial Growers*** for listings of registered insecticides.

But … Don't Over-do Insecticide Applications in Pumpkins

As the need to apply fungicides in pumpkins develops in mid- to late summer, growers sometimes choose to add an insecticide, usually a relatively inexpensive pyrethroid, to weekly fungicide applications. If the insecticide really is needed to control squash bugs or cucumber beetles, then adding it to the tank is a justified practice, and if the insecticide formulation is a liquid and the application is made when bees are not foraging, the overall result can be needed insect control and minimal bee kill. However, simply adding an insecticide to every weekly fungicide application is almost never needed and almost always counter-productive. Pyrethroids and Sevin (and some other commonly used insecticides) kill the natural enemies of aphids (lady beetles, parasitic wasps, and others) but are not really effective against the aphids. Aphids build up in the absence of natural enemies, and fields treated unnecessarily

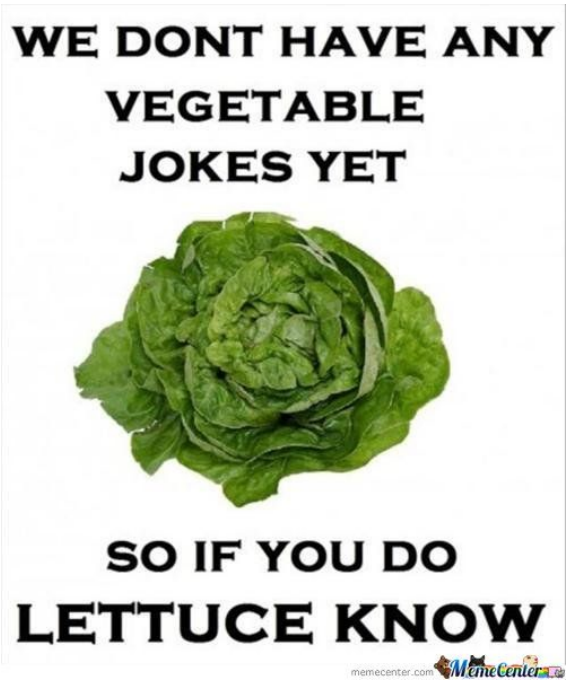
through the summer have greater aphid problems in the fall. Unneeded and poorly timed applications of insecticides also kill bees needed for pollination … this year and in the future. So … don't add an insecticide to the tank unless it's really needed, and don't spray when bees are actively foraging. For a listing of the relative toxicity of common pesticides (insecticides, fungicides, and herbicides) to honey bees see ***Protecting Honey Bees from Pesticides*** by Christian Krupke, Gregory Hunt, and Rick Foster of Purdue University.

Contributions from Weinzierl Fruit and Consulting, LLC are provided through support by the Illinois Specialty Growers Association. Visit www.specialtygrowers.org for more information or to join the association.

Rick Weinzierl (Weinzierl Fruit and Consulting, LLC, raweinzierl@gmail.com)

Less seriously…

https://www.bing.com/images/search?q=humours%20vegetable%20images&qs=n&form=QBIR&sp=-1&pq=humours%20vegetable%20images&sc=0-24&sk=&cvid=070A326730A84526A107469865A23780



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Illinois Fruit and Vegetable News