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College of Agricultural, Consumer, and Environmental Sciences

Illinois Fruit and Vegetable News

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A newsletter for commercial growers of fruit and vegetable crops

"We are what we repeatedly do. Excellence, then, is not an act, but a habit." Aristotle

Address any questions or comments regarding this newsletter to the individual authors listed after each article or to its editor, Rick Weinzierl, 217-244-2126, weinzierl@illinois.edu. The *Illinois Fruit and Vegetable News* is available on the web at: <http://ipm.illinois.edu/ivfn/>. To receive email notification of new postings of this newsletter, call or write Rick Weinzierl at the number or email address above.

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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 web site at:

<http://web.extension.illinois.edu/smallfarm/> and their calendar of events at

<http://web.extension.illinois.edu/units/calendar.cfm?UnitID=629>.

- **GAPs (Good Agricultural Practices) webinar series, July 7-28, 2014.** Monday evenings, 6:00-8:00 p.m. See <http://web.extension.illinois.edu/units/event.cfm?UnitID=629&EventID=65613>.
- **Illinois Vegetable Growers Association St. Charles Twilight Meeting, July 17, 2014.** 6:30 p.m. at the St. Charles Horticulture Research Center at the corner of Peck Road and Illinois Highway 38, St. Charles, IL. For more information, contact Shelby Henning at 630-584-7254 or shenning@illinois.edu.
- **Southern Illinois Summer Twilight Meeting Series, July 21, August 18, and September 15, 2014.** 6:00 to 8:00 p.m. On farm programs at The Corn Crib, Shawneetown, IL, on July 21; at a livestock operation TBA on August 18, and at Lipe Orchards, Carbondale, IL, on September 15. For the July 21 program ... From Interstate 57, take the Marion/Harrisburg exit, go east on Rt. 13 through Marion and Harrisburg. Continue east on Rt. 13 towards Shawneetown. *The Corn Crib* is located on the south side of Rt. 13 about 1 mile west of Shawneetown. Pre-registration (at no cost) is required by July 20; see <http://web.extension.illinois.edu/ghhpsw/> or contact Bronwyn Aly at 618-382-2662 or baly@illinois.edu.
- **Pumpkin Field Day, September 4 2014.** 10:00 a.m. at the Ewing Demonstration Center, Ewing, IL (about 20 minutes south of Mt. Vernon; 4 miles east of I-57) ½ mile north of the Ewing Northern School off of Main Street) For more information contact Nathan Johannig at 618-687-1727 or njohann@illinois.edu.
- **And mark your calendars ... for the Illinois Specialty Crops, Agritourism, and Organics Conference, January 7-9, 2015,** at the Crowne Plaza Hotel and Convention Center, Springfield, IL.

Regional Reports

From Dixon Springs ... Crop harvest continues in high tunnels throughout southern Illinois. Many growers felt first tomato clusters were lower in quality than desired. That likely was the result of poor early season growing conditions (e.g. cold temperatures and overcast skies). Second cluster tomatoes seem to be of much better quality. Growers should be monitoring for aphids, stinkbugs, worms, Japanese beetles, and mites. Continue to monitor soil moisture and fertilize and irrigate as needed.



Tomatoes and carrots in the Dixon Springs high tunnel.

High tunnel strawberry and raspberry harvests continue at DSAC. High tunnel small fruit plantings should also be monitored for pests, and fertility and irrigation management should always be a concern.

Research with oyster mushroom production continues at DSAC: We are currently struggling to find adequate methods of temperature and moisture control for our fruiting room. However, we have picked many nice mushrooms over the past two weeks.



Oyster mushrooms at Dixon Springs.

Jeff Kindhart and Julie Zakes (618-695-2770; jkindhar@illinois.edu)

Elsewhere in southern Illinois ... Rainfall has been scattered, with some locations getting multiple inches of rain last week and others getting a tenth or less, which has left some areas still in need of some rainfall. Over the holiday weekend temperatures were very pleasant with highs in the low 80s, but the heat and humidity is coming on strong again now, with more chances of storms in the forecast.

Many of the later blueberry varieties such as ‘Chandler’ and ‘Elliot’ are starting to come in, and some early peach varieties are just starting to ripen and show up at roadside stands and markets. The main commercial peach varieties such as Red Haven are still about 10-14 days away from harvest. Sweet corn, green beans, and new potatoes are among the many other crops now prevalent at farmers markets.

Thanks go to Adrian and Candy Deitz and Maggie Rose for helping transplant pumpkins at the Ewing Demonstration Center for the September 4th Pumpkin field day. We all “celebrated” our Nation’s independence last Friday by no-till transplanting 54 different pumpkin/gourd varieties for the demonstration variety trial!



From left: The Ewing Demonstration Center “Transplanting Team” ... Maggie Rose, Candy and Adrian Deitz. Right: Maggie Rose hard at work on the transplanter.

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

From western Illinois ... Harvesting and marketing of many crops continues – broccoli, cabbage and some greens, peas and green beans, onions, beets, potatoes, cucumbers, turnips, and summer squash. High tunnel tomato and pepper harvest began 10-14 days ago. And there is still a small harvest of rhubarb ongoing. Black raspberry and blueberry harvests continue. Blackberries should be arriving soon, although the production will be severely curtailed due to the cold weather of January. First planted sweet corn is being harvested or will be shortly.

The immediate Quincy area hasn’t received significant rainfall since June 23, so a nice rain would be welcome. Warm temperatures have resulted in some producers initiating trickle irrigation.

Japanese beetles emerged about 2 weeks ago. Thus far they’re not at high populations (and we’re hoping the winter deep freeze will help keep their populations low this year). Corn earworm trap captures were very high the last week of June, and growers who did not treat are finding a fairly high incidence of earworm infestation of ears. Trap captures the past few days have become very low. Cabbage moths continue to fly and lay eggs. Stink bug feeding injury on tomato fruit is apparent on newly harvested tomatoes where producers did not treat (and other crops as well, including peach). Leaf mold of tomato showed up this past week in high tunnels. Dr. Babadoost discussed this disease in the last issue of this newsletter.

Matted row strawberry renovation should begin immediately after harvest. If broadleaf weeds are present, consider an application of 2,4-D amine to help provide control. Some formulations are labeled; check to verify that you’re using one that is. There is a big concern with using 2,4-D in summer when temperatures exceed 80 degrees, and that is volatilization (although amine formulations are less volatile than ester formulations). But still, if tomatoes or grapes are in the vicinity, be very cautious. Mow the berry plants to 1-2” in height several days after herbicide application, being careful to avoid cutting into the crown. Till to narrow the rows to a maximum of 16” wide, trying to throw soil into the row. As the strawberry plant adds leaves to the crown, it increases in height. Adding soil helps to protect the crown. Tilling also incorporates the dead leaves, which can contain several foliage diseases. Fertilize with nitrogen at the rate of 40-60# per acre to stimulate runner production. Soil testing should determine phosphorus and potassium needs.

Generally speaking, a soil phosphorus test of 40 or more pounds per acre and a potassium soil test of 300 or more pounds per acre would be suggested. Application of herbicides for residual weed control should be considered. There are several products registered. See <https://ag.purdue.edu/hla/Hort/Documents/ID-169.pdf>. Keep the patch free of weeds and irrigate when necessary. Remember that fruit buds form in late summer and early fall. Providing water when plants are stressed can help keep fruit buds intact. Remove any runners that may form in row middles to keep the maximum row width to 16 inches.

Mike Roegge (217-223-8380 ; roeggem@illinois.edu)

In the Galesburg area ... Produce is abundant in western Illinois! Growers across the area seem quite happy with the growing season to this point. This year is turning out to be one of those years where many of the potential limiting factors that restrict crop growth are not nearly as apparent as they should be due to very favorable growing conditions...namely water. The tomato and pepper trials we have at the Monmouth Research Farm are proving quite informative and telling. The weed control practices employed (crimped cereal rye in combination with fabric barriers) are very effective. We will have more detail to send out as the trial progresses. In other happenings, the area received significant rain last week. Flooding is apparent across the region in low-lying areas of fields. Pumpkin transplants are in the ground, as growers get ready for the fall season. In the next few weeks, a number of fall/winter seedings will be going in as well. Sometimes it seems difficult to be thinking fall and winter crops when the temperature is so warm, however, the key to these crops is timely planting.

Kyle Cecil (309-342-5108; cecil@illinois.edu)

Fruit Production and Pest Management

Spotted wing Drosophila captures have begun at Urbana

On July 2 and 3 we captured our first spotted wing Drosophila flies of the season at Urbana. We caught them in traps baited with Trecé's SWD lure, and apple cider vinegar traps have not worked as well! See the May 15 (<http://ipm.illinois.edu/ifvn/contents.php?id=43>) and May 29 (<http://ipm.illinois.edu/ifvn/contents.php?id=44>) issues of this newsletter for details on trapping.

Insecticides that have short PHIs (preharvest intervals) and have been shown to be effective against spotted wing Drosophila include ...

Insecticide	PHI (days) in Blueberries	PHI (days) in Brambles	Days of Residual Activity
Malathion	1	1	5-7
Imidan	3	Not labeled	7
Mustang Max	1	1	7
Danitol	3	3	7
Brigade	1	3	7
Delegate	3	1	7
Entrust (OMRI)	3	1	3-5
Pyganic (OMRI)	(12 hours, REI)	(12 hours, REI)	2

Estimates of residual activity are adapted from work done by Rufus Isaacs of Michigan State University.

Rick Weinzierl (217-244-2126; weinzier@illinois.edu)

Aronia Spotted Wing Drosophila Discussion Group

A spotted wing Drosophila listserv allows aronia enthusiasts to share information, experiences and questions about monitoring and managing SWD in aronia. Information, experiences and questions about SWD in commercial, research, or backyard plantings are most welcome. Take a moment to sign-on at <https://lists.illinois.edu/lists/info/aswd>, and then post a question or share an observation via aswd@lists.illinois.edu.

As noted in the article above and the links it includes, spotted wing drosophila (SWD), *Drosophila suzukii*, is a fruit fly that infests economically valuable small fruit and tree fruit crops, including ripening cherry, raspberry, blackberry, blueberry, and strawberry crops. It was first detected in California in 2009 and now appears to be well established in many fruit growing regions around the country. Growers and researchers are working together to seek and implement effective pest control strategies.

James Theuri (815-933-8337; jtheu50@illinois.edu)

Degree-Days and Codling Moth Development

Based on the biofix dates for the locations listed below, degree-day accumulations (base 50F) since biofix for each location (based on the closest regional weather stations) are ...

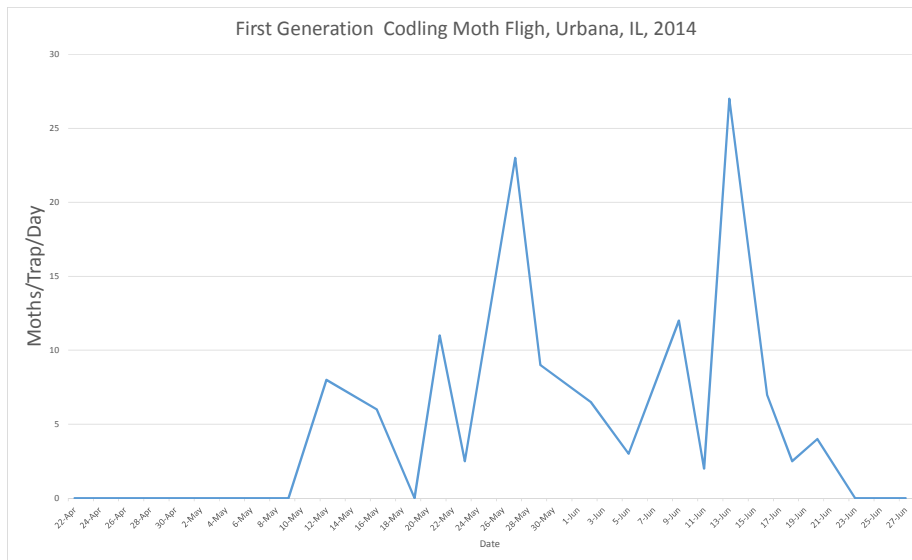
Location	Biofix Date for codling moth	Degree-Days base 50F, through June 30	Degree-Days base 50F, projected through July 7	Degree-Days base 50F, projected through July 14
Milstadt / Belleville	April 27	1297	1485	1673
Grafton	May 6	1176	1365	1552
Urbana	May 9	1094	1269	1445
Lake County	May 21	818	966	1116

Some key events in the codling moth's life cycle in comparison with degree-day accumulations (based on Table 6, p. 260, in *Orchard Pest management, A Resource Guide for the Pacific Northwest*, by Beers et al, published by the Good Fruit Grower in 1993) ...

Degree-Day Accumulations (Base 50 F)	First-Generation Flight	First-Generation Egg Hatch	Second-Generation Flight	Second-Generation Egg hatch
800	100 percent complete	95 percent complete		
900		98 percent complete	1 percent complete	
1,000		100 percent complete	5 percent complete	
1,100			13 percent complete	1 percent complete
1,200			26 percent complete	3 percent complete
1,300			43 percent complete	10 percent complete
1,400			60 percent complete	21 percent complete
1,500			77 percent complete	36 percent complete
1,600			85 percent complete	53 percent complete
1,700			92 percent complete	69 percent complete
1,800			97 percent complete	81 percent complete

See the *2014 Midwest Tree Fruit Spray Guide* for listings of recommended timing for different insecticides. (Use <https://store.extension.iastate.edu/Product/2014-Midwest-Tree-Fruit-Spray-Guide> and click on the download link to obtain a free pdf of this publication). Effective insecticides for codling moth control include Assail, Calypso, Altacor, Belt, Delegate, and Rimon. Entrust and codling moth virus products are available for organic growers.

Here's what first generation codling moth flight looked like in the unmanaged block of apples at the University of Illinois Fruit research Farm at Urbana. We're now at the beginning of second generation flight.

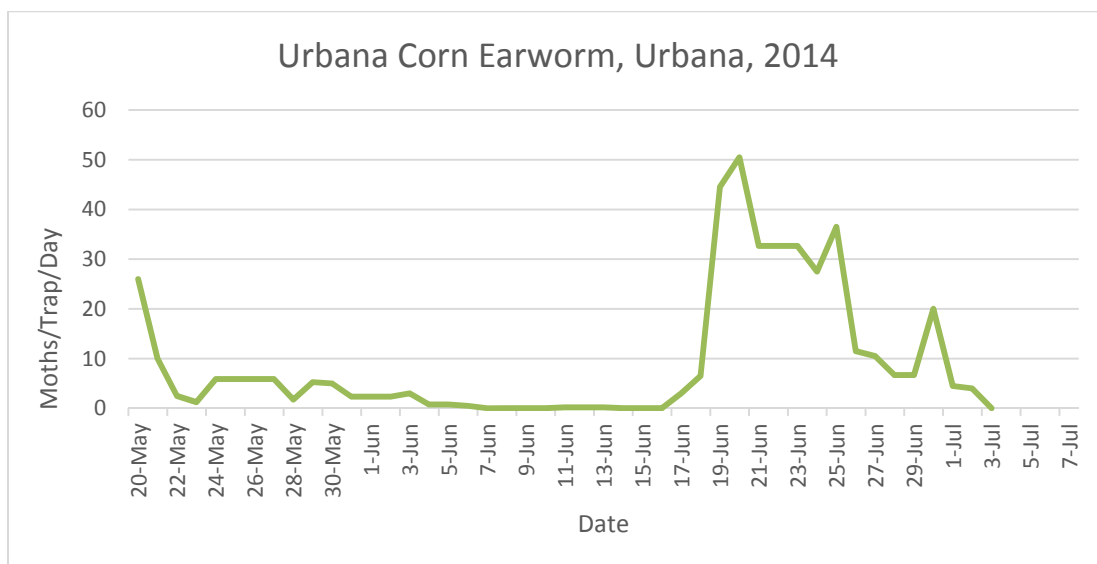


Rick Weinzierl (217-244-2126; weinzier@illinois.edu), with contributions from Kaitlin Birckelbaw and Josephine Tritsch

Vegetable Production and Pest Management

Corn Earworm

As Mike Roegge noted in his western Illinois update, corn earworm moth flight has been sporadic over recent weeks ... but it is certainly underway in many areas. The graph below shows the flight near Urbana so far in 2014. Keep in mind that the pattern here is not likely to be consistent across other areas of the state. Operating a trap on your farm is an essential step for corn earworm management in sweet corn (and tomatoes).



The May 1, 2014 issue of this newsletter (<http://ipm.illinois.edu/ifvn/contents.php?id=42#vegetable>) included detailed information on corn earworm biology and recommendations for trapping. I'm repeating that issue's notes on control below ...

Insecticide and “trait” choices for corn earworm control in 2014

First, insecticides ...

- The goal of insecticide applications in sweet corn is to put a residue on fresh silks that kills larvae before they can move from the egg on the silk to the tip of the ear. (If sprays kill some adults, that’s a benefit, but that’s NOT what makes an effective spray program.) This means that sprays must be applied repeatedly as the silks elongate. Although the residual activity of many insecticides is several days, newly emerged portions of silks near the ear tip were not exposed to the sprays applied a couple of days earlier. This is why sprays are recommended on 2- to 3-day intervals as long as silk growth continues. If traps are catching just few moths and temperatures are moderate, a 3-day spray interval can be adequate. If traps are catching 30 or more moths per night and temperatures are in the 90s, spraying every 2 days will be necessary to produce corn with very few damaged ears. Sprays should begin within 2 days after silks have begun to emerge if moths were flying when silks appeared.
- At least some of the corn earworm populations that migrate into the region are resistant to pyrethroids (Baythroid, Brigade, Hero, Mustang Max, Warrior, and their generic versions). Alternatives to pyrethroids – such as Belt, Coragen, Entrust (for organic growers), and Radiant – are not quite as effective as the pyrethroids used to be before resistance development. Where markets demand corn that is nearly worm-free, relying on a pyrethroid or an alternative alone is not likely to give adequate control when moth flights are high. Combinations of a pyrethroid plus one of these alternatives or a pyrethroid plus Lannate are likely to give the best results. If you take this approach and tank-mix two different kinds of insecticides, use each at their label rates (often the middle of range listed on each product’s label). Making timely applications on the right interval (2 or 3 days) is FAR more valuable than using the highest possible rates. A pre-mix of the active ingredients in Warrior (lambda-cyhalothrin) and Coragen (chlorantraniliprole) will be sold in 2014 under the trade name Besiege. It provides an alternative to tank-mixing two different chemicals.

What about Bt sweet corn varieties?

- From a grower’s perspective, there are three different categories of Bt sweet corn varieties on the market or soon to come to market. (1) The Attribute series sweet corns produce one kind of Bt toxin. It is very effective against European corn borer and corn earworms. The “problem” is that only 3 of 4 kernels on ears in Attribute series Bt sweet corn fields produce the toxin (a result of the heterozygous nature of the genetics of the variety and random recombination in the offspring – the kernel). Additionally, the Bt toxin in the Attribute series is not very effective against black cutworm or western bean cutworm (or rootworms or sap beetles). (2) The Seminis “Performance” series of Bt sweet corn varieties produces two toxins that kill Lepidopteran larvae; they also have genes for corn rootworm larval resistance and resistance to Roundup. The second Bt toxin in these varieties provides much greater resistance to black cutworm, fall armyworm, and western bean cutworm (as well as European corn borer and corn earworm). However, only 3 of 4 kernels on ears in Performance series Bt sweet corn fields produce the toxin (again, a result of the heterozygous nature of the genetics of the variety and the fact that the genes for the two toxins are linked and so they move together in the random recombination of genes in the offspring – the kernel). (3) A new “Attribute II” series of sweet corn varieties is under development by Syngenta. Varieties that will be available for sale in 2014 are not the ones that most fresh-market growers in Illinois will plant. In the Attribute II series, genes code the production of two very different toxins that kill Lepidopteran larvae (cutworms, armyworms, European corn borer, and corn earworm). These genes are not linked, and as a result, 15 of 16 kernels on ears in Attribute II series Bt sweet corn fields produce one or both toxins.
- Do Bt sweet corn varieties still need to be treated with insecticides? Yes. Although the Attribute II series will suffer less damage when untreated than existing Bt varieties, this technology will not be available in 2014 in varieties that most Illinois producers grow. The original Attribute series and the Performance series varieties must be treated when corn earworm moth flights are heavy or if western bean cutworm is present. The jury is still out on the characteristics of a reduced spray program that would adequately protect these varieties. In varieties with long silk channels, early sprays might be skipped (because larvae would ingest Bt toxins as they feed on silks while moving toward kernels). Bt concentrations decline somewhat in silks after pollination, and as ears elongate and kernels have less cover, sprays may be more necessary. The point for now is simple ... do be prepared to use insecticides on Bt sweet corn if it must be worm-free for your markets.

(Rick Weinzierl; 217-244-2126; weinzier@illinois.edu)

“Worm” Control in Crops in the Cabbage Family

Just a reminder ... For control of diamondback moth, imported cabbageworm, and early stages of cabbage looper before heading in cabbage and broccoli, avoid using pyrethroids if possible. The pyrethroids can be excellent clean-up sprays before harvest to get rid of potential contaminants and prevent damage to heads, but if they're over-used throughout crop development and over the whole season, resistance can develop in diamondback moth populations. When this happens, keeping the crop clean in mid and late summer can become very difficult. Alternative to pyrethroids that are useful in resistance management and early season and early stage control of lepidopteran insects (caterpillars) in cabbage and broccoli include *Bacillus thuringiensis* products (Agree, Biobit, Dipel, Javelin, Lepinox, and Xentari), Coragen, Entrust, Proclaim, and Radiant. *Bacillus thuringiensis* products and Entrust are approved for use in certified organic production. See the [2014 Midwest Vegetable Production Guide](#) for additional information.

Rick Weinzierl (217-244-2126; weinzier@illinois.edu)

Local Foods Issues

FDA to Re-open Comment Period on FSMA Rules

After initial review of over 17,000 comments submitted to the docket, the FDA plans to re-open key provisions of the proposed Produce Rule for comment this summer including:

- Water quality standards
- Raw manure and compost
- Mixed use facilities
- Procedures for withdrawing the qualified exemption for certain farms

This means you will have another opportunity to make your voice heard! We highly encourage your participation in this process. The FDA greatly values your insight in drafting a document that better suits the needs of produce farmers across the country. We will send announcements through units and this newsletter when the proposed rule has been re-released for comments, including information about where and how to comment, but you can also sign up to receive notifications directly from the [FDA E-mail Updates](#) site.

James Theuri (815-933-8337; jtheu50@illinois.edu)

Less Seriously

I took a few days off at the end of June and travelled to northwestern Arizona ... did a lot of hiking in the Redrock Mountains. A t-shirt in a shop in Sedona bore the following text ...

“If a man speaks in the desert and there’s no woman around to hear him, is he still wrong?”

Good thing I didn’t talk much in the desert.

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