



# UNIVERSITY OF ILLINOIS EXTENSION

College of Agricultural, Consumer, and Environmental Sciences

## *Illinois Fruit and Vegetable News*

Vol. 19, No. 3, April 26, 2013

*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](mailto:weinzierl@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, call or write Rick Weinzierl at the number or email address above.

### *In this issue ...*

- **Upcoming programs**
- **Regional Observations** (from Kyle Cecil in western Illinois)
- **Notes from Chris Doll** (fruit crop development, cold, wet weather, Solubor, seasonal tasks)
- **Fruit Production and Pest Management** (efficacy of apple fungicides; management of plant bugs and stink bugs, plum curculio, oriental fruit moth, codling moth, and San Jose scale)
- **Vegetable production and Pest Management** (cucumber beetles and asparagus beetle)
- **University of Illinois Extension Educators and Specialists in Fruit and Vegetable Production and Pest Management**

### *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>

- **Exploring the Environmental and Economic Opportunities and Challenges of Cover Crops, May 7, 2013; 1:00 – 2:30 p.m. webinar** ... see <http://www.conservationwebinars.net/webinars/exploring-the-environmental-and-economic-opportunities-and-challenges-of-cover-crops>.
- **Southwestern Illinois Twilight Orchard Meeting, May 9, 2013;** Weigel Orchards, Brussels, IL (Calhoun Co.). For more information, contact Michelle Berg Vogel, ANR Program Coordinator, University of Illinois Extension Calhoun County Office, P O Box 366, Hardin, IL 62047 (<http://extension.illinois.edu>; email: [mbergv@illinois.edu](mailto:mbergv@illinois.edu) or call (618) 653-4687. **(With current flooding in Calhoun County, be sure to check with Michelle to be sure this program is still “on” as the date approaches.)**
- **Economic Analysis of Local and Regional Food Systems, May 20, 2013; 2:00 – 3:30 p.m.** Central Time webinar. For access, see <https://connect.msu.edu/richpirog>. If you have never attended an Adobe Connect webinar meeting before, please test your connection in advance by going to the link below. You may need to download a small, harmless plug-in and update your version of flash player. [https://connect.msu.edu/common/help/en/support/meeting\\_test.htm](https://connect.msu.edu/common/help/en/support/meeting_test.htm)
- **Illinois Summer Horticulture Day, June 13, 2013** ... the morning program will be at Curtis Orchard in Champaign, IL, followed by an afternoon tour of the University of Illinois Fruit Research Farm in Urbana and Vegetable Crops Research Farm in Champaign. **More details to come, but mark your calendars!**

## ***Regional Observations***

### **In western Illinois,**

As with most of the Midwest, western Illinois received significant, dare I say, historic rainfall amounts during the last 10 days. As such, area fields are water-logged. Looking out my office window, the rain was falling again on April 23, so field conditions will likely remain poor for the next several days. Growers should be vigilant for seedling issues for those crops that were direct seeded earlier. Seeds planted into cold soils may sit and wait or may germinate but grow very slowly. In these very early stages of life, seedlings are highly susceptible to soil-borne pathogens that cause root rot and damping off. Growers may notice that seeds are failing to emerge from the ground or that young seedlings emerge and then yellow and fall over. Older plants may become stunted by root rot. Leaves may wilt and dieback. The recent excess of heavy rain in many areas of the state has created ideal conditions (cool, wet soils) for these root rotting pathogens. Raised beds, seed treatments, row covers and black plastic can help address the issues but warmer, dryer conditions would alleviate them.

Early season greens and root crops in high tunnels are doing well, as we would expect. Early last week did allow for a planting window in area high tunnels as temperatures warmed until the rains came. This was a welcome event as so many of us have transplants that need to get in the ground. I am often asked how to handle “leggy” transplants (those with excessive space between the nodes). Most growers deal with this by setting their tomato transplants deeper when they plant them out. We can usually get away with this on tomatoes, since they will root along the stem. Other crops do not root quite so readily and should not be planted deeper. Do not try this with grafted plants as excessive suckers will develop.

*Kyle Cecil (309-342-5108; [cecil@illinois.edu](mailto:cecil@illinois.edu))*

## ***Notes from Chris Doll***

Phenology status for southwestern Illinois (April 23):

- apples – full pink to early bloom; full bloom in southern areas.
- peaches – post petal fall, but pre shuck split
- plums – shuck split for Asian; petal fall for most Europeans
- tart cherries – full bloom;, sweets at petal fall
- grapes – bud break to one-inch leaf expansion on Concord
- strawberries – very early bloom on matted row; 20-40 percent on raised beds

Spring is supposed to be here, but a light frost and air temps of 31.5 last weekend have kept plant development from being up to average. No injury was seen on blooming fruit trees in the Back 40. More cold temperatures are due within the next day, as we hear of the snow reports from Colorado and across the northern plains. Rainfall has been plentiful, with 6.5 inches for the month at this site and much more at others. Flooding is a concern for folks on the flood plains, (as well as our hilly Calhoun County that is surrounded river water on three sides that limits grower ingress and egress). It has also made for poor soil conditions for getting early season sprays applied.

The rains have made *prevention* the word of the day for the major diseases of all fruit crops for this season. A few days of seasonal temperatures and light winds have helped allow the spray coverage needed. Staying ahead of fire blight is a major concern, and I'm not sure that if the 31.5 degree temperature last week was sufficient to put the bacteria back to a new beginning as Dr. Dwight Powell learned in research many years ago, or if was just a close call. Anyway, the computer programs should be followed as well as **most** weather forecasts.

Bees have been delivered to some orchards, and so far they have had two days of flying weather. But as the temperatures go down, flower development also slows down to await better and warmer days. Studies with boron, in this area the product Solubor, have shown improved pollen tube growth from its inclusion in pink and blossom sprays. It is difficult to see benefits without a dedicated test, but the cost of its inclusion is relatively low. And as growers try to conserve trips through the orchard, it is possible and feasible to combine the anti-biotic products for fire blight in other sprays when apple trees are in bloom. The same principle can be used when the time for Apogee and its benefits of growth control and reduction of fire blight arrives – which is just a few days away for many trees.

Other considerations for the season might include applying the rest of the nitrogen needed for the peach crop, adding nitrogen in apple sprays to boost the leaves and flower/fruit development, wrap up any grafting projects, and prepare for the apple thinning applications where needed.

Chris Doll

## ***Fruit Production and Pest Management***

### ***Efficacy of Apple Fungicides***

At last week’s twilight meeting in southwestern Illinois, Mohammad Babadoost distributed the following table on the effectiveness of key fungicides for apple disease control ...

Efficacy of Fungicides for Apple Diseases							
Fungicide	Scab	Powdery Mildew	Rusts	Active Ingredient	Protectant or Eradicant	FRAC group	PHI
Captan	G	0	0	captan	Protectant	M	0
Dithane M45	G	0	G	mancozeb	Protectant	M	77
Fontelis	E	E	G	penthiopyrad	Protectant / Eradicant	7	28
Inspire Super MP	E	E	E	difenoconazole + cyprodinil	Protectant / Eradicant	3 + 9	72
Luna Sensation	E	E	G	fluopyram + trifloxystrobin	Protectant / Eradicant	7 + 11	14
Luna Tranquility	E	E	G	fluopyram + pyramethanil	Protectant / Eradicant	7 + 9	72
Merivon	E	E	F-G	Fluxapyroxad + pyraclostrobin	Protectant / Eradicant	7 + 11	0
Polyram	G	0	G	metiram	Protectant	M	77
0 = none; F = fair; G = good; E = excellent							Babadoost

Also see page 45 of the [2013 Midwest Tree Fruit Spray Guide](#) for tables that list the efficacy of additional fungicides for controlling apple and stone fruit diseases.

### ***Insect Management in Apples and Peaches***

Key insects of concern for apple and peach growers during the few weeks after bloom include stink bugs and plant bugs, plum curculio, oriental fruit moth, codling moth, and San Jose scale. A few reminders about these creatures ...

**Stink bugs and plant bugs** damage fruit when they insert their feeding stylets into small fruits, killing cells around the feeding puncture and causing the fruit to develop in a distorted fashion – dimpled or “catfaced.” Damage can be reduced by orchard floor management practices and by applying insecticides to fruit, beginning immediately after petal fall if stink bugs or plant bugs are present on fruitlets. Establishing and maintaining orchard ground covers that do not include flowering weeds helps to avoid attracting stink bugs to the orchard (and allows you to spray a number of insecticides that should not be applied to blooming weeds because they are toxic to pollinators). If the orchard floor is weedy and weeds are flowering, mowing triggers movement of plant bugs and stink bugs from the weeds to fruit. Insecticide applications intended to reduce plant bug and stink bug damage should be timed to follow very soon after mowing in these circumstances. See page 10 (for apples) and page 34 (for peaches) in the [2013 Midwest Tree Fruit Spray Guide](#) for listings of insecticides that are effective against stink bugs and plant bugs.

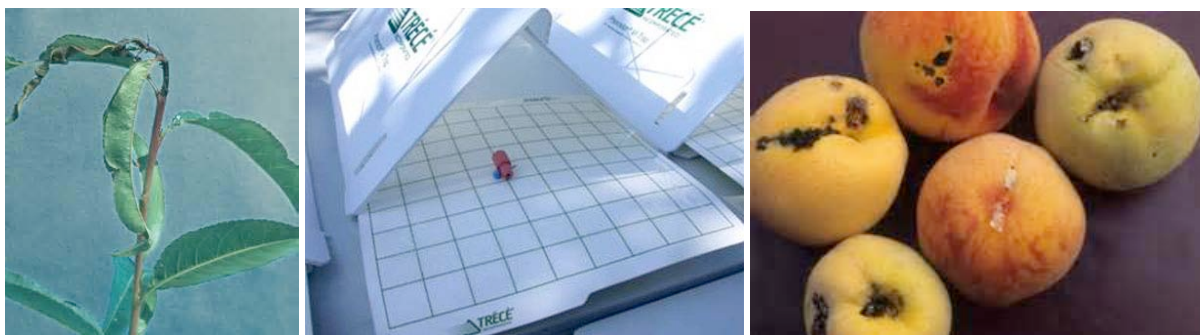
**Plum curculio** moves into orchards just after bloom and lays eggs in apples and in plums, peaches, and other stone fruits (and in blueberries). The adult female is a weevil (beetle with a snout) that chews a crescent-shaped slit into the

fruit and deposits an egg into that slit. In apples, the egg-laying scar is often the end of the story, as a large percentage of the larvae do not survive in the rapidly expanding fruit. When the larvae do survive, infested apples typically drop from the tree in early to mid-summer. A much higher percentage of larvae survive in peaches, and they sometimes are present in fruit at the time of harvest. There are at least two designs for traps for plum curculio (see pages 7 and 10 of the [Great Lakes IPM 2013 catalog](#)), but relatively few Illinois fruit growers use them. The need for curculio control is often determined by proximity to wooded areas and unmanaged fruit trees outside the orchard and the frequency of curculio damage in previous years. Insecticides for curculio control are listed on pages 12 (for apples) and 34 (for peaches) in the [2013 Midwest Tree Fruit Spray Guide](#). Note that several “popular” new insecticides used a little later for oriental fruit moth or codling moth control do not work well against plum curculio. These include Altacor, Delegate, Rimon, and Belt. Avaunt, Belay, Imidan, and pyrethroids (recommended in peaches but not apples) are effective against plum curculio. Petal fall though first cover is the key time period for controlling plum curculio.



Left: catfacing caused by stink bugs (Utah State University); center: plum curculio (Clemson University); right: plum curculio scars on apple (Cornell University).

**Oriental fruit moth** flight started around April 18 in Calhoun County, based on reports from Tom Ringhausen (and probably up to a week earlier in far southern Illinois). Flight has not yet begun at Urbana. See the [February 20, 2013 issue of this newsletter](#) for guidelines on using pheromone traps. At this time of year, this insect is primarily a pest of peaches, not apples. We often “let” the early portion of first generation larvae tunnel into shoots of peaches without spraying specifically for them ... yet we get some control from sprays of pyrethroids or Avaunt, Belay, or Imidan aimed at stink bugs or curculio. We typically see at least 4 (and sometimes up to 6) generations of oriental fruit moth per season in southern Illinois. The second and third generation larvae become “the worm in the peach” if they are not controlled, and fourth and later generations can infest apples. In Calhoun and Jersey counties, resistance to pyrethroids is common in oriental fruit moth populations, and use of mating disruption and/or alternative insecticides such as Altacor, Belt, Delegate, or Rimon (or Entrust for organic growers) is necessary. Imidan also remains somewhat effective against this insect. The best timing for two insecticide applications for first generation OFM control is around 180 degree-days (base 45 F) and again 360 degree-days after biofix (the beginning of significant captures in traps). Degree-day accumulations can be calculated for individual orchards or estimated by using the nearest weather station in the [Illinois State Water Survey’s WARM Pest Degree-Day Calculator](#). The best timing for two insecticide applications for second generation OFM control is around 1,175 degree-days (base 45 F) and 1,475 degree-days after first generation biofix. Where mating disruption is used, dispensers need to be in place **NO LATER** than the beginning of second generation flight. Second flight will begin 950 degree-days (base 45 F) after the start of first generation. Just guessing (because this will depend on the next few weeks’ weather), dispensers will probably need to be in place by around May 20 in Calhoun and Jersey counties.



Left: flagging caused by oriental fruit moth (Washington State University); center: pheromone trap; right: oriental fruit moth damage to peaches (OMAFRA).

**First generation codling moth** flight typically begins around late bloom through petal fall in apples and continues over a few weeks. The only way to know when to control codling moth is by monitoring flights with pheromone traps in your orchards. Larvae begin hatching and entering fruit 220 to 240 degree days (base 50 F) after moth flight begins. Initial sprays intended to control codling moth need to be applied by this time, usually about 3-4 weeks after petal fall, but this depends on temperatures. Although there may be a few codling moth populations in Illinois that are still susceptible to Imidan and Guthion, growers should assume that resistance to these insecticides (and to diazinon and Intrepid) will make them ineffective. Newer alternative insecticides that are much more effective include Altacor, Assail, Belt, Calypso, Delegate, and Rimon. Organic growers can use Entrust or codling moth granulosis virus.



Left: codling moth adult (Purdue University); center: “frass” (excrement) around larval entry into fruit (OMAFRA); right: larva in fruit (University of Kentucky).

**San Jose scale** crawlers typically become active 4 to 6 weeks after petal fall. This is, of course, temperature-dependent, and a better estimate of the timing of their activity is that it begins 380 to 400 degree-days (base 51 F) after male scales are captured in pheromone traps. The optimum timing for an insecticide aimed at San Jose scale crawlers is 600 to 700 degree-days after males are captured in traps. Not everyone is a fan of the tent traps used for monitoring flight of males of San Jose scale, so another approach to monitoring this insect is to wrap black electrical tape, sticky side out, on scaffold branches or twigs in trees where damage was noted last year. Get these sticky-tape traps out by 2 weeks after petal fall and check them twice a week for little yellow San Jose scale “crawlers,” and apply an effective insecticide within a few days after the first crawlers are observed. Esteem, Movento, Assail, Centaur, and Diazinon are labeled for San Jose scale control in apples. See page 15 of the [2013 Midwest Tree Fruit Spray Guide](#).



Left: San Jose scale damage on apple; center: San Jose scale on limb and twig (E. Wahle); right: electrical tape to monitor crawler activity (West Virginia University).

Rick Weinzierl (217-244-2126; [weinzier@illinois.edu](mailto:weinzier@illinois.edu))

## ***Vegetable Production and Pest Management***

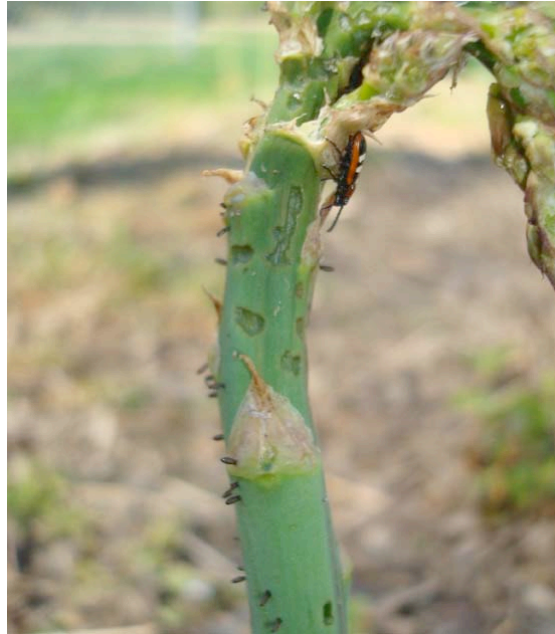
### ***Cucumber Beetles***

Striped and spotted cucumber beetles overwinter as adults and move to newly emerged cucurbit seedlings and to transplants, seemingly immediately after they emerge or are set. In addition to feeding on leaves, they carry bacterial wilt of cucumbers and muskmelons. To control them, the two main choices are exclusion (row covers for a few weeks until flowers are open) and insecticides that kill insects feeding on the plants. You can use conventional or OMRI-

approved insecticides to kill beetles with minimal impact on pollinators if you use liquid (not dust or wettable powder) formulations and you time sprays so that bees are not foraging when you spray. Effective conventional products are listed in the cucurbit section of the [Midwest Vegetable Production Guide](#); if you choose OMRI products that are allowed in certified organic production, repeated applications of Pyganic plus Surround have been moderately effective in research trials.

### ***Asparagus Beetle***

As asparagus emerges and harvests spread northward through the state, be sure to scout for asparagus beetle and its eggs (see photo); the threshold during harvest is 5-10% plants infested or 2% of spears with eggs. For complete control options, see the [Midwest Vegetable Production Guide for Commercial Growers](#).



Asparagus beetle adult and eggs (Elizabeth Wahle).

Rick Weinzierl (217-244-2126; [weinzier@illinois.edu](mailto:weinzier@illinois.edu))

### ***Less seriously ...***

In a meeting this week, addressed to a group of program participants ... “*I am going to appoint some volunteers for this committee.*” Seems like the meaning of “volunteer” must have changed.

*University of Illinois Extension Educators and Specialists in Fruit and Vegetable Production and Pest Management*

<b>Extension Educators – Local Food Systems and Small Farms</b>		
<b>STEPHEN AYERS</b> , Champaign, Ford, Iroquois, & Vermilion counties	217-333-7672	<a href="mailto:srayers@illinois.edu">srayers@illinois.edu</a>
<b>DEBORAH CAVANAUGH-GRANT</b> , Logan, Menard & Sangamon counties	217-782-4617	<a href="mailto:cvnghgrn@illinois.edu">cvnghgrn@illinois.edu</a>
<b>KYLE CECIL</b> , Henderson, Knox, McDonough, & Warren counties	309-342-5108	<a href="mailto:cecil@illinois.edu">cecil@illinois.edu</a>
<b>LAURIE GEORGE</b> , Bond, Clinton, Jefferson, Marion, & Washington counties	618-548-1446	<a href="mailto:ljgeorge@illinois.edu">ljgeorge@illinois.edu</a>
<b>ELLEN PHILLIPS</b> , Boone, DeKalb, & Ogle counties	815-732-2191	<a href="mailto:ephillps@illinois.edu">ephillps@illinois.edu</a>
<b>MIKE ROEGGE</b> , Adams, Brown, Hancock, Pike & Schuyler counties	217-223-8380	<a href="mailto:roeggem@illinois.edu">roeggem@illinois.edu</a>
<b>DAVID SHILEY</b> , Coles, Cumberland, Douglas, Moultrie & Shelby counties	217-543-3755	<a href="mailto:dshiley@illinois.edu">dshiley@illinois.edu</a>
<b>JAMES THEURI</b> , Grundy, Kankakee, & Will counties	815-933-8337	<a href="mailto:jtheu50@illinois.edu">jtheu50@illinois.edu</a>
<b>Extension Educators – Horticulture</b>		
<b>RICHARD HENTSCHEL</b> , DuPage, Kane, & Kendall counties	630-584-6166	<a href="mailto:hentschel@illinois.edu">hentschel@illinois.edu</a>
<b>ANDREW HOLSINGER</b> , Christian, Jersey, Macoupin, & Montgomery counties	217-532-3941	<a href="mailto:aholsing@illinois.edu">aholsing@illinois.edu</a>
<b>SONJA LALLEMAND</b> , Franklin, Jackson, Perry, Randolph, & Williamson counties	618-687-1727	<a href="mailto:lalleman@illinois.edu">lalleman@illinois.edu</a>
<b>ELIZABETH WAHLE</b> , Bond, Clinton, Jefferson, Marion, Madison, Monroe, St Clair, & Washington counties	618-344-4230	<a href="mailto:wahle@illinois.edu">wahle@illinois.edu</a>
<b>Extension Programs for Farm to School</b>		
<b>JULIA GOVIS</b> , Statewide Extension Program Coordinator, Farm to School	630-955-1150	<a href="mailto:jgovis@illinois.edu">jgovis@illinois.edu</a>
<b>Horticulture Research-Extension Specialists at our Research Stations</b>		
<b>JEFF KINDHART</b> , Dixon Springs Agricultural Center	618-695-2770 618-638-7799 (cell)	<a href="mailto:jkindhar@illinois.edu">jkindhar@illinois.edu</a>
<b>Campus-based Extension Specialists</b>		
<b>MOHAMMAD BABADOOST</b> , Plant Pathology	217-333-1523	<a href="mailto:babadoos@illinois.edu">babadoos@illinois.edu</a>
<b>MOSBAH KUSHAD</b> , Fruit & Vegetable Production	217-244-5691	<a href="mailto:kushad@illinois.edu">kushad@illinois.edu</a>
<b>JOHN MASIUNAS</b> , Weed Science	217-244-4469	<a href="mailto:masiunas@illinois.edu">masiunas@illinois.edu</a>
<b>CHUCK VOIGT</b> , Vegetable Production (& herbs)	217-333-1969	<a href="mailto:cevoigt@illinois.edu">cevoigt@illinois.edu</a>
<b>RICK WEINZIERL</b> , Entomology	217-244-2126	<a href="mailto:weinzierl@illinois.edu">weinzierl@illinois.edu</a>

Return Address:

Rick Weinzierl  
Department of Crop Sciences  
University of Illinois  
1102 South Goodwin Ave.  
Urbana, IL 61801

