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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/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** (listings for beginning and established growers)
- **Webinars and conference presentations available online**
- **Regional Reports** (from southern and western Illinois)
- **Fruit Production and Pest Management** (pheromone traps for fruit insects)
- **Vegetable Production and Pest Management** (controlling algae in ponds, transplants, soil organic matter, flame weeding)
- **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>

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>.

- **Farmers Market and Local Food Production Promotion Program Grant Writing Workshops, April 8, 15, and 23, 2015.** (1:00 – 5:00 p.m., April 8 in Springfield at the Sangamon County Extension Office; April 15 in Mt. Vernon at the Jefferson County Extension Office; April 23 in Grayslake at the Lake County Extension Office. For more information, contact Deborah Cavanaugh-Grant at cvnghgrn@illinois.edu or 217-782-4617. Register at <https://web.extension.illinois.edu/registration/?RegistrationID=11736>.
- **Online Good Agricultural Practices – Food Safety Webinar Series, April 9, 2015 to April 30, 2015.** (Thursdays - April 9, 16, 23 and 30, from 6:00 p.m. to 8:00 p.m.). Cost: \$20. To register, see <http://web.extension.illinois.edu/gkw>
- **Southwestern Illinois Twilight Orchard Meetings, April 16 and May 21, 2015.** April 16 at Eckert's Orchard near Grafton; May 21 at Weigel Orchard near Golden Eagle. 5:30 – 7:30 p.m. at each location. For more information, contact Ken Johnson at 217-243-7424 or kjohnso@illinois.edu.
- **Tomato Grafting, April 22, 2015.** 1:00 to 3:00 p.m. at the Kankakee Extension Office (1650 Commerce Dr., Bourbonnais, IL). Graft your heirloom tomatoes onto hybrid rootstocks for better performance. Cost: \$3 per person. Call 815-933-8337 to register.
- **Hydroponics Workshop, May 13, 2015.** 9:00 a.m. to 2:45 p.m. at Kankakee Community College, 100 College Dr., Kankakee IL 60901. Jeff Kindhart and Sam Wortman will provide an introduction to hydroponic systems. Cost: \$10 per person. Lunch on own. Link to be provided; call 815-933-8337.
- **Southern Illinois Summer Twilight Series Meeting, May 18, 2015.** 6:00 p.m. at Miller Farms, 918 Calvary Cemetery Rd, Campbell Hill, IL 62916. Visit a diverse farm operation that includes plasticulture strawberries,

low tunnel tomatoes, blueberries, cover crops, egg production, and more. Program is free but pre-registration is required by Friday, May 15 online at <http://web.extension.illinois.edu/ghhpsw/> or by phone at 618-382-2662. For more information about the Twilight Meeting go online or contact: Bronwyn Aly at baly@illinois.edu; 618-382-2662 or Nathan Johanning at njohann@illinois.edu; 618-687-1727.

- **Midwest Compost School, June 2-4, 2015.** Wauconda Township Hall, Lake County, IL. For more information, contact Duane Friend at friend@illinois.edu or 217-243-7424. Register at <http://extension.illinois.edu/go/midwestcompost>.

Webinars and Conference Presentations Available Online

The 2015 Small Farm Webinar Series concluded last month with a webinar on “Variety Selection and Rootstocks for Establishing Apple Orchards.” It can be accessed at http://web.extension.illinois.edu/hkmw/cat88_3926.html. Scroll down the page, and it’s listed along with several other webinars from 2015. Also available are recordings of all previous webinars ... they cover a wide range of topics relevant for fruit and vegetable producers and other small farmers.

Presentations – the pdf versions of Power Point files – from the 2015 Illinois Specialty Crops, Agritourism, and Organics Conference are available on the Illinois Specialty Growers association website, <http://www.specialtygrowers.org/>. Links to presentations from 2013-2015 are at the right on the ISGA home page, and the 2015 presentations are at <http://www.specialtygrowers.org/2015-iscaoc-speaker-presentations.html>.

Regional Reports

From southern Illinois ... After around 2 inches of rain the week of March 23, things are finally starting to dry out for the first time this spring in southern Illinois ... with the help of some sunny days and highs in the 70s. We did get less than a 1/10 inch of rain late Sunday (March 29), but it was too little to slow things down. Growers were out in full force the first half of this week working ground, planting fruit trees, laying plastic, and spreading fertilizer while the weather was cooperative. Forecasts for rain Thursday into Friday will more than likely slow things down.

With the warm weather our orchard crops are now starting to show some activity. Peaches are generally at or approaching pink, and apples are around green tip. Regarding my observations on the peach crop from the last newsletter, since then I have talked to some additional growers and visited some orchards, and most conclude there is still potential for a good peach crop overall. Our cold February temperatures (especially in Union County and the surrounding area) killed many flower buds, but there are significant differences between varieties and their response. Some varieties have very little if any bud-kill while others right beside lost 90% or more of the flower buds. Topography and air drainage also played into the equation. Overall, if we can keep the remaining buds (especially on some of the varieties that are light on blossoms), most varieties will have a decent crop and some will still require quite a bit of thinning.

Plasticulture strawberries are progressing rapidly. Most plants are up with about 4-6 inches of foliage, but there are no visible signs of buds or blooms yet for the most part. There are lots of tomatoes set or about to be set in high tunnels and low tunnels. Blackberries are pushing some new growth; I have ‘Kiowa’ blackberries at my office, and they have about 1” of new growth. Now is also the time to be applying spring burndown herbicides to asparagus fields ahead of any spring growth. For more information on specific herbicides for asparagus (or other crops) consult the [2015 Midwest Vegetable Production Guide](#).

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

From western Illinois ... We received about ¾ inch of rain the week of March 23, but drying winds and very little rain throughout the month provided somewhat dry soil conditions and allowed some producers to begin some field work. Spring tillage and anhydrous application began on the better drained soils for corn and soybean growers. Likewise for vegetable growers on the better drained soils, early field work began, including fertilizing, tillage, pulling beds, and laying plastic.

Early planting of some of the cool season crops (including lettuce and other greens, potatoes, and onions) began for some. Others are waiting for soil conditions to improve. Greenhouses are full of plant materials in various stages of growth to transplant. Some have transplanted tomatoes into their tunnels, others are close. High tunnel strawberries are blooming. Plastics berries have initiated new spring growth, and producers are removing the desiccated leaves to help eliminate sources of Botrytis.

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

Fruit Production and Pest Management

The usual spring recommendations for using traps to monitor key insect pests in fruits ...

For apple, peach, and grape growers who have not already done so, NOW is the time to order pheromone traps for key insects. Traps are available and useful for monitoring many insects of fruit crops, and the ones listed in the table that follows are probably the most important for most Illinois fruit growers. Other fruit pests that may be worth monitoring with traps include dogwood borer, spotted tentiform leafminer, redbanded leafroller, and obliquebanded leafroller in apples. Contact me if you want more information on these insects.

What kind of traps work best?

A few companies manufacture traps, and all have a similar range of designs. Trecé, Scentry, Suterra, Alpha Scents, and others are reliable providers. The trap design that has become most widely used for fruit insects in general is the large plastic delta trap; Trecé sells it as the Pherocon VI trap, and Suterra and Scentry simply call it a large plastic delta trap (LPD). This trap is quick to set up and easy to maintain; the sticky trapping surface is provided by an exchangeable card that slides in and out quickly and easily. If you bring the trap “shell” indoors at the end of the season, you can expect to get at least 2 to 3 years use from each trap (while replacing lures and liners as needed).

How do traps work?

Most of the insects listed in the table below are moths in their adult stage. For all the moths typically monitored using sticky pheromone traps, the trap must be baited with a pheromone lure – usually a small piece of rubber or plastic containing a synthetic blend of chemicals that is very similar to compounds used by female moths to attract males. When traps capture male moths, that serves as an indication that females are also present, and mating and egg-laying are occurring. When you order pheromone traps, you also must order lures for the specific insect(s) you wish to monitor. (Sometimes you may order “kits” that contain enough traps, sticky liners, and lures to last the season.) Remember that although you may use the same type of trap to monitor different pests, you must use only a single lure per trap ... it does not work to put lures for codling moth and tufted apple bud moth in the same trap. Depending on the pest species, lures usually last 2 to 8 weeks (suppliers can tell you the effective life of the lures they sell), so you have to order enough lures to last through the whole season.

For apple growers in the northern half of Illinois, monitoring the flight of apple maggot flies also is necessary. Traps for apple maggot flies rely on appearance (especially the color and shape of a bright red apple) and the use of a food odor (“apple volatiles”) instead of a pheromone, and they are designed to capture female apple maggot flies ready to lay eggs on fruit. All the major suppliers of insect traps carry these kinds of traps. Growers should order the red spheres, tubes or tubs of stick-um or tanglefoot, and the food lures recommended by the supplier. Apple maggot traps may be used without any food lures; counts are interpreted accordingly.

How many traps are needed for each pest species?

Guidelines often recommend at least 3 traps per pest species for any orchard up to 10 acres in size and 1 more trap for every 3 to 5 acres above 10. To monitor 50 acres of trees in 3 or 4 separate blocks, use at least 3 traps per block and at least 9-12 traps total ... for each pest species. Always use at least 3 apple maggot traps (red spheres) per block of trees. See the table below regarding placement of traps. Remember that you should check these traps and record counts in each at least twice per week.



Left: A Pherocon VI trap (an example of a large plastic delta trap), with the sticky liner partially removed, showing a pheromone lure. Right: An apple maggot trap.

If you have only one relatively small block of trees, you may want to order 3-trap "kits" that suppliers package for each of the major pests. Kits with "standard" lures will include 3 lures per trap, but because the lures for most will have to be replaced every 4 weeks, most Illinois growers will need yet another 2 extra lures per pest species per trap to get through the entire season. Suppliers also sell these extra lures and extra "liners" (the sticky trapping surface) for traps. If you operate an orchard larger than 10 to 15 acres, you'll need more traps, so don't "mess with" 3-trap kits; contact a supplier and make plans to order in bulk. "Long-life" lures are available for the codling moth and the Oriental fruit moth (and some other species) ... these lures last 8 weeks between changes and are the best choice for almost all Illinois growers.

For apple growers in southern Illinois, it has been a few years since we saw some problems with tufted apple bud moth in orchards that were treated pretty much exclusively with organophosphates. With greater reliance on alternative chemistries in recent years, this pest has faded from the scene in most orchards, but I still include it in the table below for those who encounter it.

Pheromone trapping guidelines for major fruit insects

Crop and pest	When should you use traps?	Where do you hang the traps?
Apples -- all of Illinois Codling moth	Early bloom through harvest	At eye level or higher (<u>upper third of canopy is best</u>), spaced throughout the block, including one somewhere near the upwind edge and one near the downwind edge.
Apples -- south of I-70 Tufted apple bud moth	April 15 through harvest	Same as above for codling moth.
Apples -- north of Springfield Apple maggot	June 15 through harvest	In the outer portion of the canopy of trees on the edge of the block ... VERY visible to adults flying into the block (remove foliage around the sticky red spheres). Hang in border rows or end trees nearest any woods or brush outside the block
Peaches -- Lesser peachtree borer	Bloom or petal fall through harvest	Similar to codling moth, but trap height should not exceed 5 to 6 feet.
Peaches -- "greater" peachtree borer	May 15 through harvest	Similar to codling moth, but trap height should be 3-4 feet above the ground.
Peaches -- Oriental fruit moth <i>(In southern IL, trapping for Oriental fruit moth in apples is also recommended.)</i>	Green tip to pink through harvest	Similar to codling moth, but trap height need not exceed 6-8 feet.

Grapes -- Grape berry moth	Bloom through harvest	Hang traps on the top trellis wire. Place traps in the outside rows and near ends of rows; concentrate traps on edges near wooded areas. (Note that where GBM populations carry over in wild grapes in woods near vineyards, mating may occur there, mated females may lay eggs in the vineyard, and traps may not capture many (or any) males in the vineyard itself.)
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Midwestern suppliers of pheromone traps include:

Supplier	Address	Phone & Fax
Great Lakes IPM	10220 Church Road Vestaburg, MI 48891-9746 email: glipm@greatlakesipm.com On the web at: http://www.greatlakesipm.com	989-268-5693 989-268-5911 800-235-0285 FAX: 989-268-5311
Gempler's	P.O. Box 44993 Madison, WI 53744-4993 On the web at: http://www.gemplers.com/pheromone-lures	1-800-382-8473 (U.S.A.) FAX 1-800-551-1128

The March 19, 2015 issue of this newsletter (<http://ipm.illinois.edu/ifvn/contents.php?id=57>) provided guidelines for trapping for spotted wing Drosophila ... trapping to monitor this insect is absolutely necessary for growers of thin-skinned fruits such as brambles, blueberries, grapes, and peaches (and day-neutral strawberries).

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

Vegetable Production and Pest Management

Controlling Algae in Ponds

I've had four calls during the past week from pond owners who want to begin control of algae in ponds. Too much algae in ponds can interfere with irrigation intake lines. Copper sulfate (CuSO₄) provides some of the best control, but the application method can influence how effective the product is.

Using granular CuSO₄, place 2-3 cups in a 2.5 gallon jug and fill with hot water from your tap. Place outside in the sun and shake every couple of hours to mix. Not all the product will dissolve, but most will. With a pump up hand sprayer, on a day that the winds have pushed the algae to one side of the pond, apply to the algae. In 7-10 days you'll note a color change in the algae.

Wait until water temperatures are above 60 degrees before application. You'll need to reapply in about 30 days. It's best not to apply during the warm summer months when water oxygen levels are lower, as any additional decaying plants could lower oxygen levels to the point where fish kill occurs.

You never want an entirely clean pond, as these plants provide protection for young fish and provide oxygen. Look at the label for any restrictions on use, but many have zero or very few days between application and use, including irrigation. For more information on identification and control of aquatic plants, see <http://web.extension.illinois.edu/abhps/weeklyag/140516.html> and <http://ipm.illinois.edu/weeds/aquaticWeeds.pdf>.

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

Transplants, Structures, and Watering:



Greenhouse transplant production.

Now that transplant production is in full swing, a few things to remember and consider ...

More vegetables can be transplanted than you think. If you have the space and time, starting transplants of certain vegetables inside will create a much more predictable outcome than direct seeding. In fact, at the University of Illinois Student Farm, the only things we didn't transplant were carrots, radishes, beans, and baby salad greens (though even these can be transplanted). Transplant production controls soil temperature, moisture, and early fertility. This ensures uniform plant growth. When the plants are subsequently planted outdoors they have a head start that ensures better success over their direct-seeded counterparts in the field. A good example of this is the members of the Amaranthaceae family. This includes beets, chard, and spinach. All of these crops are traditionally direct seeded throughout the spring and fall in the field. However, all three of these crops are excellent candidates for transplanting as well. We have planted 3-4 beet seeds per cell in 50 cell plug trays without thinning and then set them out at 6 inches apart in row and 12 inches between rows. This extra in-row space allows the multiseeded beet plugs to expand out and form full size beets from these clusters. We used similar approaches with chard and spinach but used 128-cell plugs instead.

If you don't have a greenhouse, sufficient window space, or a good indoor lighting set up; there is another option – modified hotbeds. A traditional hotbed is a coldframe box that is heated by fresh manure buried 1-2 feet below the soil line. Seeds are started in a potting mix on the surface and benefit from the bottom heat and increased soil temperature. A modern version of this might include burying electrical soil heating cables (controlled by an external or internal thermostat) between layers of moist play sand, then a layer of metal construction mesh, topped with a soil-less potting mix on top. This is contained in either a traditional coldframe box or a mini-tunnel attached to a raised bed (pictured below). The mini-tunnel could be made out of ½" metal conduit and greenhouse plastic. I am currently working on a design that will be 32 sq ft and cost around \$470 for the completed structure (including soil). This could pay for itself in a year, depending on how many transplants a grower would produce. The transplants would have to be dug out (like cutting up a square cake), so those vegetables that are sensitive to having their roots disturbed might not excel in this system (cucurbits, for example). However, if timed right even warm season transplants such as peppers and tomatoes could be produced in a system like this.



Low tunnel for transplant production.

Adequate watering without overwatering is essential for transplant production. Too little or too much water is not a good thing. However, there is no single rule for how much to water. Even automated mist benches and watering systems require an element of human management to work properly. Here are some important tips:

- Water in a uniform fashion. Organize trays by cell size so they are all watered according to their respective cell volumes.
- Water by location on the benches. Trays on the edge of a bench, on the south side of the greenhouse, and closer to the furnace will dry out more rapidly.
- Watering is a task that must be done twice. The first watering will moisten dried out cells to initiate capillary action on top, then the second pass will water the cells to the bottom. If you are unsure, pull a couple plugs out to see if water is reaching the bottom of the plugs. It is a good idea to pull a couple plugs out anyway to see if they need water at all. This is in addition to feeling the tops of the plugs.
- Consider the outside temperature and conditions. Sunny and warm conditions require thorough watering, whereas cloudy weather requires little to no watering.

All in all, leggy and disease prone transplants are created in excessively moist conditions. Watering thoroughly but no more frequently than necessary avoids excessive leaf wetness and fungal diseases.

Zachary Grant (708-449-4320; zgrant2@illinois.edu)

Increasing Soil Organic Matter

A common question we get from growers is “Am I making a difference in organic matter content of my soil over the years?” The answer ... it’s complicated.

Soil organic matter consists of living organisms (microorganisms, earthworms, etc.), fresh plant residues (old plant roots, crop residues, recently added manures), and well-decomposed residues (humus). While most growers implement practices on the farm that we hope are increasing soil organic matter, it is difficult to determine what impact we are having on overall soil organic matter content. There are several reason for this ... different types of organic matter accumulate and deteriorate at different rates, soil organic matter is accumulated in the soil VERY slowly with

sometimes imperceptible changes taking place over decades, and depending on the type of soil you have, the cropping system, environment, and other factors, the rate of deposition varies extremely from place to place and over time.

Having recognized these facts, is there anything we should do differently? My answer to this is that we should all continue using practices that help “build” our soils. The following list of practices is likely not new to you but it is worthy of noting to reaffirm their importance in helping to build quality soil resources:

- Grow or add material such as manures, compost or other organic materials to your fields regularly.
- Better use crop residues and include high residue crops.
- Encourage deep rooted crops which add significantly to soil health.
- Grow cover crops.
- Reduce tillage if possible.
- As always, practice soil and water conservation on all acres.

Only that portion of soil organic matter which remains after harvest, along with root biomass, will influence long-term organic matter content. Focus your main efforts on this fact. For a more detailed discussion on soil organic click here for [Cornell University’s Soil Organic Matter Factsheet #41](#)

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

Flame Weeding

Flame weeding kills weeds with intense heat produced by a fuel-burning device, either hand-held or tractor-mounted. The goal is not to set plants on fire, but rather to damage the cell structure of their foliage. Brief exposure to intense heat causes the cell sap to expand and that in turn disrupts cell walls. The flamed weeds don’t keel over immediately, but within several hours or days they wilt and then die.

There are several keys to successful flame weeding strategies. These include:

- Work the seedbed early and encourage any weed seed to germinate and then flame them as small seedlings. The idea is to flame the plants before the first true leaves emerge.
- Broadleaves are more readily controlled with flaming than grasses. The growing point of grasses is well insulated in the soil.
- After flaming the bed, plant your seeds without any unnecessary soil disturbance.
- One can flame after planting within the row as long as the plants have not emerged.

Safety is a big issue with flaming. Consult with a gas professional if constructing your own flaming unit. You are literally “playing with fire” as they say. There are lots of reports available on flame weeding; one that is interesting and informative is at <http://www.extension.org/pages/58694/video-clip:-flame-weeders-from-vegetable-farmers-and-their-weed-control-machines#.VRmeh-HijdU>.

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

Less Seriously ...

A guy sent ten different puns to ten of his friends, with the hope that one of the puns would make them laugh. No pun in ten did.

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