



# UNIVERSITY OF ILLINOIS EXTENSION

College of Agricultural, Consumer, and Environmental Sciences

## *Illinois Fruit and Vegetable News*

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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](mailto:njohann@illinois.edu) or Bronwyn Aly 618-382-2662, [baly@illinois.edu](mailto: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.

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### *In Memory of Jeff Kindhart*

**Jeff Kindhart**

*January 18, 1965 – February 8, 2016*



On February 8, 2016, Jeff Kindhart, Senior Research Specialist at the University of Illinois Dixon Springs Agricultural Center (DSAC), died peacefully at his home under hospice care. An aggressive cancer reached the membranes of his brain several days earlier, and it was inoperable and untreatable. Jeff gave generously and tirelessly in his teaching and advising efforts to improve the lives of countless growers throughout Illinois and elsewhere. He will be missed tremendously as a friend, a colleague, and a mentor to many.

An educational fund for Jeff's children has been established at Bailey Funeral Home in Vienna, Illinois. To contribute, contact the funeral home at Bailey Funeral Home, 705 North First Street PO Box 695, Vienna, IL, 62995 (email [baileyfhinc@hotmail.com](mailto:baileyfhinc@hotmail.com); <http://baileyfh.com>). Jeff's obituary is available on the funeral home website, and the following paragraphs tell at least some of the valuable professional story that's not in the obituary.

The horticulture program at DSAC was established in 1960, with Dr. J.W. (Bill) Courter as its leader. After receiving a Master's Degree in Horticulture at the University of Illinois, Jeff started at DSAC as a horticulturist in 1990, initially under the mentorship of Dr. Courter and then as an independent Research Specialist after Dr. Courter retired in 1992. His work initially expanded on many of the research and Extension efforts that Dr. Courter initiated; later Jeff took on many new and innovative projects. Jeff was among the first scientists in the Midwest to research and promote strawberry plasticulture, having established research plots at DSAC in 1992. Largely as a result of his work, plasticulture production of strawberries (using raised beds, plastic mulch, winter row covers, and an annual production cycle) has been widely adopted by progressive growers in the southern third of Illinois where the climate allows success and profitability. His evaluations of existing and new varieties of tomatoes, peppers, asparagus, blueberries, blackberries, and other specialty crops produced recommendations widely used by southern Illinois growers. He collaborated with University of Illinois faculty in horticulture, entomology, and plant pathology in numerous projects and provided on-site management for those projects. Moreover, he carried out independent research and extension projects that he knew would benefit growers throughout the state and region.

Since 2010, Jeff's work at DSAC focused primarily, but not exclusively, on protected agriculture, including both small fruits and vegetables in high-tunnel and greenhouse production systems. High-tunnel research began in 2008 with DSAC staff cooperating with an area producer. The first two high tunnels were constructed at DSAC in 2010, with a third added in 2014. In just a few years, Jeff's work produced cultivar evaluations and recommendations for high-tunnel production of tomatoes, peppers, raspberries, salad greens, and strawberries. Jeff evaluated and demonstrated the use of a portable steamer to pasteurize soil for insect, weed, and disease suppression, a practice that can benefit conventional and organic growers alike. His evaluations of various hydroponic systems for strawberries, tomatoes, greens, and other crops were the topics of many Extension presentations to growers in Illinois and nearby states. Most recently, Jeff began assessments of the economic viability of low-technology mushroom production using various structures, including high tunnels, and efforts to identify superior cultivars of oyster and *Agaricus* mushrooms and the best substrates for their production.

Jeff Kindhart led numerous educational/extension activities, both on and off site. These included annual field day events at DSAC, regional twilight meetings, regional growers' schools, the Illinois Specialty Growers Association statewide meeting, and invited presentations at conferences in Missouri and Kentucky. He was always sought after by attendees at these programs because his knowledge and his recommendations helped them to be successful and profitable. He was an essential part of University of Illinois Extension's statewide and southern IL fruit and vegetable programs. From 2012 through 2015, DSAC was one of three sites for the U of I's USDA-funded program, *Preparing a New Generation of Illinois Fruit and Vegetable Farmers*, a program that helped over 250 potential new fruit and vegetable growers plan and initiate new small farms. Jeff developed several of the training modules for this program, led the field portion of all sessions held at DSAC, and taught multiple topics at DSAC, Urbana, and St. Charles. He was undeniably the single most important contributor to this program. The following link will take you to the new farmers website, which has a few photos of Jeff teaching during the last three years, as well as a video on high tunnel construction <http://newillinoisfarmers.org/kindhart.php>.

On January 7, 2016, at the Illinois Specialty Crops, Agritourism, and Organics Conference, Jeff received the Illinois Specialty Growers Association Award of Excellence for his many outstanding contributions to specialty crop production in Illinois. The day before Jeff addressed a packed crowd in a small fruit workshop to provide updates and recommendations on hydroponic production of strawberries in a vertical stacking system in high tunnels. It would be his final public presentation.

In all of his research and extension work, Jeff was dedicated to the idea that scientific evaluations of new (and old) methods of fruit and vegetable production provide information that improves yields, efficiencies, and profits for growers. He understood that assessing and teaching new approaches helped improve the lives of small farmers and local consumers alike. He was knowledgeable about a broad range of horticultural challenges and practices, always genuine, frequently passionate, and never shy about "telling it like it is."

Those of us who knew him well lost a treasured co-worker and friend. All who knew him will miss his wit and his smile. Even those who have never met him will miss the contributions he would have continued to make.

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

## 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>.

- **Small Farm Webinar Series, January 14 through March 31. Thursdays, noon to 1:00 p.m.** For more details or to register online, see <https://web.extension.illinois.edu/registration/?RegistrationID=13379>. For more information, contact Andy Larson at 815-732-2191 or [andylars@illinois.edu](mailto:andylars@illinois.edu).
  - **Feb. 18** - The Emerging Local Grain Economy in Illinois, Bill Davison, *University of Illinois Extension Local Food Systems and Small Farms Educator*
  - **Feb. 25** - Food Safety Modernization Act: Changes for Small Scale Producers, Laurie George, *University of Illinois Extension Local Food Systems and Small Farms Educator*
  - **Mar. 3** - Getting Your Beehives Ready for Spring, Doug Gucker, *University of Illinois Extension Local Food Systems and Small Farms Educator*
  - **Mar. 10** - Raising Meat Birds on Pasture, Andy Larson, *University of Illinois Extension Local Food Systems and Small Farms Educator*
  - **Mar. 17** - Using Cover Crops on Small Farms, Nathan Johanning, *University of Illinois Extension Local Food Systems and Small Farms Educator*
  - **Mar. 24** - Growing Great Blackberries, Bronwyn Aly, *University of Illinois Extension Local Food Systems and Small Farms Educator*
  - **Mar. 31** Setting Up a Grazing System on a Small Farm, Jay Solomon, *University of Illinois Extension Energy and Environmental Stewardship Educator*
- **Tri State Local Food Summit. Saturday, February 20, 2016** at John Wood Community College in Quincy. Registration at 8 a.m.; program starts at 9 a.m. Dr. John Ikerd will be a keynote speaker. Separate producer and consumer tracks, locally grown lunch and refreshments, opportunities to network with local growers from IL, IA and MO. Pre-registration cost is \$20 per adult, lower for students. Register at <http://web.extension.illinois.edu/abhpps>. A locally grown Farm to Table dinner will be offered Friday evening. For more information contact Mike Roegge at 217-223-8380 or [roeggem@illinois.edu](mailto:roeggem@illinois.edu).
- **Stateline (IL-WI) Fruit and Vegetable Conference, February 25, 2016, Rockford, IL.** For more information visit <https://web.extension.illinois.edu/registration/?RegistrationID=13143> or contact Grant McCarty at [gmcarty@illinois.edu](mailto:gmcarty@illinois.edu) or 815-235-4125.
- **Kankakee County Fruit & Vegetable Growers Symposium, Friday, February 26, 2016 from 9:00 a.m. to 3:00 p.m.** University of Illinois Extension Office, 1650 Commerce Dr., **Bourbonnais, IL.** Topics include disease and insect management, no-till production, irrigation, variety selection and food safety. Cost is \$20 (includes lunch). To register, visit <https://web.extension.illinois.edu/registration/?RegistrationID=13500>. For more information, call James Theuri at 815-933-8337.
- **North American Raspberry and Blackberry Conference, March 1-4, 2016.** Williamsburg, Virginia. For more information, see [www.raspberryblackberry.com](http://www.raspberryblackberry.com), email [info@raspberryblackberry.com](mailto:info@raspberryblackberry.com), or call 919-542-4037.
- **26<sup>th</sup> Annual Greenhouse Tomato Short Course, March 1 & 2, 2016.** Eagle Ridge Conference Center, **Raymond, Mississippi** (close to Jackson and the airport [JAN]). For more details visit <http://greenhousetomatosc.com> or on Facebook at <https://www.facebook.com/GreenhouseTomatoShortCourse>
- **Pruning Your Way to Success: Managing Small Farm Fruit Plantings, Thursday, March 10, 2016 from 4 p.m. to 6 p.m.** University of Illinois, Dixon Springs Agricultural Center, 354 State Hwy 145 N Simpson, IL. Register at <https://web.extension.illinois.edu/registration/?RegistrationID=13874>. For more information, call Bronwyn Aly at 618-382-2662, or Nathan Johanning at 618-687-1727.
- **Market Ready Program, Thursdays, March 10 through March 31 5:30 – 8:30 p.m.** Boone County Extension, 205 Cadillac Ct., Suite 5, Belvidere, IL 61008. This four week program is designed for local food farmers who are interested in selling to restaurants, retail stores, and institutional buyers. For more information or to register visit <https://go.illinois.edu/MarketReady> or contact Grant McCarty 815-235-4125; [gmcarty@illinois.edu](mailto:gmcarty@illinois.edu) or Andy Larson 815-732-2191; [andylars@illinois.edu](mailto:andylars@illinois.edu).
- **High Tunnel Workshop: For Intermediate & Advanced Growers. Saturday, March 12, 2016 from 9 a.m. to 4:30 p.m.** Hillsboro City Hall, 101 Main St.; Hillsboro, MO (just south of the St. Louis Metro Area) Topics include grower experiences, insect and disease management and soil health/cover crops. Cost is \$25. For additional registration or program information please contact Miranda Duschack, Small Farm Specialist, Lincoln University at 314-604-3403 [DuschackM@lincolnu.edu](mailto:DuschackM@lincolnu.edu).

## ***Regional Reports***

### From northern Illinois...

Weather has remained fairly uneven over the last couple of weeks. We did get a blast of normal, cold temperatures but lacked any precipitation. In fact, there is not much snow coverage up here. By the end of next week, we are expecting lows in the 30s which is unusual for this time of year.

In northern Illinois, we are preparing for the Stateline Fruit and Vegetable Growers Conference on Thursday, February 25 in Rockford. This will provide both southern Wisconsin and northern Illinois growers timely updates on disease, insect pests, and other topics related to their production. We also will be joined by Mac Condill of the Great Pumpkin Patch to deliver our keynote address. Growers can still register for this event by visiting our unit Extension [website](#).

*Grant McCarty (815-235-4125; [gmccarty@illinois.edu](mailto:gmccarty@illinois.edu))*

### From western Illinois ...

The 2016 growing season has begun for some. High tunnel growers have started tomato transplants for April 1<sup>st</sup> setting. Most folks like at least 6 weeks of growth prior to setting out plants. Of course temperature and light will somewhat dictate length of growth. Many cole crop transplants have been seeded as well. Tunnel growers are fertilizing and preparing beds, or they soon will be, in preparation for planting.

We've had just one night below 0 degrees, which has allowed many overwintering plants (head lettuce, carrots, etc.) in high tunnels to survive with some row covers to hold temperatures. The warm temperatures interspersed with the cold this winter has allowed for good growth on overwintered spinach in the tunnels, better than what we've experienced the past few years. We've not provided any protection for the spinach, only watered a couple of times. We did have to work on an aphid infestation, catching it early while populations were still light.

Pruning of apple trees is ongoing as weather permits. Pruning of brambles, especially those thorny ones like Illini Hardy, need to be completed while the weather still warrants Carhart protection (or at least it does for me). Soil conditions are very wet. In talking to a couple of tile contractors, they're finding difficult conditions as frost in the ground has not been constant this winter, making for irregular working conditions. The tile lines are definitely running. Fertilizer prices are some of the lowest we've seen for a few years, at least since 2008. And the dealers I've talked to don't anticipate much if any increase between now and spring application. Make sure you're replacing the fertilizer you remove when harvesting crops. If you've not taken a soil test in the past 4 years, make sure you complete that task this spring.

*Mike Roegge (217-223-8380; [roeggem@illinois.edu](mailto:roeggem@illinois.edu))*

### From southern Illinois ...

Winter has been a little more evident in southern Illinois in the last few weeks with generally seasonal temperatures and even lows down in the single digits last weekend; however, we have had a few warm days between weather systems with temperatures up in the 50s or 60s, but this is shortly followed by some subfreezing temperatures. Last week, we got hit by multiple clipper systems that brought us almost daily snows, but most only around an inch or two at the very most. Otherwise, our precipitation has been fairly modest and typical for this time of year. The forecast for the week ahead has a warm up in store with temperatures at or near 70 by the weekend and overall limited precipitation.

Dormant pruning on perennial fruit crops continues, especially on apples. In the high tunnel at my office, we have many greens, and carrots still doing well. For those focusing their tunnels on early tomato and summer annual vegetable crops, now is the time to start getting things cleaned up and prepared for planting which will be here before you know it. Be especially mindful of sanitation in tunnels with continuous tomato production where any disease problems have been problematic. White Mold is a common issue many growers have struggled with in tomatoes in tunnels. Take a look back at this article in the IFVN from last [July \(Vol 21:4\)](#) that highlighted more about white mold management.

*Nathan Johanning (618-687-1727; [njohann@illinois.edu](mailto:njohann@illinois.edu))*

## ***Educational Resources***

### **Midwest Vegetable and Fruit Spray Guides Available**

Extra Midwest Fruit and Vegetable Production Guides are available for purchase for those in need of a hard copy.

For copies of the **2016 Midwest Fruit Pest Management Guide** (note this is a combined guide replacing the separate Small Fruit Spray Guide and Tree Fruit Spray Guide from past years.) Contact Laurie George's office (618-242-0780, [lgeorge@illinois.edu](mailto:lgeorge@illinois.edu)) or Elizabeth Wahle's office (618-344-4230, [wahle@illinois.edu](mailto:wahle@illinois.edu))

Elizabeth Wahle's office also has copies of the **2016 Midwest Vegetable Production Guide for Commercial Growers** available for sale. **Each guide sells for \$15.00 delivered within the continental US.**

For those that want to refer to these guides online both can be found as PDFs at the links below:

[2016 Midwest Vegetable Production Guide for Commercial Growers](#)  
[2016 Midwest Fruit Pest Management Guide](#)

Elizabeth Wahle (618-344-4230; [wahle@illinois.edu](mailto:wahle@illinois.edu))

### **Online Resources Now Available from Recent Programs**

Did you miss out on some of the winter conferences and meetings this year or want to review some of the presentations? Presentations have now been uploaded and available online for the Illinois Specialty Crops, Agritourism, Organic Conference, Springfield; Commercial Tree Fruit Schools; and Gateway Small Fruit and Vegetable Conference. Please see the links below for this year (and archived presentations from previous years) from these events.

[2016 Illinois Specialty Crops, Agritourism, Organic Conference](#)  
[Commercial Tree Fruit Schools](#)  
[Gateway Small Fruit and Vegetable Conference](#)

Also, if you have missed any of the Small Farms Webinars from this year or previous years you can find them archived at <http://web.extension.illinois.edu/smallfarm/webinar.html> or directly on the Local Food Systems & Small Farms Team YouTube Channel at <https://www.youtube.com/channel/UCBvG-jopax3tPSCBxb6AgIQ>

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## ***Vegetable Production & Pest Management***

### **2015 On-Farm Tomato Cultivar Trials for Southern Illinois**

Two on-farm tomato cultivar trials were conducted in southeastern and southwestern Illinois during the 2015 season. The trial near Murphysboro, IL was replicated and included eleven cultivars while the trial near Shawneetown, IL was observational and included nine cultivars. The Shawneetown location has a very sandy soil while the Murphysboro location has a heavier soil, providing a good contrast in comparing cultivar performance. Transplants used in these trials were grown at the Dixons Springs Agricultural Center and field set on May 1, 2015 (Shawneetown) and May 7, 2015 (Murphysboro). While both locations utilized black plastic mulch with trickle irrigation, the Shawneetown site planted into flat beds and the Murphysboro site planted into raised beds. Transplants were set two foot apart in row with six foot bed spacing. Each location grew plants using a trellis weave training system and pruned to below first cluster. Pest control practices followed recommendations given in the *Midwest Vegetable Production Guide, 2015*.

The plots were harvested once a week for the period of July 8 to August 24. Early yields are for the period of July 8 to July 15 and midseason yields for the period of July 20 to August 10. Table 1 provides results from the Shawneetown observation trial and Table 2 provides results from the replicated trial in Murphysboro. Cultivars are listed in descending order of total pounds of U.S. No. 1 fruit harvested.



We would like to thank Don and Shirley Ahrens, *The Corn Crib*, in Shawneetown, IL and Greg McLaughlin, *McLaughlin Farm*, in Murphysboro, IL for allowing us to set these trials on their farms and for maintaining the plots throughout the season; Maggie Rose, *U of I Extension Unit 26*, Jeff Kindhart and Julie Zakes, *U of I Crops Sciences*, DSAC, for growing out the transplants; and *Seedway*, *Rupp*, and *Seigers* for donating seed.

Table 1. Results from the 2015 on-farm tomato cultivar observation trial in Shawneetown, IL.

	Early (7/13)	Midseason (7/20-8/10)	Total (7/13-8/24)	Total Marketable Yield	Size	Culls	Culls - BER
	----- U.S. No. 1 -----			U.S. No. 1 & 2	U.S. No. 1		
Cultivar	----- (lbs/plant) -----				(oz)	----- (no.) -----	
BSS 1056	1.3	5.1	6.4	10.3	11.5	12.2	0.0
Skyway	0.9	4.0	5.6	9.1	12.7	11.3	0.1
Rally	0.9	4.1	5.0	7.8	11.8	13.9	0.1
BHN 964	0.6	3.9	4.7	6.2	12.6	12.0	0.0
Tribeca	1.0	3.5	4.5	6.0	10.4	10.1	0.2
BrickYard	1.1	2.3	3.7	6.9	12.1	12.9	0.0
BHN 589	1.4	2.0	3.4	6.3	12.6	9.1	0.0
Red Rave	0.5	2.6	3.2	5.4	11.9	8.1	2.3
SummerPick	1.1	0.9	2.0	4.0	12.3	8.4	0.0
* Single plot observation trial							

Table 2. Results from the 2015 on-farm tomato cultivar replicated trial in Murphysboro, IL.

	Early (7/8-7/15)	Midseason (7/21-8/7)	Total (7/8 -8/21)	Total Marketable Yield	Size	Culls	Culls - BER
	----- U.S. No. 1 -----			U.S. No. 1 & 2	U.S. No. 1		
Cultivar	----- (lbs/plant) -----				(oz)	----- (no.) -----	
Red Mountain	1.1	5.3	6.5	10.6	10.6	17.7	0.0
Tribeca	0.2	4.6	5.8	11.1	10.5	13.7	0.0
Red Rave	0.5	3.9	4.9	7.4	11.3	6.7	1.3
Phoenix	0.4	4.0	4.6	7.8	10.5	7.4	0.4
BHN 964	0.2	3.3	4.1	8.4	11.0	13.1	0.1
BHN 589	0.2	3.2	3.9	6.6	11.3	13.6	0.8
Rally	0.1	2.6	3.5	6.7	9.9	8.7	0.0
BSS 1056	0.1	2.3	3.4	6.7	11.5	10.2	0.8
SummerPick	0.0	2.0	2.6	6.1	10.8	11.8	0.1
Skyway	0.1	1.4	2.2	4.1	12.3	9.9	0.1
BrickYard	0.4	0.7	1.4	4.1	10.4	11.5	0.2
* Averaged from 3 replications							

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## ***Fruit Production & Pest Management***

### **Considerations for Ordering Tree Fruit**

Because tree fruit nurseries are no longer speculating, orchardists need to preplan tree orders further out and get orders made sooner rather than later to get what they want. Nurseries have already sold much of the 2016-2018 inventory and are already scheduling larger orders (1000+) for 2020. Most in demand are dwarfing rootstocks (all species), with some like G.16 and G.30 in apples becoming harder and harder to find due to nursery production issues. Another issue that could unexpectedly affect availability is weather related crop failure at the nursery...in other words, just because you ordered them does not mean you are guaranteed to get them. Having said all that, for those of you still looking for trees for 2016, contact your nursery representative or tree fruit broker immediately to get on a waiting list. When nurseries grade out their stock this spring, there is a good chance small quantities will become available to growers on those waiting lists.

*Elizabeth Wahle (618-344-4230; [wahle@illinois.edu](mailto:wahle@illinois.edu))*

### **Fruit Management Update**

Pruning is ongoing in many crops, like apples, peaches, grapes, blueberries and brambles. It's time for sprayers to be pulled out and calibrated in anticipation of dormant applications for disease and insect control. Check the spray guide for the appropriate timing and rate for the various fruit crops. Leaf curl sprays on peaches can be put on now (before bud swell), as soon as conditions allow...temperatures should be above freezing at least 24 hours after application. For grapes, blueberries and brambles, it is best to wait until buds are just beginning to swell. Be ready for orchard and vineyard floors (weeds) to take off with the next warm-up. Growers should be prepared with a spring burndown and preemergent herbicide for residual control. Refer to the [2016 Midwest Fruit Pest Management Guide](#) for specific recommendations on pest management products.

*Elizabeth Wahle (618-344-4230; [wahle@illinois.edu](mailto:wahle@illinois.edu))*

### **Using Traps to Monitor Key Insect Pests in Tree Fruits**

For apple and peach 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 the most important for most Illinois tree fruit growers. Dogwood borer has become more troublesome to the east and northeast of us in dwarf apple trees, so increased attention to it is probably warranted here as well. Other fruit pests that may be worth monitoring with traps include spotted tentiform leafminer, redbanded leafroller, and obliquebanded leafroller in apples. Contact me if you want more information on these.

*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 list 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 useful. 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.

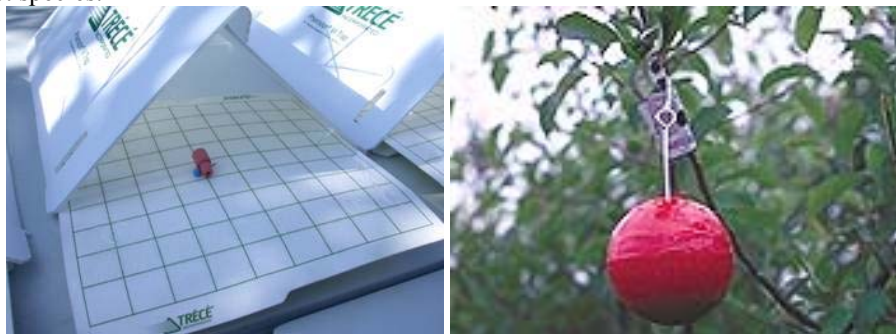
#### *How many traps are needed for each pest species?*

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 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.

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.

The next issue of this newsletter will provide updated 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). Later issues also will cover how to interpret trap counts ... what to do to control each target species.



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.



***Pheromone trapping guidelines for major fruit insects***

<b>Crop and pest</b>	<b>When should you use traps?</b>	<b>Where do you hang the traps?</b>
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 – all of Illinois Dogwood borer	Petal fall through harvest	4 feet above the ground and within the tree canopy. (This height is very important, 1 foot higher or lower reduces attractiveness.)
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 <b>(In southern IL, trapping for Oriental fruit moth in apples is also recommended.)</b>	Green tip to pink through harvest	Similar to codling moth, but trap height need not exceed 6-8 feet.

***Midwestern suppliers of pheromone traps include:***

<b>Supplier</b>	<b>Address</b>	<b>Phone &amp; Fax</b>
Great Lakes IPM	10220 Church Road Vestaburg, MI 48891-9746 email: <a href="mailto:glipm@greatlakesipm.com">glipm@greatlakesipm.com</a> On the web at: <a href="http://www.greatlakesipm.com">http://www.greatlakesipm.com</a>	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: <a href="http://www.gemplers.com/pheromone-lures">http://www.gemplers.com/pheromone-lures</a>	1-800-382-8473 (U.S.A.) FAX 1-800-551-1128

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

***Food Safety Updates***

**Produce Safety Rule: BASIC EXEMPTIONS – article 2 of 7**

Basically, the Produce Safety Rule does not apply to farms that have an average annual value of produce sold during the previous three-year period of \$25,000 or less; farms that grow produce for personal or on-farm consumption; produce that is not a raw agricultural commodity (*a raw agricultural commodity is any food in its raw or natural state*); food grains, including barley, dent or flint corn, sorghum, oats, rice, rye, wheat, amaranth, quinoa, buckwheat, and oilseeds (ie: cotton seed, flax seed, rapeseed, soybean, and sunflower seed); farms that grow produce that is rarely consumed raw

(asparagus; black beans, great Northern beans, kidney beans, lima beans, navy beans, pinto beans; garden beets (roots and tops) and sugar beets; cashews; sour cherries; chickpeas; cocoa beans; coffee beans; collards; sweet corn; cranberries; dates; dill (seeds and weed); eggplants; figs; horseradish; hazelnuts; lentils; okra; peanuts; pecans; peppermint; potatoes; pumpkins; winter squash; sweet potatoes; water chestnuts).

Farms that produce commodities that will receive commercial processing that adequately reduces the presence of microorganisms of public health significance (ie: a “kill step”) can be eligible for an exemption (*with modified requirements*).

If your farm is exempt from FSMA’s Produce Safety Rule, you will need to maintain specific documentation on file to prove your exemption. Documentation should include paperwork that can support the exempt status, and should include the farm name and address, date, and description of what was sold.

## **QUALIFIED EXEMPTIONS**

To be eligible for a qualified exemption, a farm must meet two requirements: 1) must have food sales averaging less than \$500,000 per year during the previous three years **AND** 2) farm sales to qualified end-users must exceed sales to all others combined during the previous three years. *A qualified end-user is either the consumer of the food or a restaurant or retail food establishment that is located in the same state as the farm or not more than 275 miles away.* A farm with a qualified exemption must meet certain modified requirements, including disclosing the name and complete business address of the farm where the produce was grown either on the label of the produce or to display the same information at the point of purchase, and establishing and maintaining documentation.

## **EXEMPTION WITHDRAW**

A farms qualified exemption may be withdrawn if there is an active investigation of an outbreak of foodborne illness that is linked directly with the farm or if FDA determines it is necessary to protect the public health or mitigate an outbreak based on conduct or conditions associated with the farm.

## **EXEMPTION REINSTATEMENT**

A withdrawn exemption may be reinstated if the FDA determines that the outbreak was not directly linked to the farm, and/or if the FDA determines that the problems with conduct or conditions material to the safety of the food produced or harvested at the farm have been resolved.

## **QUESTIONS/COMMENTS:**

The Food and Drug Administration has established a Food Safety Technical Assistance Network to provide a central source of information to support industry understanding and implementation:

<http://www.fda.gov/Food/GuidanceRegulation/FSMA/ucm459719.htm>

Next Article in the Series: Agricultural Water Quality

Laurie George (618-548-1446; [ljgeorge@illinois.edu](mailto:ljgeorge@illinois.edu))

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

- A Doctor and an Advocate loved the same girl. The Doctor gave her a rose daily and the Advocate gave the girl an apple. The girl got confused and asked the Advocate, "There is a meaning in giving rose in love. Why are you giving me an apple?" Advocate answered: Because, "An apple a day keeps the doctor away!"
- You love flowers, but you cut them. You love animals, but you eat them. You tell me you love me, so now I'm scared! - <http://coolfunnyquotes.com>
- Don't worry, if plan A fails, there are 25 more letters in the alphabet. - <http://coolfunnyquotes.com>
- Most of the time... when you're crying, nobody notices your tears. Most of the time... when you're worried, nobody feels your pain. Most of the time... when you're happy, nobody sees your smile. But when you fart just one time... - <http://coolfunnyquotes.com>

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