UNIVERSITY OF ILLINOIS EXTENSION

College of Agricultural, Consumer, and Environmental Sciences

Illinois Fruit and Vegetable News

Vol. 20, No. 5, June 16, 2014
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, weinzier@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

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) webinars, in July, 2014.** Call 815-933-8337 or email uie-gkw@illinois.edu for more information on webinar dates and registration, or contact a Local Food Systems and Small Farms educator in your area (see the staff list and contact info at the end of this newsletter).
- **Southern Illinois Summer Twilight Meeting Series, June 16, July 21, August 18, and September 15, 2014.** 6:00 to 8:00 p.m. On farm programs at Tanglefoot Ranch, Simpson, IL on June 16; 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. Pre-registration (at no cost) is required; see http://web.extension.illinois.edu/ghhpsw/ or contact Bronwyn Aly at 618-382-2662 or baly@illinois.edu.
- **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.

Regional Reports

In southern Illinois … We have been stuck in a very unsettled weather pattern for the last week or so, which has left us with highs around 80 and almost daily chances of rain. Rainfall totals have been close to 3" at Murphysboro for the week ending June 13. This has made field work and harvests challenging … and has made it crucial to keep up with fungicide sprays on fruit trees and many vegetables.

Gooseberries are ripe, and harvest has just started on many early maturing blueberry varieties. With the onset of the summer berry season, be sure to monitor any blueberry or bramble plantings for spotted winged drosophila (check recent issues of this newsletter for instructions).

Tart cherry harvest is nearing its end. There was a fair crop, but I have seen some brown rot in cherries, especially after the frequent rains we have been receiving. For effective control of brown rot, fungicide sprays start around bloom. Refer to the ***2014 Midwest Tree Fruit Spray Guide*** for further management information.

Brown rot of cherry (Nathan Johanning).

Now is also the time to start thinking about planting many "late" summer crops such as sweet potatoes, pumpkins, and winter squash. We just started our pumpkin transplants for the 2014 Pumpkin Field Day and hopefully they will go out in the field in a couple of weeks. In the meanwhile let's hope for some more sunshine and "normal" summer weather!

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

Fruit Production and Pest Management

Fire Blight

Chris Doll sent this note to me after a visit at Summer Horticulture Day last week …

> "This is one of the best fire blight papers I've seen, with all the reports of infections by growers this past week. Might be of interest to F & V readers, although a little late."
>
> Fire blight is being reported throughout Pennsylvania and Maryland. Management strategies are discussed for dealing with active fire blight infections. Link to full alert:
>
> http://extension.psu.edu/plants/tree-fruit/news/2014/disease-update-the-fire-blight-saga

European Hornet

One of the growers who attended Summer Horticulture Day last week near Centralia brought a wasp collected in Marion County. Although it vaguely resembled the common cicada killer that's found in many parts of the state, it was instead European hornet, *Vespa cabro germana*. This insect nests in colonies with 200 to 400 workers, often in hollow

trees but also in other protected spaces. It presents a problem only when workers feed on ripening fruit or when nests are located in a place that's close to lots of human activity.

Destroying nests that present a threat to humans is no small task. A nest may contain up to 400 hornets that can sting repeatedly, will fly at night, have guards at the nest entrance, and may have more than one entrance to the nest. If a nest is located and must be destroyed, it can be treated with a pressurized wasp and hornet jet spray. Several brands are available, but they all are about equal in effectiveness. Although the knock-down is quick, it may not be quick enough if you are too near the nest or do not take other precautions. It is best to treat at night with the aid of a flashlight. Prop the light on something and aim it at the nest or nest opening. When you begin to spray, the wasps usually will attack the light rather than the source of the spray. Wear heavy clothing and a bee veil, if available, for protection from any wasps that may not be fooled by the light. For more information, see http://www2.ca.uky.edu/entomology/entfacts/ef600.asp.

European hornet.

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

Potato Leafhopper on Apples and other Fruits


Left to right: cupping of apple leaves as a result of potato leafhopper feeding, potato leafhopper nymph, and adult.

In the last couple of weeks reports from around the state indicate that potato leafhoppers have arrived. These small insects migrate into Illinois from southern states on late spring and early summer weather systems. They feed on a wide range of fruit, vegetable, field crop, and landscape plants by inserting their needle-like mouthparts (stylets) into leaves and shoots, then sucking out plant fluids. In the process, they inject a salivary toxin into the leaves or shoots, causing a variety of symptoms, all of which are sometimes referred to as hopper burn. In apples, potato leafhopper feeding causes cupping of new leaves and greatly reduced growth of new shoots. In most years, potato leafhopper damage is most common in young trees that are not yet bearing fruit, as growers are not spraying them regularly for other insect pests (and coincidentally killing potato leafhopper). In addition, the switch from organophosphates such as Imidan and Guthion to alternatives such as Altacor, Rimon, and Delegate for codling moth control in apples allows potato leafhopper infestations to develop in fruit-bearing blocks, because these insecticides do not control potato leafhoppers.

Sample for potato leafhoppers by examining the undersides of leaves. Look for light-green, narrow, small (< 1/8 inch long) insects that tend to move sideways (instead of forward or backward) when disturbed. Thresholds suggested for potato leafhopper control range from treating whenever adults and nymphs are found on young trees to 1 adult or

nymph per leaf on older trees where vigorous new growth is less important. Unlike white apple leafhopper (which is resistant to several insecticides), potato leafhopper is susceptible to most of the broad-spectrum insecticides used in apples –Imidan, neonicotinoids such as Assail and Calypso, pyrethroids such as Danitol (and others), and carbamates such as Lannate and Sevin. Again, Altacor, Belt, Delegate, and Rimon do not control potato leafhopper.

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

Degree-Days and Codling Moth Development

Just an update on phenology … 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 9	Degree-Days base 50F, projected through June 16	Degree-Days base 50F, projected through June 23
Milstadt / Belleville	April 27	734	923	1091
Grafton	May 6	663	822	998
Urbana	May 9	574	725	893
Lake County	May 21	358	482	627

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
340	67 percent complete	12 percent complete		
360	70 percent complete	20 percent complete		
500	90 percent complete	54 percent complete		
600	96 percent complete	73 percent complete		
700	99 percent complete	87 percent complete		
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

See page 23 of 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.

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

Vegetable Production and Pest Management

Potato leafhopper:

As noted above for fruit crops, potato leafhopper is now present. Potatoes and snap beans are among the vegetable crops most vulnerable to potato leafhopper damage. Thresholds for potatoes are 2 adults per sweep or 1 adult per sweep plus 0.6 nymphs per leaf (15 on 25 leaves). For snap beans, treat seedlings if counts exceed 0.5 per sweep or 2 per foot of row; from the first true leaf stage through white bud, treat if counts exceed 1 per sweep or 5 per foot of row.

Insecticides labeled for potato leafhopper control in these crops are listed in the ***2014 Midwest Vegetable Production Guide*.**

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

Leaf Mold and White Mold, Two Emerging Diseases of Tomatoes Grown in High Tunnels

In the past six years, leaf mold (caused by the fungus *Fulvia fulva*) and while mold (caused by the fungus *Sclerotinia sclerotiorum*) have been observed widely on tomatoes produced in high tunnels.

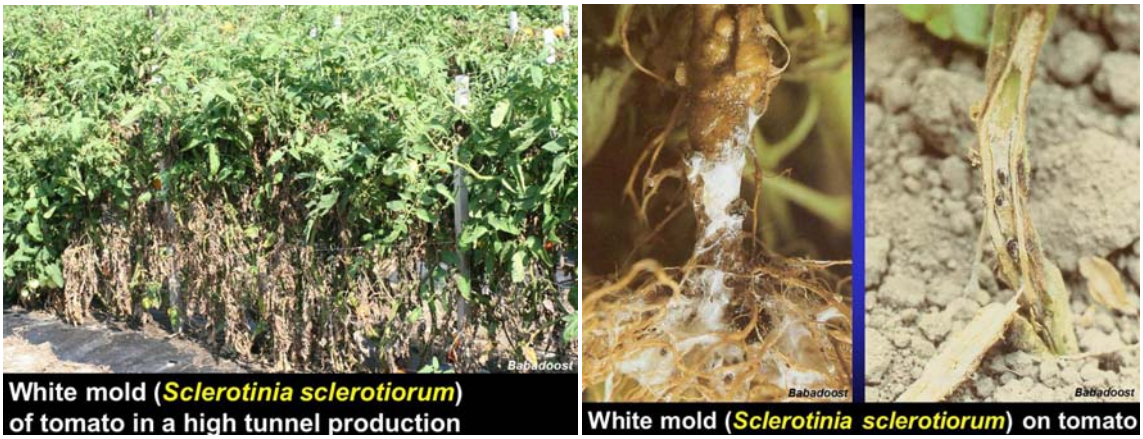
Leaf mold. Symptoms usually develop on foliage. Older leaves are first affected, with symptoms on younger leaves occurring later. The first leaf symptom is the appearance of small, pale-green, or yellowish spots with indefinite margins on the upper leaf surface. On the corresponding areas of the lower leaf surface the fungus begins to sporulate. The fungus appears as an olive green to grayish purple velvety growth, composed mostly of spores (conidia). The mold is denser and deeper in color toward the center of the discolored area. The leaves curl and wither and may drop from the plant.

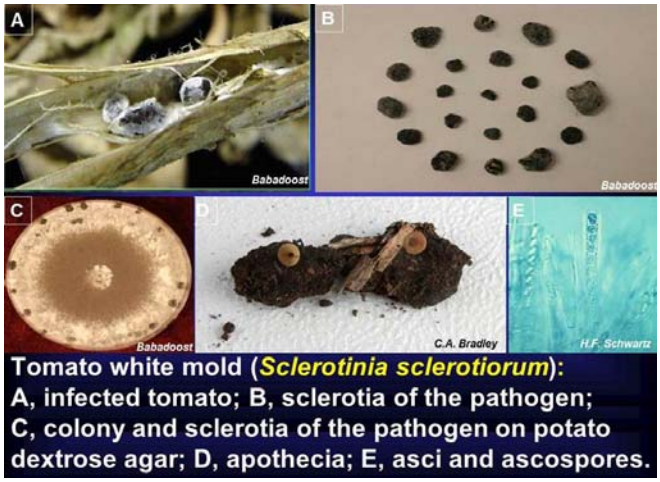
Leaf mold (*Fulvia fulva*) of tomato in a high tunnel production

The pathogen survives between seasons as conidia and sclerotia on plant debris. Conidia can be produced from surviving sclerotia. Conidia, produced on the undersurface of infected leaves, are easily spread from plant to plant by air currents, splashing water, tools, and clothing of workers. Conidia germinate in water films or when humidity levels are above 85%, at temperatures between 39 and 93°F (4-34°C). Symptoms usually appear in 10 days after infection. The following practices help to reduce crop losses to the leaf mold: Provide good ventilation; keep the relative humidity below 85% and keep free moisture from forming or persisting on leaves; avoid wetting the leaves when watering; water plants early in the day to allow leaves to dry by mid-afternoon; provide adequate plant and row spacing to avoid excessive shading; plant resistant varieties, if available; reduce primary inoculum levels through sanitation; after harvest, carefully remove and destroy (burn) all plant debris. A fungicide spray program may help control the disease, but it should be considered secondary to the environmental control measures. Mancozeb, Inspire Super, and Tanos have been reported effective for control of leaf mold, but the labels should be checked for up-to-date recommendation and use in greenhouse and high tunnel. For current recommendations on fungicidal control of leaf mold, refer to the current edition of the ***2014 Midwest Vegetable Production Guide*.**

White mold. White mold has a wide host-range, including vegetables, field crops, herbaceous ornamental plants, and a number of common weeds. White mold generally appears on tomato plants at flowering. Symptoms include water-soaked areas on flowers, at stem joints, and stem at the soil line. In high-tunnel production in Illinois, stem infection at the soil level is very common. The infection quickly kills stems, which eventually dry and take on a bleached appearance. White, cottony mycelium grows at the affected area and produces irregular black sclerotia. Sclerotia are the hard survival structures of the fungus. Fruits can also be infected, and infected fruits rot.

Sclerotia survive in the soil. When they are within one inch of soil, they can germinate to form saucer-shaped fruiting bodies called apothecia (singular: apothecium). Each apothecium produces numerous spores (ascospores) that are disseminated by wind. High soil moisture favors apothecial production.
Control of white mold is difficult because infection is caused by both airborne ascospores and soil-borne sclerotia. The following practices are recommended for reducing losses to this disease: Avoid planting tomato after tomato; consider plant densities that open plant canopies to create a less favorable environment for white mold development; sub-surface drip irrigation keeps soil surface day, which is less favorable for germination of sclerotia and plant infection; and remove infected material to reduce the sclerotia population in the soil. Since sclerotia can survive in the soil for several years, removal of infested soil may be considered. Contans WG, a biocontrol product (active ingredient: *Coniothyrium minitans*), is labeled for control of white mold.





Mohammad Babadoost (217-333-1533; babadoos@illinois.edu)

Beet Leafhopper in Horseradish

This note will be of interest pretty much only to horseradish growers. Rob Gerstenecker reported finding very low numbers of beet leafhopper in horseradish fields in the area around Collinsville, east of St. Louis. Beet leafhopper carries and transmits the pathogen that causes brittleroot of horseradish. When beet leafhopper arrives early in the summer, controlling it may be necessary to prevent outbreaks of brittleroot.

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

Some Analyses from the 2012 Census of Agriculture

As most of you are aware, the U.S. Department of Agriculture's National Agricultural Statistics Service recently released the 2012 Census of Agriculture. As a Local Food Systems and Small Farms Educator and member of the USDA Advisory Committee on Beginning Farmers and Ranchers, I was interested in analyzing this data from the perspective of small-acreage farms in Illinois.

In a May 2 press release, Secretary of Agriculture Tom Vilsack shared beginning farmer highlights. Two of particular note, (1) 22% of all farmers are beginning farmers who have operated a farm for less than ten years; and (2) the number of younger beginning farmers (35 and under) who report farming as their principal occupation has increased by 11% since the 2007 Census (36,396 to 40,499).

Let's step back and define the word "farm." According to USDA, "a farm is any place from which $1,000.00 or more of agricultural products were produced and sold, or normally would be sold, during the Ag Census year." The next question is what is a "small farm"? And, here, things get a little more complicated. About fifteen years ago, the USDA Economic Research Service (USDA-ERS) developed a farm classification system, or typology, that sorted farms for reporting and research purposes (*ERS Farm Typology for a Diverse Agricultural Sector*, Bulletin Number 759, September 2000). The original farm typology based its groups (in part) on the level of gross farm sales. The four categories included: (1) small family farms – sales less than $250,000 (includes limited-resource, retirement, residential/lifestyle, farming occupation/lower-sales, and farming occupation/higher-sales), (2) large family farms ($250,000 and $499,999), (3) very large family farms ($500,000 or more), and (4) nonfamily farms (farms organized as nonfamily corporations or cooperatives, as well as farms operated by hired managers). Now let's look at the data to get a better idea of some of the demographics of small farms in Illinois.

Farm Size and Sales

The 2012 Census indicates that small farms account for 88% of all farms and 11% of all sales in Illinois. Of particular importance from the perspective of small-acreage farms in Illinois, 75 % of all farms gross under $50,000 a year, and account for 3% of all sales. Large family farms selling between $250,000 and $499,999 represent 4.5% of all farms and 9% of all sales. Very large farms with over $500,000 in sales account for 7.5% of all farms, but 80% of all sales.
The Ag Census data shows that of the 75,087 farms in Illinois, 52,124 (78%) are classified as "small farms"; 6,402 farms had sales of less than $1,000 (9%); 24,777 farms had sales between $1,000 and $9,999 (33%); 12,851 farms had sales between $10,000 and $49,999 (17%); 14,496 farms had sales between $50,000 and $249,999 (19%). The remaining 16,561 (22%) farms were either "Large" or "Very Large" farms with sales over $250,000.

Beginning Farmers and Age

As noted above, 22% of all farms are run by beginning farmers, defined as those operating farms for less than 10 years. The 2012 Census allows respondents to name principal operators as well as junior operators of the farm. Using this enhanced data set reveals that 18% of all principal operators; 27% of all secondary operators; and 41% of all third operators are beginning farmers. Nationally, the average age of farmers who were the principal operator in 2012 was 58.3 years of age, up from 57.1 five years ago. Breaking down that average reveals the following age groupings. Farmers age 34 and younger now represent 6% of all operators, up from 5% in 2007. Those between the age of 35 and 64 represent 61% of all operators, down from 64% five years ago. Those 65 and older represent 33% of all operators, up from 30% in 2007. Counting all operators instead of just principal operators, those same age brackets break down as follows: (1) age 34 and under account for 8% of all operators, the same as in 2007; (2) age 35-64 account for 63% of all operators, considerably less than their 67% share in 2007 and (3) those over age 65 have increased from 25% of all operators to 29%.
The average age of Illinois farmers who were the principal operator in 2012 is slightly younger than the national average - 57.8 years of age, up from 56.2 in 2007. In Illinois those 65 and older represent a higher percentage of farmers, 36% of all operators, up from 33% in 2007. Farmers age 34 and younger now represent 6% of all operators, up from 5% in 2007. Those between the ages of 35 and 64 represent 58% of all Illinois farm operators, down from 62% in 2007.

Looking at some additional demographics in the 2012 Ag Census for principal operators in Illinois, we find that 91% are male and 9% are female (an increase in 1% as compared to 2007); 50% are farming as their primary occupation (an increase in 2% as compared to 2007); and that 3% have been on their present farm for 2 years or less (3% in 2007); 4%

for 3 or 4 years (5% in 2007); 11% for 5 to 9 years (13% in 2007) and 82% for 10 years or more (79% in 2007). While the number of beginning farmers 35 of age and younger increased by 11% between 2007 and 2012, this change was more than offset by an aging farm operator population; this aging trend appears likely to continue in the short term as farm operators ages 60-64 move into the 65 and older age group over the next 5 years.

How can this aging farming population be replenished? In two ways: education and through market-based incentives. In Illinois, we are fortunate to have several organizations (community colleges, farmer associations, non-profits, and state and federal agencies and universities) working to provide training to young and beginning farmers. One of the programs, University of Illinois Extensions' "Preparing a New Generation of Illinois Fruit and Vegetable Farmers," is working to increase the number of new farmers producing fruits and vegetables throughout Illinois. The goal is to enhance the viability, profitability, and sustainability of new and beginning enterprises to meet increasing demand for local produce and to contribute to local economies. For more information about this program, see www.newillinoisfarmers.org.

The above organizations are also working together to meet the goal of training new farmers. In April 2014, members of these organizations met at two separate events. The first event, the Farmer Training Roundtable II, convened by the Illinois Local Food Farms and Jobs Council (ILFFJC), met on April 14 to discuss three questions: (1) How do we bring more farmers online by 2020 to reach state goals for growing a vibrant local food and farm economy?; (2) Who is training farmers in Illinois and what are the gaps in training?; and (3) How can farmer training practitioners better work together to fill the gaps? For a summary of the Farmer Training Roundtable II, see the ILFFJC website at http://foodfarmsjobs.org. The second event, the Start2Farm Together Conference, held on April 15-16, brought together beginning farmer and rancher educators and service providers from across the country to share resources and best practices and was hosted by Start2Farm (headquartered at the USDA's National Agricultural Library), American Farm Bureau Federation, Illinois Farm Bureau, University of Illinois Extension, and the Illinois Department of Agriculture. For more information, see www.start2farm.gov.

According to the USDA National Institute of Food and Agriculture, "Small farms and ranches play a vital role in supporting the competitiveness and sustainability of U.S. rural and farm economies and in protecting and enhancing its natural resource base and the environment. These numerous and diverse small-scale operations provide a nursery for the development of new enterprises and marketing systems, and a replenishment of the farming population." Education and training of small farm operators is critical to their success as well as providing sufficient market-based opportunities (farm stands, farm stores, U-pick, farmers markets, co-ops, Community Supported Agriculture (CSAs), restaurant sales, grocery stores and food retailers, institutional food service buyers and auctions) so that farming as a principal occupation makes sense for existing - and potential - small farm operators.

Deborah Cavanaugh-Grant (217-782-4617; cvnghgrn@illinois.edu)

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

Extension Educators – Local Food Systems and Small Farms		
BRONWYN ALY, Gallatin, Hamilton, Hardin, Pope, Saline, Wayne, and White counties	618-382-2662	baly@illinois.edu
STEPHEN AYERS, Champaign, Ford, Iroquois, & Vermilion counties	217-333-7672	srayers@illinois.edu
DEBORAH CAVANAUGH-GRANT, Logan, Menard & Sangamon counties	217-782-4617	cvnghgrn@illinois.edu
KYLE CECIL, Henderson, Knox, McDonough, & Warren counties	309-342-5108	cecil@illinois.edu
BILL DAVISON, Livingston, McLean, and Woodford counties	309-663-8306	wdavison@illinois.edu
CONNIE ECHAIZ, Lake and McHenry counties	847-223-8627	cechaiz@illinois.edu
LAURIE GEORGE, Bond, Clinton, Jefferson, Marion, & Washington counties	618-548-1446	ljgeorge@illinois.edu
DOUG GUCKER, DeWitt, Macon, and Piatt counties	217-877-6042	dgucker@illinois.edu
NATHAN JOHANNING, Franklin, Jackson, Perry, Randolph, & Williamson counties	618-687-1727	njohann@illinois.edu
ANDY LARSON, Boone, Dekalb, and Ogle counties	815-732-2191	andylars@illinois.edu
GRANT MCCARTY, Jo Daviess, Stephenson, and Winnebago counties	815-235-4125	gmccarty@illinois.edu
MIKE ROEGGE, Adams, Brown, Hancock, Pike & Schuyler counties	217-223-8380	roeggem@illinois.edu
DAVID SHILEY, Coles, Cumberland, Douglas, Moultrie & Shelby counties	217-543-3755	dshiley@illinois.edu
JAMES THEURI, Grundy, Kankakee, & Will counties	815-933-8337	jtheu50@illinois.edu
JAMIE WASHBURN, Effingham, Jasper, Clay, Fayette, Clark, Crawford and Edgar counties	217-374-7773	jlwshbrn@illinois.edu.
Extension Educators – Horticulture		
RICHARD HENTSCHEL, DuPage, Kane, & Kendall counties	630-584-6166	hentschel@illinois.edu
ANDREW HOLSINGER, Christian, Jersey, Macoupin, & Montgomery counties	217-532-3941	aholsing@illinois.edu
SONJA LALLEMAND, Franklin, Jackson, Perry, Randolph, & Williamson counties	618-687-1727	lalleman@illinois.edu
ELIZABETH WAHLE, Bond, Clinton, Jefferson, Marion, Madison, Monroe, St Clair, & Washington counties	618-344-4230	wahle@illinois.edu
Horticulture Research-Extension Specialists at our Research Stations		
JEFF KINDHART, Dixon Springs Agricultural Center	618-695-2770 618-638-7799	jkindhar@illinois.edu
SHELBY HENNING, St. Charles Horticulture Research Center	630-584-7254	shenning@illinois.edu
Campus-based Extension Specialists		
MOHAMMAD BABADOOST, Plant Pathology	217-333-1523	babadoos@illinois.edu
MOSBAH KUSHAD, Fruit & Vegetable Production	217-244-5691	kushad@illinois.edu
JOHN MASIUNAS, Weed Science	217-244-4469	masiunas@illinois.edu
CHUCK VOIGT, Vegetable Production (& herbs)	217-333-1969	cevoigt@illinois.edu
RICK WEINZIERL, Entomology	217-244-2126	weinzier@illinois.edu

Return Address:

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