



College of Agricultural, Consumer, and Environmental Sciences

Illinois Fruit and Vegetable News

Vol. 22, No. 9, June 1, 2016

Editors: Nathan Johannning & 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 Johannning, 618-687-1727, njohann@illinois.edu or Bronwyn Aly 618-382-2662, 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 Johannning at the phone number or email address above.

In this issue...

- **Upcoming programs** (listings for beginning and established growers)
- **So this is retirement?** (Warm wishes to our insect guru, colleague, mentor, and friend)
- **Regional Reports** (north-central, central, southern Illinois)
- **Fruit Production and Pest Management** (pheromone traps, degree days, control of oriental fruit moth & codling moth)
- **Vegetable Production and Pest Management** (Botrytis Gray Mold on High Tunnel Tomatoes)
- **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 website** at:

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

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

- **Southern Illinois Summer Twilight Series, 4 Monthly On-Farm Meetings on Mondays, May through August, 6:00 p.m.** For more information or details, contact Bronwyn Aly at 618-382-2662; baly@illinois.edu or Nathan Johannning at 618-687-1727; njohann@illinois.edu Save the dates, more details to follow:
 - **June 20** – G & C Meyer Farm & Greenhouse, near Steeleville, IL
 - Diverse farm including brambles, blueberries, vegetables bedding plants and more. For more information on the program or to register visit <https://web.extension.illinois.edu/registration/?RegistrationID=14619> or call 618-382-2662.
 - **July 18** – Spring Valley Farm, Pulaski, IL
 - **Aug 8** – Grant's Orchard, near Johnston City, IL
- **ISHS Summer Horticulture Day, Thursday, June 9, 8:00 a.m.** Hosted by Raoul & Jodie Bergersen, Valley Orchard, 811 E State St, Cherry Valley, IL 61016. To register online visit <https://www.picatic.com/ilhortday> or contact Rachel Graham Coventry at 217-853-6048 or ilsthortsoc@gmail.com
- **Illinois Pumpkin Field Day, Wednesday, August 31.** Ewing Demonstration Center, 16132 N. Ewing Rd; Ewing, IL 62836. For more information, contact Nathan Johannning at 618-687-1727 or njohann@illinois.edu



So This Is Retirement? Best Wishes Rick Weinzierl! - A few words and snapshots from across the state.



Rick has been making preparations for this day over the last year, resizing several of his hats to fit those of us willing to try to fill the size 20 shoes he has been wearing for a long time. With Rick's guidance, Nathan and I have tackled the *Illinois Fruit and Vegetable News* and our colleague to the north, Andy Larson, has taken on the role of Illinois SARE coordinator, just to name a couple. I first met Rick in the very early 1990's, working as summer help for Jeff Kindhart at the Dixon Springs Ag Center. I remember my first impression, which we all know is the most important and can't be undone, was that this guy really knows a lot about bugs, seems to really want to help farmers, and he is fun to be around (mind you I was 16-17 at the time). And I think that after 25+ years, my first impression was spot on – he has been the Illinois fruit and vegetable industry's insect guru. Rick has made countless grower recommendations, on-farm visits, and conducted research trials literally spanning the state. I think that Rick has been able to provide growers with the information and a skill set to achieve a desirable level of insect management on their farming operations. Rick's role in the Illinois Specialty Crops, Agritourism, and Organics Conference shows his commitment and understanding of the fruit and vegetable industry in Illinois. I have been learning from Rick since the first time I met him, consider him a good friend, and will be forever grateful that I got to monitor traps, count worms, and stalk the elusive Grape Berry Moth egg for him. That is Extension, THANK YOU RICK!!!

- Bronwyn Aly

I first met and heard Rick when I was in college as many of our fruit and vegetable classes made the trip up to Mt. Vernon to the fruit and vegetable schools. Since that time, I have had a great deal of respect for Rick and his depth of knowledge and research on anything insect (and beyond) related to specialty crops. It's around that same time I heard one of his "shameless plugs" for the "newsletter" that he was editor of and decided to subscribe. I didn't realize that a little over 10 years later I would be the one editing this "newsletter" (along with Bronwyn), and also be making those "shameless plugs" for new subscribers. It is a great honor to have taken over the newsletter and to have Rick as a colleague in Extension after all of those years of being on the other side of the projector, in the audience. Rick, I want to thank you for the leadership you have given the Local Foods & Small Farms Educator Team and for all of those countless recommendations and bug identifications you have done. You have been a great educator, researcher, colleague, and friend. I have learned a great deal from Rick and wish him the best in retirement!!!

- Nathan Johanning

For both the Illinois State Horticulture Society and the Illinois Vegetable Growers Association and their umbrella organization of Illinois Specialty Growers Association his leadership in development of the annual meetings and publishing newsletters has been outstanding. Of course, these activities were all above his entomological duties for the University of Illinois. And I have seen his involvement in other relevant groups such as the Midwest Fruit Growers Workers, the Great Lakes Fruit Workers, and many other state and national organizations.

His research and extension activities on apples, peaches, strawberries and other small fruits, many vegetable crops with emphasis on tomatoes, sweet corn and horseradish. As a result, integrated insect pest management (IPM) programs have been instituted in all these crops, as well as use of mating disruption programs, reduced pesticide usage, and increased safe usage.

- Chris Doll

Hey RAW, you took us through ERM, CM, OFM, and we are in the midst of BMSB and SWD, and you did it with intelligence, wit, and friendship. We will keep track of a public servant going private! Have a great time in this next phase. With great respect,

- Jim Eckert, *Eckert's Orchard*

I've known Rick for many years, and we have worked together on a number of projects here in our orchards. Of course, we all know he is always very professional and extremely well-informed. He and his colleague Chris Doll were the two who consulted on and solved a very difficult problem here at Rendleman Orchards-coddling moth resistance to organophosphates. We are able to raise a clean apple because of their knowledge and persistence.

I am privileged to know Rick and count him as a friend. I'm sure many of us will continue to call on him in the future. We thank him for all the information in the newsletters and for the touches of humor to brighten our workday. Also, we appreciate all the work he put into the Specialty Grower's Conference, and we wish him the very best in retirement.

- Ren Sirles, *Rendleman Orchards*

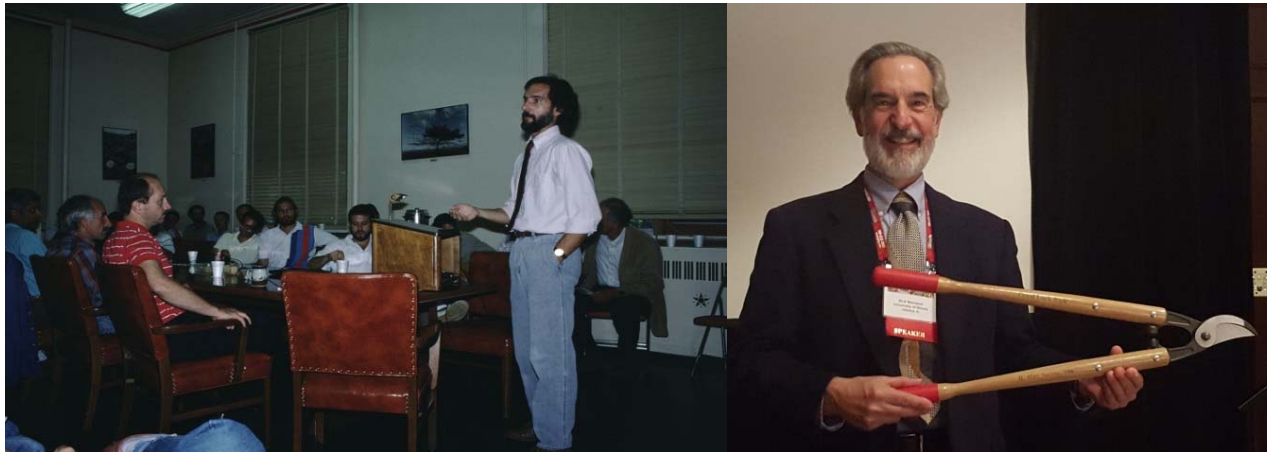
Rick is a ***consummate professional with the heart and soul of a grower***. He's one of the true pillars of Illinois horticulture. Best Regards,

- Ken Hall, *Edwards Apple Orchard*

As a grower, the thing I liked best about Rick was his quiet competence and thoroughness. When he spoke we knew that he knew what he was talking about.

Once when a leaf miner that had not been seen in 50 years showed up on my farm, he researched and identified it, tested to see what would control it and we eradicated it, for another 50 years.

- Jerry Mills, *Mills Apple Farm*



And now a letter from our retiree...

I'm writing this in at the request of Bronwyn and Nathan. May 31, 2016, is my official date of retirement from the University of Illinois, they asked that I write my own farewell to IFVN readers. I appreciate the opportunity, because it lets me say things that really are important to me.

First, the simple history ... I joined the faculty of the University of Illinois in 1984 as an assistant professor on a 100-percent Extension appointment in the Office of Agricultural Entomology. I started working in entomology at North Dakota State University in 1975, and I guess I've been more or less a "bug-guy" ever since. My research and Extension focus when I started at the U of I was on insect management in stored grains and livestock ... though my previous graduate research and Extension responsibilities at Oregon State University were tied to fruit and vegetable pest management. In 1990, with the retirement of Dr. Roscoe Randall, another Extension Specialist in Ag Entomology, my focus shifted to insect management in fruits and vegetables, and I also began a 6-year "volunteer" stint teaching a graduate-level course on integrated pest management in the Department of Entomology. Following the reorganization

of the College of ACES in the mid-1990s, I have been an associate and then full professor in the Department of Crop Sciences, with a 3-way extension, teaching, and research appointment.

I have taught Introduction to Applied Entomology for ACES undergraduates for 20 years, co-taught Principles of Plant Protection, and contributed to several off-campus and on-line courses, and my research has included a wide range of insect management topics ... managing insecticide resistance has been a common thread through stored-grain, livestock, fruit, and vegetable insect management studies. Extension has remained my real love through the course of my career ... I guess that's why I seldom missed an opportunity to provide insect management recommendations in whatever way that I thought might work for growers ... annual extension publications and regional conferences, over 400 issues of the *Illinois Fruit and Vegetable News* newsletter (and yes, I tried to read and edit every word of every issue), coordinating the Illinois Specialty Crops, Agritourism, and Organics Conference for the Illinois Specialty Growers Association, and coordinating a USDA-funded Beginning Farmer Training Program titled *Preparing a New Generation of Illinois Fruit and Vegetable Farmers*.

This spring I started establishing a 2-acre apple and peach orchard not far from Urbana-Champaign ... a retirement career that I hope will (1) keep me from driving my wife crazy; (2) keep me out of the bars during the daytime (LOL); and (3) maybe even make some money after the first few years. Hey, I'm still young, right?

If I have not bored you too much and you're still reading ... I owe a lot to great mentors – Glen Fisher and Paul Koepsell as my supervisors in Oregon who continually gave me opportunities to expand my career (OK, by doing more work), Don Kuhlman and Roscoe Randall in Ag Entomology here (they reminded me who Extension specialists really work for), and Chris Doll and Bill Whiteside from the U of I Extension field staff. I owe a lot to great co-workers ... too many to list, but one who must be acknowledged – Jeff Kindhart. I – and many others – miss him greatly.

I will be “around” even after retirement. I've agreed to continue to coordinate the program for the annual Illinois Specialty Crops, Agritourism, and Organics Conference for at least a year or two. And (shameless advertising alert!), Weinzierl Fruit and Consulting is my retirement business. For now, contact me at raweinzierl@gmail.com or 217-621-4957.

Thank you to all who receive this newsletter ... it has been a pleasure and a privilege to work with this industry.

Rick Weinzierl



Regional Reports

From north-central Illinois... Some much-needed rain came late in the week. Soils were dry and cracking here in Macomb. Today, my socks are soaked after a quick walk to the high tunnel. I must remember boots next time. Thursday night we received over 1-inch and over the weekend anywhere from 0.01-inch (Macomb) to 0.5-inch (Quincy) to 1-inch (Bloomington/Normal). Many of the recent transplants in the field are thankful for the rain. As am I, so long as we avoid the soggy mess that was early season 2015. Our eighty-plus degree temperatures last week pushed a lot of growth in the high tunnel. Already, we are seeing green tomatoes.

Asparagus harvest has picked up speed with the higher temperatures. Remember, spear production uses stored energy in the root system. Once spear diameter diminishes to the width of a pencil, harvesting can become detrimental to the plant and is the signal to “put the bed to sleep”. Fertilize at this time with 50-70 lbs/acre of nitrogen. Soil tests will reveal phosphorous and potassium levels, two important nutrients for asparagus. Amend per soil test results. Herbicide application should be timed immediately after the last harvest. For a listing of products for asparagus (and many others) see the [2016 Midwest Vegetable Production Guide](#).

Peaches behind the Extension office are a little over 1-inch and need thinning and perhaps another pruning. Plums are at ½-inch. The deer have taken to pruning the apple trees, though I don’t remember bringing them into my employ, nor do I believe we are on the same page regarding branching structure.

My job as an Extension Educator gives me the luxury of experimenting with various ways to grow fruit and vegetables. One such experiment involved rebuilding organic matter in high tunnel beds. During the fall of 2015, I sowed a winter kill cover crop mix (rye, field peas, & crimson clover) in one bed and vented the tunnel in February hoping for a good stretch of freezing temperatures. Mother Nature decided otherwise and blessed us with mild winter temperatures, hence a very poor winter kill. After mechanical cultivation, I now have an amazing layer of terminated cover crop material mulch in my former cover crop bed. Right now there are sweet potatoes growing in this and two other beds (one amended with compost the other peat and perlite), and several smart pots. I look forward to the continued study of these various systems.

My Cascade hops are in their second year. I decided to try yet another experiment and train the hops to grow into the nearby high tunnel and provide some shade once summer arrives. My recipe for disaster is assured, but I am happy to report the hops have initially trained nicely and begun flowering.



Photos: C. Enroth

Chris Enroth (309-837-3939; cenroth@illinois.edu)

From central Illinois ... A report of Septoria Leaf Blight on tomatoes in high tunnels, which was due to overcrowding and poor ventilation during the cool, damp period of May 10 – 21. Some crops had to be reseeded due to poor emergence from crusted soils and earlier cool soil temperatures. Currently, local crops are looking much better with the recent rains and warm temperatures of the past 10 days. One local sweet corn producer had corn tasseling, this weekend, which is very early for the area. The sweet corn was planted in low tunnels in late March.

Doug Gucker (217-877-6042; dgucker@illinois.edu)

From southern Illinois ... We have been rather damp here in southern Illinois. Here in Murphysboro we had 2 inches of rain across a couple of days last week, just as we were starting to get dry enough to get out in the fields more. So far we have dodged the rain this week; however, the week (or even day) is not over and we have plenty more chances for rain. Temperatures have at least been a little warmer with highs the last few days in the 80s with ample humidity. Fortunately, the humidity is supposed to drop on Thursday with a passing front.

This damp, warm weather has been great for weeds and diseases with both having a potential chance to get out of hand. The warmer temperatures have started to get our summer vegetable crops growing after a slow start from our cool temperatures in May. Strawberries are starting to come to an end, but the growers that I have talked to said the crop was very good. I had a chance to grab some of the last picking of ‘Camarosa’ from a local farm and even with some rain the flavor and sweetness was excellent. Asparagus harvest is also coming to an end and as Chris Enroth mentioned above make sure to fertilize your asparagus and also make herbicide applications to keep the weeds under control now that harvest is over. The first zucchini and high tunnel tomatoes are starting to show up at local markets. At home we just harvested tart cherries. Fruit set was good and insect and disease pests were in check, but the hail that I mentioned in the last issue greatly limited the fruit quality with only a quarter of the fruit being usable.

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

Fruit Production & Pest Management

Pheromone Traps, Degree-Days, and Control of Oriental Fruit Moth and Codling Moth

Growers around the state should be using counts from pheromone traps in their orchards and degree-day data and projections to best time sprays for oriental fruit moth and codling moth. The biofix date (first consistent capture of male moths in pheromone traps) for oriental fruit moth at the University of Illinois orchard at Urbana was April 15 (3 days earlier than last year); biofix for codling moth here was May 5 (same date as last year). Using the Illinois State Water Survey [Degree-Day Calculator](#), degree-day accumulations for oriental fruit moth (base 45F) from April 15 through May 25 at Urbana were 615. Degree-day accumulations for codling moth (base 50F) at Urbana since May 5 (through May 25) were 232. So ...

For oriental fruit moth, first-generation moth flight here at Urbana has pretty much ended, and second-generation flight will likely start about June 8 (sooner if temperatures remain higher than average). First generation larvae have infested new shoots in untreated peach and nectarine trees, and although their tunneling and feeding cause shoots to flag, this damage is usually not severe. Second- and third-generation oriental fruit moth larvae infest the fruits of peaches and nectarines (and other fruits) and must be controlled in commercial production using mating disruption or insecticides. Where mating disruption is used (as it is in Calhoun County), pheromone dispensers need to be in place before the start of second-generation flight (by no later than 900 degree-days base 45 F after the biofix date for the first generation flight). For Calhoun County this year, dispensers should be hung no later than June 3 for disruption of mating of second and third generation oriental fruit moths. Where insecticides are used to protect fruit, the key timing for application is 400 to 600 days after the beginning of the second and third flights. See the [2016 Midwest Fruit Pest Management Guide](#) for a list of insecticides registered for oriental fruit moth control in peaches. Oriental fruit moth populations in Calhoun County and perhaps other areas have developed resistance to pyrethroid insecticides (including Asana, Baythroid, Renounce, Pounce, Actara, Mustang Max, Warrior, Proaxis, and Danitol) ... these products and others that contain the same active ingredients will not control the resistant populations.



Oriental fruit moth adult, flagging damage to new shoot, and larva in fruit.
(Photos from [Washington State University](#))



Left: codling moth adult (Photo from University of Minnesota). Right: codling moth larva (Photo from Utah State University)

For codling moth, first-generation larvae begin to hatch from eggs and enter fruits about 220-240 degree-days (base 50F) after the biofix date ... so infestations are just beginning at Urbana during the last week of May. To protect fruit from first-generation larvae, insecticides need to kill eggs or larvae before larvae enter fruit. Recommended timing (based on degree-day accumulations) for several insecticides used for first-generation codling moth control on apples and pears is listed on page 29 of the [2016 Midwest Fruit Pest Management Guide](#).

Rick Weinzierl (217-244-2126; weinzierl@illinois.edu) (or 217-621-4957; raweinzierl@gmail.com for Weinzierl Fruit and Consulting)

Vegetable Production & Pest Management

Botrytis Gray Mold on High Tunnel Tomatoes

The recent cool and cloudy weather has influenced conditions in the field as well as in greenhouses and high tunnels. I have observed more Botrytis gray mold of tomatoes in greenhouses this spring than usual. This is due in part to the weather. This article will discuss this disease on tomatoes and some management options.

Gray mold is caused by a fungus that attacks many types of vegetables and ornamentals. The fungus is not a strong pathogen and often starts on weakened or senescent tissue such as old flower petals. The gray mold fungus, *Botrytis cinerea*, may be a weak pathogen, but it is a good saprophyte, growing well on old crop debris and organic matter until a good plant host is available.



Tomato leaf on which a flower petal has fallen. Since the gray mold fungus is sporulating on the flower petal, there is a good chance that a lesion will soon start on the leaf



A gray mold lesion on a leaf is shown in left picture and a gray mold lesion on a tomato fruit right. Note the flower petal on the top of the tomato fruit that picture. *Photos: D. Egel.*

Gray mold is favored by temperatures from 64 to 75 F and requires only high humidity (not leaf wetness) to become established. Our recent cool, cloudy weather fits these criteria. Greenhouses and high tunnels usually have higher humidity than adjacent fields.

Since the gray mold fungus can thrive on organic matter and crop debris, sanitation is key for management of this disease. Keep greenhouse floors clear of crop debris. Regularly remove tomato prunings from the greenhouse and surrounding area. Keep weeds to a minimum and don't allow volunteer tomatoes from last year to grow. Just as dirty kitchens are associated with being unhealthy, I associate dirty, unkept greenhouses with disease.

As much as possible, keep greenhouses well ventilated. Weather permitting, vent the greenhouse in the evening to replace the humid air with relatively dry air from outside. Avoid the temptation to crowd as many tomato plants as possible into the greenhouse. Research has shown that spacing plants much closer than about 20 inches within the row and 5 feet between rows doesn't increase yield and may reduce ventilation. If possible, prune or sucker to improve ventilation. For determinate type tomatoes, ventilation can be improved with little chance of yield sacrifice by pruning the suckers from the plant bottom until the node below first flower cluster.

For more details on the management of foliar diseases of tomatoes in greenhouse, see "Tomato disease management in greenhouses" at <https://www.extension.purdue.edu/extmedia/BP/BP-197-W.pdf> or call Dan Egel for a hard copy.

Gray mold is known to be favored by low calcium levels in the plant. In particular, calcium to phosphorus levels of less than 2:1 may make the tomato plant more susceptible. In short, make sure your tomato plants have adequate nutrition.

Several fungicides are available to help manage gray mold of tomatoes in greenhouses or high tunnels. See the [2016 Midwest Vegetable Production Guide](#) for more detailed information. Botran, Fontelis, Scala and Switch should all be effective against gray mold. Copper products such as copper hydroxide or copper sulfate will be less effective than the above products, but should offer some help. Oxidate will help to sanitize the surface of the foliage of the gray mold fungal spores. However, Oxidate will have no residue; therefore, Oxidate will not protect against spores that land on foliage after the product has dried. Mancozeb products such as Manzate and Dithane are not labeled for gray mold. Note that only products allowed for greenhouse use are discussed here.

When should one make the decision to apply fungicides? Growers may make the decision to spray if the weather has been cool and wet for an extended time. Greenhouses that have had little chance of ventilation with outside air are more likely to have gray mold problems. Additional factors that may favor a fungicide application is if the greenhouse has had gray mold problems in the past and if tomatoes have been grown after tomatoes for several years. The first application should be made at or shortly after first bloom.

The weather should become warmer and drier soon. With the change of weather, gray mold should become less of a factor. The above discussion, however, should help growers to understand the biology of this important disease.

Dan Egel, Extension Plant Pathologist, Southwest Purdue Agricultural Center (812-886-0198; egel@purdue.edu)

Less seriously...

An Entomologist specializing in wasps walks through a record store & finds a record of flight sounds of different wasp species. He walks over to the store keeper and says: "If you play me all the tracks & I guess correctly which species is which, can I have the record for free?" The shopkeeper agrees, but the Entomologist fails on his first, second & even third attempt to name the correct wasp species. He is about to give up when the shopkeeper says: "Sorry sir, my mistake. I accidently played the B side."



217-621-4957
Weinzierl Fruit & Consulting

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, & White counties	618-382-2662	baly@illinois.edu
STEPHEN AYERS , Champaign, Ford, Iroquois, & Vermilion counties	217-333-7672	srayers@illinois.edu
BILL DAVISON , Livingston, McLean, and Woodford counties	309-663-8306	wdavison@illinois.edu
LAURIE GEORGE , Bond, Clinton, Jefferson, Marion, & Washington counties	618-548-1446	ljgeorge@illinois.edu
ZACHARY GRANT , Cook County	708-679-6889	zgrant2@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
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		
CHRIS ENROTH , Henderson, Knox, McDonough, & Warren counties	309-837-3939	cenroth@illinois.edu
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
ELIZABETH WAHLE , Madison, Monroe, & St Clair counties	618-344-4230	wahle@illinois.edu
Horticulture Research-Extension Specialists at our Research Stations		
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

Return Address:

Nathan Johanning
University of Illinois Extension
402 Ava Rd.
Murphysboro, IL 62966

«L1»
«L2»
«Street_»
«City_zip»



UNIVERSITY OF ILLINOIS
EXTENSION

Illinois Fruit and Vegetable News