



College of Agricultural, Consumer, and Environmental Sciences

Illinois Fruit and Vegetable News

Vol. 23, No. 18, October 18, 2017

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 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 Johanning at the phone number or email address above.

In this issue...

- **Upcoming programs** (listings for beginning and established growers)
- **News & Announcements** (Fruit & Vegetable Research Priorities Survey)
- **Regional Reports** (St. Louis Metro-east, north central Illinois, western Illinois, southern Illinois)
- **Fruit & Vegetable Production & Pest Management** (Review of Post-harvest Activities that Benefit Next Year's Crop, FSMA Produce Safety Rule Updates)
- **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>.

- **Produce Safety Alliance Grower Training Course, Monday, November 6, 2017, 8:00 a.m. to 5:00 p.m.** DoubleTree by Hilton 10 Brickyard Dr., Bloomington, IL. This training will be held as a part of the 2017 Illinois Farm Bureau Local and Regional Food Conference. Registration details can be found at www.ilfb.org/livelocal or for more details contact Laurie George at (618) 242-0780 or ljgeorge@illinois.edu
- **Produce Safety Alliance Grower Training Course, Monday, November 13, 2017, 8 a.m.- 5p.m. CST.** University of Illinois Extension led training will be held at Rend Lake College – Applied Science Center, Room 102, 468 N. Ken Gray Parkway, Ina, Illinois 62846. Registration fee of \$120 includes PSA training manual, AFDO certificate, and lunch. Visit the following link for more information or to register for the training <https://web.extension.illinois.edu/registration/?RegistrationID=17068> or contact Laurie George at (618) 242-0780 or ljgeorge@illinois.edu
- **Great Lakes Fruit, Vegetable and Farm Market EXPO, December 5-7, 2017 in Grand Rapids, MI.** The EXPO includes educational programming for fruit, vegetable and greenhouse growers, and for farm marketers. Pre-register by November 15 to save money at: <http://www.glexpo.com/>

- **2018 Illinois Specialty Crops, Agritourism, & Organics Conference, Wednesday-Friday, January 10-12, 2018.** Crowne Plaza Hotel, Springfield, IL. Save the date; more details closer to event. For more information visit the [ISGA](#) website.
- **2018 Gateway Small Fruit & Vegetable Conference, Wednesday, February 7, 2018.** Regency Conference Center, O'Fallon, IL. Save the date; more details closer to the event. For more information contact Elizabeth Wahle at wahle@illinois.edu or 618-344-4230.
- **2018 Southern & Southwestern Illinois Commercial Tree Fruit Schools, Tuesday & Wednesday, February 13 & 14, 2018.** Mt. Vernon & Hardin, IL. Save the date; more details closer to event. For more information contact Laurie George at (618) 242-0780 or lgeorge@illinois.edu
- **2018 Illinois Summer Horticulture Field Day, Thursday, June 7, 2018.** Annual Illinois State Horticulture Society annual summer field day will be hosted by Flamm Orchards, Cobden, IL. Save the date; more details closer to event.

News & Announcements

REMINDER: Please Remember to Fill Out the Fruit and Vegetable Research Priorities Survey

Take this opportunity to have a direct impact on future applied fruit and vegetable research projects. We have received about 45 survey responses (thank you!!!), but would love to have input from as many as possible, so...take 5 minutes.

This survey was compiled by Elizabeth Wahle, Nathan Johanning, and Bronwyn Aly with the purpose of accessing the research needs on vegetable, high tunnel, and fruit production in Illinois. By prioritizing and focusing on specific areas identified by specialty crops growers and industry professionals, the University of Illinois can work with the industry to target those research needs. This survey is not intended to be a list of crops you are currently growing, but rather, a mechanism to provide direction to future research endeavors. Your input will **directly** influence the direction of future applied specialty crop research! **Please take 5 minutes to fill out the survey by clicking on the following link: [Fruit and Vegetable Research Priorities](#) or via the paper copy enclosed in the newsletter.** If you have specific comments or thoughts regarding research focus areas not addressed by the survey, please feel free to contact Elizabeth, Nathan, or Bronwyn at your convenience (see the contact list at the end). Thank you for your feedback and thank you to those that have already submitted a survey!

Bronwyn Aly (618-382-2662; baly@illinois.edu)

Regional Reports

From the St. Louis Metro-East... Rainfall was highly variable across the St Louis collar counties this past weekend, with the northern counties receiving significantly more than the southern counties. The northern collar counties received 2-3 inches of rainfall compared to 0.75 inches in the southern collar counties. Some cracking of Fuji apple was reported but nothing serious. Even with this recent rain, much of the collar counties are still abnormally dry to moderately droughty according to the US Drought Monitor. With the rainfall came a return to more fall-like temperatures, which during the day are perfect for apple and pumpkin u-picks. Early defoliators like sweet cherry and walnut have dropped most of their leaves, but the overall landscape is still green, with some color developing following the recent rain and cooler temperatures.

Apple harvest is winding down, with apple cultivars like Fuji, Granny Smith, EverCrisp, Winesap and Arkansas Black either completed or very near. The way Halloween falls this year, pumpkin sellers still have two full weekends to continue marketing what has turned out to be a superior crop of pumpkins, gourds and other winter squash.

Elizabeth Wahle (618-344-4230; wahle@illinois.edu)

From north central Illinois... It seems fall has arrived at last. Temperatures dipped into the upper 30's in the area this past weekend. The cold snap came as a bit of a surprise. The weather forecast a low in the lower 50's. It seems unbeknownst to the meteorologist the sky cleared up a bit early in the late night allowing the trapped heat to escape. I awoke to find the house frigid. Fortunately the tropical crops in the high tunnel (ginger and turmeric) made it through the cold snap. A good reminder if you do grow tender perennial crops that require you to bring them inside to a protected area (or better yet a greenhouse!) now is the time to do so.

The rain last week was a welcomed change to the droughty fall we've experienced. We begun harvesting our romaine lettuce in the field. The bok choy has done superb this fall. We grow it mostly for ourselves, as we haven't explored the



Bok choy growing very well in the high tunnel. Photos: C. Enroth

Ginger (pictured) and turmeric get pulled this week and transplanted indoors.

demand for bok choy in our area. A reminder we operate a donation garden. All produce is donated to local food pantries. I think we've found is some crops have few takers, like kale. I am assuming bok choy would be a similar circumstance.

We also tried something different due to bed space being at a premium. We planted in blocks of mixed vegetables versus rows. With the romaine lettuce coming out we now have opened up the broccoli to fill in. Once lost in a forest of romaine, turnips have found their niche flanking the broccoli. This is chaos under a modicum of control, but we wanted to experiment with high-density plantings. So far, I've enjoyed the results, however, I am in no way advocating this as a successful strategy for commercial growers.



A crowded yet productive bed of lettuce, turnips, broccoli, and Swiss Chard.

For those investing in season extension, low tunnels should be going up. This is the first year we are building low tunnel over some of our field beds. Using a bender we fashioned ten-foot long galvanized electrical conduit into six-foot wide hoops. Installing these on raised beds prove to be somewhat tricky, and will likely be problem solved through experience of what works best for us. It brings to mind the idea of good planning and thinking long term when laying out your growing beds. If we had been thinking more about season extension when building our raised beds in the spring, perhaps installing the low tunnels would have been less of a struggle now.

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

From western Illinois... After months of dry weather, we're finally getting some rainfall. Thus far in October we've received 3.18 inches of rain, which is allowing the grass to resume growth and regain its green color. Rainfall total for July through September totaled 5.74", which wasn't enough to keep many crops from dying prematurely. If you didn't provide supplemental water, you probably didn't get optimal yields. Although corn and soybean farmers are harvesting some incredible yielding crops despite the dry weather. As dry as the soil was, we've not had any runoff, so lakes, rivers and streams remain very low. And any fall tillage may have to wait until we get some dryer conditions.

This is our 27th year for raising pumpkins, and we're not sure we've ever raised a crop as good as this. You could probably walk across the field on pumpkins without touching the soil there are so many fruit. Many other local producers have found similar results. And we're not sure why. We started seeing yellow foliage in August, as there were few new leaves being produced, and we were so dry. We only had one episode of temperatures greater than 90 degrees during July and August, and that only lasted a little over one week. So apparently pumpkins like dry weather and cool weather.

High tunnel warm weather crops (tomato, pepper, etc.) almost quit producing about a month ago when we had a low temperature of 44 degrees. That low temperature effectively shut down the plant for 7-10 days. But then when we got back into the 90's a few weeks ago, they really took off. We had a low this past Monday morning of 36 degrees, so I'm going to assume that we won't have much in the way of production for the remainder of the year, unless we get some hot temperatures again.

We planted spinach and head lettuce in the tunnels as well as outside (the lettuce goes on plastic). Being careful to avoid planting when we had those 90 degree temperatures allowed excellent germination and the first cutting occurred last week on the first planted spinach. It doesn't have the sweet taste of winter production yet, due to warm growing temperatures. These cold tolerant plants produce more sucrose in their cells as the temperatures decline. Since sugar doesn't freeze as readily as water, they are better able to survive cold temperatures. It also provides a great taste. You still have a little time yet to start some winter tolerant crops, especially in southern IL. The secret is to get them mature, or close to, by the time we're down to 10 hours of light. We will utilize a light weight row cover to protect lettuce at temperatures colder than 25 degrees, but the spinach will tolerate much colder temperatures.

As winter approaches, but before the weather gets too cold, consider how you will prepare. Change oil in motors before the long period of rest; perhaps add some sort of gas additive to reduce water accumulation in tanks; be sure to start

engines every month to keep the battery in good order; clean and oil hand tools; hopefully you stored extra seeds in your basement or refrigerator/freezer and not in the garage or tunnel; drain all irrigation lines; store liquid pesticides in a frost free area; consider a sanitary spray inside the tunnel and on all tools and supplies used during production;

Our cover crop of daikon (tillage) radish which we planted in mid-August after our sweet corn emerged soon after planting as we waited until a rainfall to plant. But then it grew very slowly due to a lack of moisture. However with the rains of October, the plant grew 3-4 times in height and now is approaching knee high. Normally at this time of year we see large roots, which measure up to 3" in diameter and extend out of the soil 4-5", but not so this year.

Our July planted bare root strawberries have 2-4 branch crowns. In comparison, the late August plug plants have 0-1 branch crowns. We've been planting a few more of the bare root plants each year to ensure that we've an adequate number of branch crowns to allow better yield. The negative associated with so many branch crowns is pruning runners. We do this chore at least once per week. The bare roots we've been pruning for 6 weeks while the plug plants we've pruned twice.

Mike Roegge, Retired Extension Educator & Mill Creek Farms (roeggem@illinois.edu)

From southern Illinois... We have been in a more "fall-like" weather pattern recently with highs in the upper 60s and now 70s. We also had a few "cold" mornings earlier this week where I saw temperatures as low as 38°, but I did not see any or hear reports of any frost as of yet. We finally got a break in the "drought" about 10 days ago with a front that came through 10/10 and brought more widespread rainfall to most. I have heard of rain totals from 1.4" at home at the farm in Monroe County to 3" at the Ewing Demonstration Center in Franklin County. This Saturday night into Sunday we are supposed to have another chance of rain and temperatures dropping down again with highs in the 60s next week and even some lows into the mid to upper 30s. This just might be the end of our "summer" growing season, but we will have to wait and see.

Out in the field, apple harvest is nearing the end but still lots of great apples out in the markets. Pumpkin harvest for wholesale markets is slowing down as many stores have their fill as we approach the later part of October. On the retail side the next few weeks will still be busy especially with the cooler temperatures as consumers prepare for fall and Halloween festivities.

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

Fruit & Vegetable Production & Pest Management

A Review of Post-harvest Activities that Benefit Next Year's Crop

Since some leaves are in the process of dropping, it is time to be thinking about sanitation measures to reduce the amount of overwintering apple scab pathogen. The fungus that causes apple scab overwinters on fallen leaves and develops fruiting bodies in the spring. The goal in sanitation is to speed decomposition of fallen leaves to prevent the apple scab fungus from successfully overwintering. This can be accomplished in a couple of ways. One is to mulch or flail mow in the fall or early spring (prior to green tip); keeping in mind that raking under the trees may be necessary to do a complete job. This method alone can significantly reduce the amount of overwintering pathogen. A second method is to apply a solution of 5% urea (by weight) to trees just before leaves fall or immediately after leaf fall to leaves on the ground to avoid any late-season stimulation of growth (even better if you mulch leaves first, then apply the urea). Like a compost starter, the use of urea on fall leaves promotes decomposition. To do a rough calculation, assume a gallon of water weighs 8.35 lbs; 5% of that is 0.42 lbs or 6.7 oz. So, for every 100 gal (835 lbs), you need to fill the tank with at least half of the volume (note that urea will dissolve in its own weight in water, but it becomes increasingly difficult to dissolve as the concentration increases), turn on agitation, add 42 lbs of urea to the tank, then bring up to the 100 gal volume mark.

The bitter rot fungus (apple) overwinters in mummified fruit (from disease or hanging thinned fruit), in cracks and crevices in bark, and in cankers produced by other diseases such as fire blight (and more rarely in cankers produced by bitter rot). According to David Rosenberger, Plant Pathologist and Professor Emeritus, Cornell University, inoculum can also overwinter on prunings left beneath trees, rotted fruit left on the ground and from one of many wild hosts in hedgerows and woodlots (example: Horse-chestnut, *Aesculus hippocastanum*). As a result, sanitation is critical in reducing fungal inoculum...dead wood, including the current year's fire blight strikes, needs to be removed from the tree and destroyed. All mummies hanging on the tree and rotted fruit from under the trees after harvest must be removed. If practical, remove diseased fruit from the tree during the growing season to reduce the spread of the disease.

Sanitation of vine crop residue is also critical in terms as managing overwintering pathogens. Like apple scab, many of the diseases that affect pumpkins/winter squash/gourds overwinter on vine residue. Operations that speed decomposition of vine residue greatly reduces primary infection the following season. Smaller particles break down faster so bush hogging or flail mowing vines before plowing down is beneficial. For growers on a no-till system, reducing particle size for rapid decomposition of diseased plant material is a must. Keep in mind that a disease like *Phytophthora* (Oomycetes) is capable of over-wintering in the soil without the benefit of plant residue. If *Phytophthora* was present in the field follow the same procedure, but plan to rotate out cucurbit and solanaceous (especially peppers) crops for at least 4 years.

Strawberry growers should secure an order of straw to cover their mulching needs. For the southern region, application may be a ways off, but start planning now. Strawberry leaves are still active well into late autumn, and applying mulch too early in the fall can reduce the plant's ability to produce and store reserves needed for winter survival. If the mulch is applied too soon, before plants are dormant, the mulch can cause rotting of the leaves and crowns. If mulch is delayed too late, low temperatures could damage crowns. The best time to apply mulch is after the strawberry plants have experienced several light frosts, but before temperatures drop to 20°F, at which point injury can occur. After several light frosts, the leaves attached to the crown should begin to flatten out, signaling the time to mulch. The mulch should be applied three to four inches deep over the plant rows. One bale of straw pulled apart should cover about 100 square feet.

Other programs of Interest:

Registration is now available for the Great Lakes Fruit, Vegetable and Farm Market EXPO, one of the premier shows for fruit and vegetable growers and farm marketers which is held December 5-7, 2017 in Grand Rapids, MI. The EXPO includes educational programming for fruit, vegetable and greenhouse growers, and for farm marketers. Also not to be missed is the trade show with more than 450 exhibitors covering 4 acres of exhibit space in one hall. Pre-register by November 15 to save money at: <http://www.glexpo.com/>

Illinois State Horticulture Society **2018 Summer Horticultural Field Day**, June 7th, Flamm Orchards, Cobden, IL.

Elizabeth Wahle (618-344-4230; wahle@illinois.edu)

FSMA Produce Safety Rule Updates (Recent FDA announcements)

In September, the FDA released three much-anticipated announcements:

- 1) A small entity (business) compliance guide for the produce safety rule. This guidance does not establish legally enforceable responsibilities but rather describes the FDA's current thinking on certain produce safety rule topics. This should only be viewed as recommendations unless specific regulatory requirements are cited within the guide. Here is a link to that document:

<https://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/ucm574281.htm>

2) Proposed Rule: Extension of Compliance Dates for Subpart E (Agricultural Water)

Due to stakeholder feedback concerning the testing requirements for pre-harvest agricultural water, the FDA has proposed an extension of the previous compliance dates for water testing for all produce covered under the produce safety rule (except sprouts). This will allow the FDA to address some of these issues, reduce costs, and enhance the flexibility of these requirements. The proposed rule does not address the underlying requirements, but only the compliance dates for the water testing requirements. This extension will give producers an additional two years to come into compliance with the water testing requirements. For more information on the proposed extension visit the following link: <https://www.federalregister.gov/documents/2017/09/13/2017-19434/standards-for-the-growing-harvesting-packing-and-holding-of-produce-for-human-consumption-extension>

PROVISIONS	COVERING	COMPLIANCE DATE		
		Very Small (\$25k - \$250k Produce Sales)	Small (\$250K - \$500K Produce Sales)	Other (>\$500K Produce Sales)
112.44, 112.45(a) and (b) 112.45(b)(2), and (c) 112.46(b)(1) with respect to untreated	Provisions dealing with <i>E. coli</i> based agricultural water quality criteria (old dates)	1/26/2022	1/26/2021	1/26/2020
112.44, 112.45(a) and (b) 112.45(b)(2), and (c) 112.46(b)(1) with respect to untreated ground water	Provisions dealing with <i>E. coli</i> based agricultural water quality criteria (proposed new deadlines)	1/26/2024	1/26/2023	1/26/2022

3) Water testing methods

In the current rule under acceptable water testing methods (112.151), the listed protocol is EPA method 1603(membrane filtration using modified mTEC). The main difficulty of this method for most growers is the quick turn-around time for testing. EPA 1603 requires delivery of the sample within 6 hours of collection, which will be very difficult to achieve for most farms. In light of this, the FDA has released a list of equivalent testing methods that are “scientifically valid” and “at least equivalent to 1603 in accuracy, precision, and sensitivity. The list can be found in the following fact sheet: <https://www.fda.gov/Food/FoodScienceResearch/LaboratoryMethods/ucm575251.htm>

This is the current list, which includes some commonly found methods such as standard method 9222 B, 9213 D, and D 5392-93. The list may expand, but hopefully your current water testing lab runs one of these equivalent tests. It is a good idea to call the water testing department of the lab you use to confirm they use one of these methods on the FDA’s list.

Zachary Grant (708-679-6889; zgrant2@illinois.edu)

Less seriously... <http://www.smart-words.org/quotes-sayings/funny-sayings-puns.html>

The road to success is always under construction. [Lily Tomlin]

All my life I've always wanted to be somebody. But I see now I should have been more specific. [Jane Wagner]

I worry whoever thought up the term "quality control" thought if we didn't control it, it would get out of hand.

When I was a boy I was told that anybody could become president. I'm beginning to believe it.

I don't suffer from insanity. I enjoy every minute of it.

I said yes, which turned out to be the right answer. [Pat Sajak]

The only power you have is the word 'no'. [Frances McDormand]

Art doesn't transform. It just plain forms. [Roy Lichtenstein]

Attempt to get a new car for your spouse - it'll be a great trade.

I said "no" to drugs, but they just wouldn't listen.

I don't like balance. Balance is not a word you can use in Versace fashion. [Donatella Versace]

Hypochondria is the only disease I haven't got.

Everyday is a gift, that's why they call it the present.

Good judgment comes from experience, and experience ... well, that comes from poor judgment.

Answering machine message: "You're growing tired. Your eyelids are getting heavy. You feel very sleepy now. You are gradually losing your willpower and your ability to resist suggestions. When you hear the tone you will feel helplessly compelled to leave your name, number, and a message"

Just because your doctor has a name for your condition doesn't mean he knows what it is.

There is always light at the end of the tunnel - if there isn't, it's not a tunnel ...

If you had to identify, in one word, the reason why the human race has not achieved, and never will achieve, its full potential, that word would be "meetings".

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
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
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
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
Extension Educators – Commercial Agriculture		
ELIZABETH WAHLE , Fruit & Vegetable Production	618-344-4230	wahle@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



Illinois Fruit and Vegetable News