

Kentucky Fruit Facts

July-August 2024

<https://www.uky.edu/hort/documents-list-fruit-facts>

Daniel Becker, Editor
Delia Scott, Newsletter Designer

Inside This Issue:

Fruit Crop News	1
Upcoming Meetings	2
Introduction to Weather Alert	3
Ag Drones Workshop	4
Keeping Birds Away from Small Fruits	4
Fruit Grower Alert Listservs	5
Laundering Pesticide Contaminated Clothing ...	5

Fruit Crop News

Daniel Becker, U.K. Extension Associate

By my estimation fruit crop development is about a week to two weeks ahead of schedule so far this year. A few berries were ready to pick from our small planting of ‘Duke’ blueberries starting on May 20. Looking at my notes from past years, I could expect to start picking early the first week of June from this cultivar. The first week of June is also about the same time we would begin harvesting cherries, but this year they were ready 10 days in advance. Peach and nectarine harvest is similarly early, with the first picking coming on June 6. ‘Redhaven’ and other early main-season cultivars were harvested June 27; normally we would have to wait until the first week of July to begin with these. Reports from several growers and others around the state are confirming the advanced phenology and rush to get crops harvested.

Yields have been variable so far. Strawberries were good, but for some the crop was excellent with harvest extending for six weeks in some cases. However, some plasticulture growers reported small fruit size due to excess branch crown formation from the warm fall and winter. Several growers also reported

increased fruit rots due to excess spring rains, numerous misshapen berries, and mite injury as causes of diminished crop. Blueberries have also fared well. Thornless blackberry yield has been excellent

in plantings that escaped winter injury. Flavor was good early-on but has declined as rainfall has increased.

The peach crop is hit or miss depending on location and cultivar, some have near a full crop, others a partial or total loss. Several sites that made it through the subzero cold spell back in December were hit by the March freeze which caused further crop loss. I have noticed some early leaf yellowing and drop on ‘Redhaven’ caused by bacterial spot. ‘Redhaven’ is rated as having moderate to good bacterial spot resistance but during favorable conditions, such as have existed over the past few months of rainy weather, will become infected (Figure 1). I have not noticed any fruit infections. “Redhaven’ is entering its eighth decade as a commercial cultivar and some loss of disease resistance is to be expected as pathogens reproduce and populations shift.

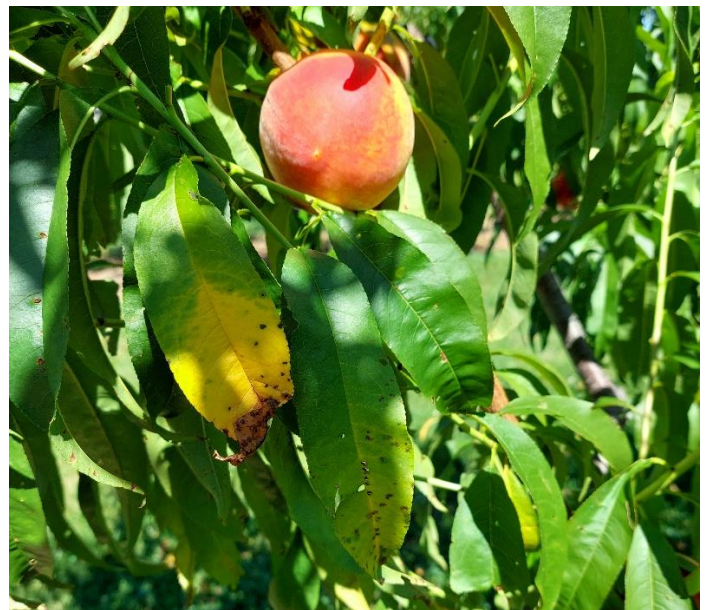


Figure 1. Bacterial leaf spot on ‘Redhaven’ peach. (Photo: Daniel Becker, UK)



Cooperative Extension Service
University of Kentucky
Horticulture Department
N-318 Ag. Science Ctr. No.
Lexington, KY 40546-0019

So far, the apple crop looks good, summer cultivars ‘Lodi’ and ‘Pristine’ are being harvested with the main season fast approaching. Time will tell if the week to two weeks advance in harvest seen in other crops will hold true.

Looking ahead, I am hearing that the availability of strawberry plugs from reputable nurseries is expected to be limited once again. According to Shawn Wright “it is going to be very important for growers to get their orders in as soon as possible for the 2024 planting season. Many eastern nurseries are finding it difficult getting quality tips from suppliers up in Canada at the right time to produce good quality plugs. Priority will go to existing growers who already have an established relationship with nurseries. Newer growers may not get all the plugs they want or the cultivars they desire.

If a single nursery is not able to supply enough plugs or the desired cultivar, growers will need to order from multiple sources to get the plants they need, even if they are a little more expensive. A few years ago, the Kentucky Horticulture Council worked with UK Horticulture to develop [HortFact-3002](#), a listing for fruit and nut cultivar nursery sources. Another list of commercial plug plant producers has been assembled by the [North Carolina Cooperative Extension Service](#). These lists are not exhaustive but can be a great place to start! A word of caution, though, be sure to acquire plugs only from producers that source tips from off-farm, not ones that harvest and propagate their own tips. Anthracnose crown and fruit rot is easily spread by tip propagation unless strict sanitation is practiced. Extensive to near total crop loss has occurred from plantings established with infected plugs.

Upcoming Meetings

Times are listed in Central Time (CT) or Eastern Time (ET) depending on location.

July 9. Ag Drones Workshop. 1:00 – 5:00 p.m. ET. KSU Harold R. Benson Research and Demonstration Farm, 1525 Mills Ln, Frankfort, KY 40601. Participants will receive two pesticide applicator CEU credits for Category 11 (Aerial) with attendance. Use this [link](#) for more details and to register.

Jul. 18. Purdue University Fruit and Vegetable field Day. Purdue Meigs Ag Center, 9101 S. 100 E., Lafayette, IN 47909. Registration starts at 8:00 a.m. ET and educational tracks are scheduled between 9:00 a.m. and 12:30 p.m. Lunch is included in the \$25 registration. For more information about demonstrations and a printable PDF schedule, visit the [program website](#).

Jul. 23. Ohio Agritourism Conference & OPGMA Summer Tour. Hillcrest Orchard of Walnut Creek 2474 Township Road 444, Sugarcreek, OH 44681. Registration for the morning Agritourism Conference begins at 9:30 a.m. ET with sessions starting at 10:00 a.m. and ending at 3:00 p.m. Registration for the OPGMA Summer Tour begins at 3:30 p.m. and runs through 5:30 p.m. with a farm tour of Hillcrest Orchard. The cost is \$40 per session or \$60 for both. An agenda and a link to register can be found [here](#).

Jul. 25. Purdue Small Farm Education Field Day. Purdue Student Farm, 1491 Cherry Lane, West Lafayette, IN 47906. Registration 8:00 a.m. – 9:00 a.m. and demonstrations 9:00 a.m. – 12:30 p.m. ET. A schedule and link to register can be found [here](#).

Jul. 26. KSU Pawpaw Field Day. KSU Harold R. Benson Research and Demonstration Farm, 1525 Mills Lane, Frankfort, KY 40601. Schedule TBD. Contact Sheri Crabtree for more information: sheri.crabtree@kysu.edu, (502) 597-6375.

Aug. 3. Kentucky AgVets Field Day. 11:00 a.m. – 3:00 p.m. CT. All KY veterans and active-duty service members interested in agriculture are invited to attend and participate in program activities. For more information about the KY AgVets program, visit the [program website](#).

Sept. 7. Louisville Pawpaw Festival. 11:00 a.m. – 4:00 p.m. ET. Louisville Nature Center, 3745 Illinois Ave, Louisville, KY 40213. This free community event will feature guided hikes, engaging workshops, local vendors, music, food, tastings, and more family friendly fun.

Oct. 19. Fall Kentucky Nut Growers Association Meeting. It will be held on Saturday at the Owensboro Extension office from 9:30 a.m. to 3:00 p.m. CT.

Program schedule TBD. For questions contact John Strang, jstrang@uky.edu (859) 396-9311.

Nov. 21-23. Kentucky Small, Limited Resource Minority Farmers Conference. KSU Harold R. Benson Research and Demonstration Farm, 1525 Mills Lane, Frankfort, KY 40601. Program schedule TBD.

Jan. 5-7, 2025. Kentucky Fruit & Vegetable Conference. Marriott Griffin Gate, 1800 Newtown Pike, Lexington, KY 40511. Pre-conference events will begin on Sunday, January 5, with educational sessions and trade show being held on Monday and Tuesday, January 6 and 7. Program schedule TBD.

Jan. 29-31. From Food to Flowers: Illinois Everything Local Conference. Bank of Springfield Center, 1 Convention Center Plaza, Springfield, IL 62701. Schedule TBD.

Introduction to Weather Alert

Matt Dixon, Senior Meteorologist, UK Ag Weather Center

I'm excited to present a new smartphone app called "[Weather Alert](#)", developed in collaboration between the [UK Ag Weather Center](#), [UK Center for Computational Sciences](#), and [Southeastern Center for Agricultural Health and Injury Prevention \(SCAHIP\)](#). The goals of this app are two-fold: to heighten awareness during extreme weather conditions and secondly, to empower Kentucky farming operations with valuable insights for management and production-related decisions.

Made possible through support from Smith-Lever/Land Grant Engagement funding, SCAHIP, and the [UK Department of Biosystems & Ag Engineering](#), the initial phase of app development is now COMPLETE. This includes a user-friendly design for easily accessing current and forecast weather data, including a high-resolution radar interface. This app also seamlessly integrates the ability to deliver timely warning and watch alerts directly to your mobile device, all accessible through your phone's GPS location or other designated areas of interest.

The app can be accessed for each platform by scanning the QR codes or following the links in the descriptions below (Figures 1 and 2).



Figure 1. Weather Alert app for [iOS](#) (Apple iPad and iPhone).



Figure 2. Weather Alert app for [Android](#).

Phase two of app development will start in the coming weeks, where tools from the Ag Weather Center will be updated and modernized to create a GPS-enabled, county-by-county ag weather product for the Bluegrass State. We'll then turn our attention to disaster readiness in phase three, focusing once again on a county-by-county product.

Last but not least, this app is completely **FREE** with **NO ADS!** One of the best compliments I received a few weeks ago was from a farmer in Boyle County. She mentioned that this is the first weather app she could use in her rural location that doesn't bog down because of ads!

Please share with friends and family! While the focus is on the state of Kentucky, you can utilize this app anywhere across the United States. I've included some screenshots of the iOS version below for reference (Figure 3). As mentioned above, this app is

being completed in three phases, and I'm more than open to suggestions and comments as we move forward in development. You can send those to our email at weather.alert@uky.edu. Ultimately, the goal is for this app to be your go-to source for your ag weather needs and staying weather aware!

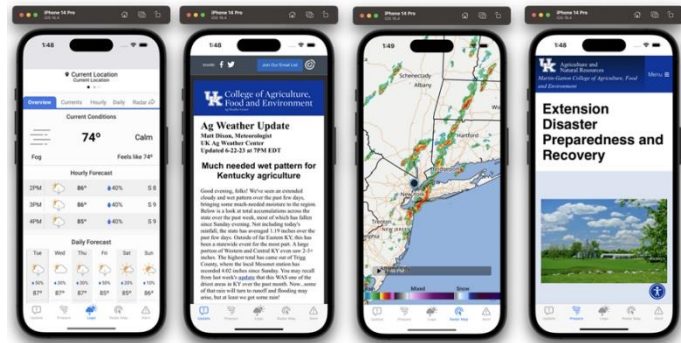


Figure 3. Screenshots of the iOS (Apple iPad and iPhone) version of the Weather Alert app. (Courtesy: Matt Dixon, UK Ag Weather Center)

Ag Drones Workshop

Interested in Ag Drones? Join us for a special training to learn how agricultural drones can help Kentucky producers more efficiently manage land, crops, and livestock!

Attendees will get to fly drones and hear from a variety of specialists and commercial business owners on how this exciting technology can be leveraged for your business. Whether you are interested in simple scouting and aerial imagery of your farm or want to expand into commercial drone applications, this training is for you!

The workshop will be held on Tuesday, July 9 from 1:00 – 5:00 p.m. ET at the KSU Harold R. Benson Research and Demonstration Farm, 1525 Mills Ln, Frankfort, KY 40601. The event has been approved for 2 Pesticide Applicator CEUs for Category 11 (Aerial) by KY Dept of Agriculture.

Scan the QR code on the flier at the end of this newsletter or use this [link](#) for more details and to register for this free event.

Keeping Birds Away from Ripening Small Fruits

Delia Scott, Extension Associate, Beginning Farmers, Fruit and Vegetable Production

Birds that feed on ripening small fruit can be a problem for homeowners with plantings of blueberries, raspberries, blackberries, gooseberries, currants, and grapes. There are multiple techniques that may be effective in keeping birds away, depending on bird populations and other available foods. These include using bird scare balloons with large eyes on the sides, placing rubber snakes or owls around plants, hanging aluminum pie pans or old CD's that blow in the breeze, or using reflective tape over and around the plants. These techniques are more effective if used before the bird problem develops. Birds will eventually become accustomed to scare devices, so repositioning them frequently is necessary.

Another technique that is effective in controlling bird feeding is the use of exclusion netting (Figure 1). There are many types of netting available, from fine-meshed netting that also excludes insects to large-meshed netting designed exclusively for bird control. Using a structure is often recommended to keep the netting off the plants, as well as to make harvesting more enjoyable. Photos of bird netting setups and structures can be found at this [link](#) on the UK Horticulture Department website.

Once birds have found fruit, it is difficult to discourage them from continued feeding. Birds will eat fruit long before it is considered ripe, so be sure to apply nets or use scare tactics before fruit begins to color.



Figure 1. Bird netting draped over a single blueberry row using lengths of 1/2-inch PVC pipe anchored with 1-foot lengths of rebar rods pounded into the soil for support. (Photo: Daniel Becker, UK)

Fruit Grower Alert Listservs

Kentucky fruit growers can subscribe to crop-specific e-mail listservs in order to receive up-to-date information and important alerts from University of Kentucky Extension Specialists. Separate listservs are available for:

- Apple
- Peach
- Grape
- Blueberry
- Strawberry
- Brambles

To be added to any of the listserv(s) contact Kim Leonberger (kimberly.leonberger@uky.edu) or Delia Scott (delia.scott@uky.edu).

Laundering Pesticide Contaminated Clothing – New Research Available

Michelle Wiesbrook, University of Illinois Extension Specialist, Weed Science, from the January-February 2022 issue of the [Illinois Pesticide Review Newsletter](#)

Your work clothes may be more exposing than you realize. Of course, I am referring to the potential exposure to pesticide residues lingering within the fabrics. While not officially considered as Personal Protective Equipment (PPE), most pesticide labels require the use of a long-sleeved shirt and long pants. Since these items are not officially PPE, employers aren't responsible for their use or care. You are. What clothing do you typically wear when using pesticides? What's the fabric type? Cotton? Polyester? Denim? Jeans are pretty popular. How soon after using pesticides are they washed? Are you washing them or is someone else and do they know how to safely and properly handle them? Do you wash your pesticide contaminated clothing daily and separately from other clothing?

Laundry tends to be a mindless task but if you apply pesticides for a living, you should reevaluate your practices to minimize pesticide exposure. Fortunately, new research is available on removing pesticide residues from clothing.

The recommended laundry procedure, across the nation, was based on laboratory research from the 1980's to early 1990's. It was modified over time with limited later research and in Illinois, our recommendations have gone a few steps further even. While this recommended procedure is sound, washers, detergents, and fabrics have changed considerably with time. Overall, this laundering process involves a lot of water when many currently available machines are high efficiency (HE). New machines have mandated energy saving settings and use less water and lower temperatures. Water saving settings may not be adjustable. Research has demonstrated that lowering water quantity and temperature likely will reduce the effectiveness of pesticide removal from clothing. Less water means transfer to other items in the load can occur. Many new machines don't have agitators, but is agitation needed? With detergents, new improvements

have been made in their ability to tolerate hard water, disperse contaminants and break down quickly after use but phosphates which were once used to break down oil and grease have now been removed. HE machines require low-sudsing soap. While recommended, “heavy duty” isn’t really a prominent description found on most detergent labels. Nowadays, pods (encapsulated, highly concentrated liquid detergents in water-dissolvable pouches) are widely used, but are they effective in removing pesticides from fabric? Lastly, there is a lack of information on newer breathable fabrics. Athletic style shirts (polyester/cotton blends) are popular but they simply haven’t been tested with pesticides. Are the current recommendations appropriate given the changes that have occurred since the 1980’s research was conducted?

Multi-state applicator surveys have been used to indicate trends and help guide pesticide safety educators. From these, we know that the majority are following most of these guidelines, but there is still room for improvement. Nearly a third reported that they washed clothes weekly rather than daily and a little less than a quarter reported that items were not separated from the family wash. Additionally, results indicate that HE machine use has risen as expected.

In 2016, Pesticide Safety Educators from various states compiled what we knew about washing pesticide-contaminated clothes into a [publication](#). This publication also brought to light all that we didn’t know. More research was needed and our colleagues from Colorado and Wyoming got right to work. Recently, their research article, [“Comparing the Removal of Pesticide Residue from Clothing with Different Washing and Drying Methods,”](#) was published in the Journal of Pesticide Safety Education. This study involved several factors including pesticide formulation type, application rate, washing machine type (full-fill agitator vs. HE), clothing type, and drying method. To test for the transference of pesticide from work clothes to the other family laundry, an uncontaminated baby Onesie was included in each load.

In addition to some of the questions previously discussed, the researchers also considered:

- Are the temperatures hot enough?
- Does fabric type matter? For example, does cotton wash better than a cotton/poly blend?
- Do any residues remain in the washer or dryer after use? Is it still necessary to run an empty cycle and if so, should bleach be added as research has shown it can deactivate certain pesticides?
- Can line drying be effective if it occurs in a basement or is ultraviolet light (UV-B) light needed? Fresh air and sunlight could further break down pesticides. Previously, this was theorized but never actually studied.

In this study, the researchers selected pesticide products that were commonly used and labeled for multiple application sites to represent a broad range of applicator types. Different formulations were selected:

- permethrin insecticide as Perm-UP 3.2EC, containing petroleum distillates which cause difficult to remove stains as oil is resistant to water.
- carbaryl insecticide as Sevin XLR Plus, which does NOT contain petroleum distillates.
- 2,4-D herbicide as Shredder LV4 Ester, which contains petroleum distillates. Research has shown that the ester formulation of 2,4-D is more difficult to remove from clothing than the amine formulation.

Each product was applied at 2 rates: 1X to represent a single application at the maximum labeled rate and 9X to represent multiple applications or a spill of diluted spray. To achieve the 9X rate, clothing items were sprayed nine times with the 1X solution. Clothing types included a long-sleeved work shirt, a pair of jeans, two long-sleeved T-shirts, and a baby Onesie®. All items were 100% cotton with the exception of one T-shirt that was a 50/50 cotton/poly blend.

It was thought that a heavier weight fabric would provide better protection so weight was considered during selection. Of the fabrics used, the jeans were the heaviest weighing roughly double that of the other fabrics. But when considering threads per

inch, the work shirt was the highest with a tighter weave (almost double) than that of the jeans. While heavy, the jeans had fewer threads per inch with a greater yarn size. Both the work shirt and jeans were cross-woven fabrics with two separate threads woven together. All t-shirts and onesies were made of a single, continuous thread (knitted).

The clothes and cut out swatches were laid out on turf and sprayed with a wet boom on a backpack sprayer (Figure 1). Once the clothing had dried, they were placed in plastic bags for transport to be washed. Exposed fabric swatches were included to assess the concentration prior to washing. Pesticides were extracted using methanol and analyzed using a mass spectrometer.



Figure 1. Clothing being sprayed in the study. (Source: Thia Walker, Colorado State University)

Two washing machines were used in the study: one HE and one agitator. The HE used less than half the total water of the agitator, and less than 1/3 of the hot water of the agitator. Appropriate cycles were selected for each machine but the HE wash cycle also included a pre-wash and an extra rinse. These extras were not options in the agitator washer or they would have been included in the study.

The researchers indicated that while detergent options are numerous, they had trouble finding products that claimed to be “heavy duty”. Persil ProClean 2 in 1 detergent was chosen based off high Consumer Reports (2016) ratings and good product availability in stores. A set amount of this detergent was used in each load in the study but additional detergent was required for the HE’s prewash cycle. Each machine was cleaned after the wash cycle by

running an empty load using detergent and ½ cup of bleach.

Previous research determined that a temperature of 140F was more effective in removing pesticides than lower temps of 115F, but on average, machines these days do not get that hot. In this study the on-demand water heater was placed within 6 ft of both washers and set to 120F per manufacturer instructions. Water temperature was measured throughout the cycles but 90F was the highest temperature reached. They discovered that while filling with hot water, some cold water was mixed in too. Unfortunately, this could not be adjusted. Washers were swabbed to check for pesticide residues after the washing cycle and again after running a cleaning cycle (no clothing) using detergent and bleach.

High heat was used with the machine dryer for 40 minutes or until dry. The dryer was swabbed after the cycle to check for pesticide residues. For line drying, the time was the same. Additional samples were exposed to UV-B for the same amount of time. The dryer temperature was measured at each minute of the cycle. The average peak temperature of 138F was reached at about 25 minutes, and then started to decline again. Here again, 140F was not reached.

Provided here is a brief summary of findings. For specific details, please read the journal article. It’s important to remember that this study looked at only 3 different pesticides at 2 different rates and not all pesticides may be removed from clothing with a similar efficiency. Due to difficulties encountered in the lab analysis of the 2,4-D samples, some results were not presented and that portion is being repeated.

For washing, both machines were effective but how well they worked depended on the fabric. The jeans had the highest level of residues regardless of washing or drying method. Remember the jeans weighed the most. The researchers indicate that heavier fabric may allow for deeper penetration of pesticides. Residues on the washer drum were detected at times and the empty bleach cycle helped to remove them. **All pesticides were transferred to the baby Onesie which is alarming.**

For drying, the results of this study suggest it is not possible to generalize that specific drying methods will further reduce pesticide residues. Each pesticide had different results. The authors suggest that convenience be the determining factor in choosing a drying method. Additionally, they determined that UV-B can further reduce some pesticide residues after washing but it appears to be dependent on active ingredient.

The general recommendations from this study mostly align with past recommendations. It is good to learn that both machine types were effective as HE washers are commonly used and fewer options exist for agitator washers. Continue to use the heaviest cycle with the most water possible. Supplementing with a pre-wash and extra rinse may be more effective even. Don't delay washing pesticide contaminated clothing. Preliminary observations with 2,4-D ester in this study suggested that delaying may result in more pesticide being absorbed by the clothing. So clean PPE immediately after use each day. Running the machine empty on a cleaning cycle with bleach is best to help remove any lingering residues. A dryer or clothesline can be used and always keep your pesticide contaminated clothes separate from all other clothing!

Finally, a big take away from this study is that applicators should avoid wearing 100% cotton jean type materials when applying pesticides. If choosing to wear them, applicators should consider an additional protective layer in the form of waterproof/rain pants or chemical-resistant chaps. Other options include applying starch to form a repellent surface, however, starch must be reapplied after each washing. Starch was not included in this study. Possible alternatives to jeans include ripstop fabric, Teflon-coated pants that are water, dirt and oil resistant.

To further summarize all recommendations, when washing pesticide contaminated clothing:

- Keep it separate from family laundry while washing or storing to avoid transferring residues to uncontaminated clothing.
- Handle with unlined, chemical-resistant gloves.

- Wash soon after use, at least daily.
- Don't pack clothes too tightly. (Fill to no more than 50-75% clothing capacity.)
- HE or full-fill agitator washing machines may be used.
- Prewash or presoak using hot water if possible.
- Wash using hot water. (Hot is more effective than warm which is more effective than cold.)
- Use the longest or heaviest wash cycle with the highest water level, for at least 20 min.
- Rinse using hot water, if possible. (If cold, then rinse twice.)
- Use a high-speed spin cycle or increase spin time if possible.
- Use liquid or granular detergent that is heavy duty or of high quality. (Detergent labels may not directly state this.)
- Multiple launderings remove more pesticide residues from clothing.
- Run an empty cycle with detergent and bleach.
- Line dry outside if practical. Otherwise, line dry inside or use an electric dryer.
- Starch clothing for added stain protection. (Starch coats fibers.)
- Discard any clothing contaminated with liquid concentrates or highly toxic pesticides.

Consider that last bullet carefully and plan accordingly. Even with proper laundering, enough residues can remain in the fabric to be absorbed through the skin. Accidents happen so don't wear your favorite concert T-shirt while measuring liquid concentrates or applying highly toxic pesticides. Instead, wear only items you can part with in the event of a spill.

Receiving Fruit Facts on the Internet

By subscribing to the email notification service, you will receive an email announcement when each new issue is posted on the web with a link.

To subscribe, send an email message:

TO: listerv@lsv.uky.edu

SUBJECT: Fruit Facts

MESSAGE: subscribe KY-FRUITFACTS

Followed by a blank line

OR to unsubscribe, the lines:

Signoff KY-FRUITFACTS

Followed by a blank line

You should receive confirmation by return email. If you have a problem, or if you wish to communicate with a person about “fruitfacts”, the owner’s address (the TO: line of the message is: owner-ky-fruit-facts@lsv.uky.edu).



AG DRONE DAY

**Tuesday, July 9th
1pm-5pm ET**

Join us for an afternoon training to learn how agricultural drones can help Kentucky producers more efficiently manage land, crops, and livestock!



Kentucky State University

Harold R. Benson Research and Demonstration Farm
1525 Mills Lane, Frankfort, Ky 40601

Register at

[kentuckyhorticulturecouncil.ticketspice.com
/ag-drone-training-day](https://kentuckyhorticulturecouncil.ticketspice.com/ag-drone-training-day)

