

# *Kentucky Fruit Facts*

February 2013/ (2/2013)

Fruit Facts can be found on the web at: [http://www.ca.uky.edu/fruit\\_facts/](http://www.ca.uky.edu/fruit_facts/)

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## **Fruit Crop News**

*By John Strang, U.K. Extension Horticulturist*

This should be a good winter to prune apples heavier than normal to help contain tree size because our apple crop was substantially reduced by last season's spring freezes. Trees should be loaded with flower buds for the 2013 crop and eliminating more of these through pruning will help the new crop. Several growers have reported that their pruning is progressing well. The winter has been colder than last winter which is good and most fruit crops have minimal or no cold injury. The exception is peaches. Some peach flower bud kill was noted the week of February 18 at the Princeton Research and Education Center where the lowest temperature experienced this winter was 12°F on February 1st. Dwight Wolfe evaluated peach buds for several varieties at the station. Please note his article below. The lowest temperature in Lexington was 6.6°F also on February 1st. The good news is that there are still plenty of live buds for a good crop.

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If a dormant oil spray has not been applied to your fruit trees, plan on making an application when temperatures are predicted to be above 45°F for two days. Good coverage is essential for overwintering San Jose Scale, aphid and spider mite control. If scale has not been a problem wait and make a delayed dormant application which is more effective on aphids and spider mites.

This is the time to apply nitrogen fertilizer for the coming season for all of our fruit crops except strawberries and grapes. Nitrogen is applied to strawberries at renovation after harvest and sometimes in August if the leaves look nitrogen deficient. Half the recommended nitrogen is applied to grapes at 10 inches of new growth and the other half if there is no frost just before fruit set. It is also best to split the nitrogen application for peaches, applying half now and the other half after the spring frost season is over.

Plasticulture strawberry growers should be thinking about removing their floating row covers during the last week of February or the first week of March depending on weather. Recover the plants when cold weather moves in and low temperatures are predicted to get cold enough to damage buds or flowers.

Tom Priddy in the Ag Weather Center has indicated that most areas of Kentucky have received enough precipitation this winter to make up for last summer's drought and recharge our ground water. This is certainly good news. So what do future weather forecasts indicate is in store for us? The three month outlook calls for near normal rainfall and temperatures which should fully alleviate our drought situation from last summer and hopefully lead to normal bloom periods for fruit crops.

## Freeze Injury to Peach Flower Buds

By Dwight Wolfe, U.K. Horticulture Research Specialist

Recent winter temperatures in Kentucky have been cold enough to cause some injury to peach flower buds in orchards throughout the state.

Temperatures at Princeton, KY, reached 12.3° F, on Feb. 1, 2013, while the flower buds were still dormant. To determine whether or not the cold temperatures resulted in any damage, flower buds were sampled from, Contender, Redhaven, and Reliance and Allstar varieties. The buds were cut and examined for any internal brown to black discoloration



Figure 1. Peach flower bud injury: Left to right live flower bud, live leaf bud, dead flower bud.

(Figure 1). Survival percentages were 100, 91, 80, and 77 for Reliance, Redhaven, Allstar, and Contender, respectively at the UK Princeton orchard. In Lexington at the Horticultural Research Farm where the lowest temperature was 6.6°F on February 1, survival percentages were 90% for Madison, 74% for Buenos II (NJF25) Peento and 65% for Redhaven and Coralstar. Generally, only about ten percent of the flower buds are needed to have a full peach crop. Assuming that the weather service's prediction of normal weather for the coming next couple of months is correct, growers in Kentucky could expect a full crop of peaches for 2013.

## Upcoming Meetings

**Feb. 25 KCARD Grant Workshop**, U.K. Research and Education Center, Princeton, KY. 9:00 a.m.-3:00 p.m. CST. This workshop is to help Kentucky agricultural producers and rural businesses identify grant opportunities and learn grant preparation strategies. To register or for more information, contact Aleta Botts at [botts@growkentuckyag.com](mailto:botts@growkentuckyag.com) or at 859-951-8328.

**Feb. 27 Home Fruit Production**, Harlan County Extension Office, 519 South Main Street, Harlan, KY. 4:30 p.m. EST. Contact Jeremy Williams 606-573-4464.

**Feb. 28 Pruning and Grafting Demonstrations**, Laurel County Extension Office, 200 County Extension Road, London, KY. 9:00 a.m. & 6:00 p.m. EST. Contact Bonnie Sigmon or Glenn Williams 606-864-4167.

**Mar. 1 Grape Pruning Demonstration**, Christianburg Farms (Bill & Denise Stiles), 264 Christianburg, Rd., Shelbyville, KY. Directions: Take I-64 to exit 35. Go North 3 miles and turn right on Route 43. Just past the 7 mile marker turn right onto Christianburg Road. 5th house on the left. Drive to the back of the house. Lunch is at noon and the pruning demonstration is at 1:00 p.m. EST. The event is free, but please RSVP to [patsy.wilson@uky.edu](mailto:patsy.wilson@uky.edu) before Feb. 28th.

**Mar. 2 Plasticulture Strawberry Production Farm Tour**, Sponsored by the Kentucky Strawberry Growers Association, Danny Van Meter Farm, 164 Old Peonia Loop Rd., Clarkson, KY. 615-887-6229 10:00 a.m. CST. Pot luck luncheon. Contact Shawn Wright 606-666-2438 X 234 or [shawn.wright@uky.edu](mailto:shawn.wright@uky.edu) (See directions and program below.)

**Mar. 6, 20, 25, 27 Homebased Processing and Microprocessing Videotaped Workshops** at County Extension Offices around the state. Registration \$50. Please see the website for locations and times on the Family Consumer Sciences website: <http://www.ca.uky.edu/agcomm/micro/> Additional workshops are scheduled in April.

**Mar. 7 Apple Grafting Workshop**, Hart County Extension Office, 505 A. A. Whitman Lane, Munfordville, KY. 5:30 p.m. CST. Contact Chris Clark 270-524-2451.

**Mar. 8 Apple Disease Control and Fungicide Use for the Homeowner**, Fruit Pest Control for the Homeowner, Starting a Bee Hive, Philosophy of Pruning Fruit Trees and Fruit Production Considerations, Fruit Tree Grafting and Home Wine Making, Garrard County. 1302 Stanford St., Lancaster, KY.

9:00 a.m.-2:00 p.m. ET. Contact Jay Hettmansperger 859-792-3026.

**Mar. 11 Mountain Monday Pruning and Grafting Workshop**, Quicksand Community Building, Robinson Center for Appalachian Resource Sustainability (RCARS), 176 Robinson Road, Jackson, KY. 6:00 p.m. EST. Contact TY Back 606-666-8812.

**Mar. 12 Fruit Pruning and Grafting Workshop**, Russell County Extension Office, 2688 S. Hwy. 127, Russell Springs, KY. 1:30 p.m. CST. Contact Raymond Thompson 270-866-4477.

**Mar. 12 Starting a Commercial Vineyard Operation**, Pulaski County Cooperative Extension Office, Somerset, KY. 5:30 p.m. Contact 606-679-6361.

**Mar. 13 Fruit Tree Grafting Workshop**, Boyle County Extension Office, 99 Corporate Dr., Danville, KY. 10:00 a.m. ET. Contact Jerry Little 859-236-4484.

**Mar. 21 Fruit Tree Grafting Workshop**, Lyon County Extension Office, 231 W Main St., Eddyville, KY. 1:00 p.m. CST. Contact Susan Fox 270-388-2341.

**Mar. 22 Fruit Tree Pruning and Grafting Demonstration**, Marion County Extension Office, 415 Fairgrounds Road, Lebanon, KY. 1:00 p.m. EST. Contact David Kessler 270-692-2421.

**Mar 23 Fruit Pruning Demonstration**, Spencer County, Taylorsville, KY. 10:00 a.m. EST. Contact Bryce Roberts 502-477-2217.

**Apr 8 Blueberry Production & Pruning**, Robinson Center for Appalachian Research and Sustainability (RCARS) Jackson, KY. 6:30 p.m. Contact: Shawn Wright 606-272-3500.

**Apr. 11 Fruit Grower Orchard Meeting**, Mulberry Orchard, Matt and Amanda Gajdzik operators, 1330 Mulberry Pike, Shelbyville, KY 502-220-7309. 10:00 a.m. EST. Contact John Strang 859-257-5685; email: jstrang@uky.edu

**Apr. 24 Small Fruit Production & IPM Short Course**, Franks Extension Community Building, Boyd County Fairgrounds, 1758 Addington, Road, Ashland, KY. Directions - From Lexington on I-64 take exit 191 and turn left at the end of the exit ramp. Travel approximately 1 mile and turn left at the ADD CAR sign. Contact Lori Bowling 606-739-5184.

**Apr. 27 Kentucky Nut Growers Association Spring Meeting**, Harden County Extension Office, 201 Peterson Drive, Elizabethtown, KY. 9:00 a.m. – 3:30 p.m. Contact Danny Ganno 270-860-8362.

**May 15 Fruit Grower Orchard Meeting**, Fegenbush Farms, Maurice Fegenbush owner, 502-252-5316, 4940 Plum Run Road, Bloomfield, KY. 10:00 a.m. EST. Contact John Strang 859-257-5685; email: jstrang@uky.edu

**Jun. 27 UKREC Horticultural Field Day**, Princeton, KY. Contact Winston Dunwell 270-365-7541 X 209.

**Jan. 6-7, 2014 Kentucky Fruit and Vegetable Conference and Trade Show**, Embassy Suites Hotel, Lexington, KY. Contact John Strang 859-257-5685; email: jstrang@uky.edu

## **Plasticulture Strawberry Production Farm Tour**

Saturday, March 2  
Van Meter Family Farm  
Owner: Danny Van Meter  
164 Old Peonia Loop Rd.  
Clarkson, KY 42726  
Phone: 615-887-6229

Directions: From then Wendell H Ford Western Kentucky Parkway take Exit 112 toward Clarkson/Mill-erstown. Turn right onto KY-224/E Main St (0.7 mi.) Turn left onto E Main St/ US. 62 (0.2 mi.) Turn left onto KY-88/ Peonia Rd. (8.1 mi.) Take a slight left onto Old Peonia Loop (0.1 mi.) and arrive at Van Meter Family Farm on left.

Program: All Times CST  
10:00 a.m. This will be a tour of Danny's planting with discussions of cultural aspects, insect, disease, and weed control  
U.K. Extension Specialists Shawn Wright, Nicole Ward and John Strang and growers.  
Noon Pot Luck Lunch – Please bring a dish.

## **Farm to School Webinars & Trainings** *By Tina Garland, KDA Farm to School Program*

**FY 2014 USDA Farm to School Grant Program webinars** -- To assist eligible entities in preparing proposals for the next round of USDA Farm to School Grants, USDA will host a series of webinars related to the application process. Each webinar presentation will last approximately one hour, with an extra 30 minutes of question and answer time. Information on how to access each webinar is below; please contact

Laura Brown (laura.brown@fns.usda.gov) with any questions.

**Grants.gov: Wednesday, February 27, 1:00 p.m. EST** -- Representatives from grants.gov will discuss the application process and how to submit using the grants.gov portal. Access the webinar here: [https://www.livemeeting.com/cc/usdafns/join?id=CQB39F&role=attend&pw=3cT%2B%7BP\\*\\*H](https://www.livemeeting.com/cc/usdafns/join?id=CQB39F&role=attend&pw=3cT%2B%7BP**H)  
Meeting ID: CQB39F Entry Code: 3cT+{P\*\*H  
Note: You will need an Internet connection and computer speakers in order to see and hear the webinar.

**Planning Grants: Tuesday, March 5, 1:00 p.m. EST** -- Access the webinar here: <https://www.livemeeting.com/cc/usda/join?id=ZS99Z2&role=attend>  
Phone: 888-603-8943 Passcode: 3927574  
Note: You will need both an Internet connection and telephone line in order to see and hear the webinar.

**Implementation Grants: Wednesday, March 6, 1:00 p.m. EST** -- Access the webinar here: <https://www.livemeeting.com/cc/usda/join?id=ZS99Z2&role=attend> Phone: 888-396-9185  
Passcode: 3927574. Note: You will need both an Internet connection and telephone line in order to see and hear the webinar.

**Support Service Grants: Thursday, March 7, 1:00 p.m. EST** -- Access the webinar here: <https://www.livemeeting.com/cc/usda/join?id=ZS99Z2&role=attend> Phone: 888-396-9185  
Passcode: 3927574. Note: You will need both an Internet connection and telephone line in order to see and hear the webinar.

**Sample proposals are available online!**  
To assist applicants in preparing their grant submissions, USDA has shared winning proposals from the FY 2013 round of funding. The samples should not be treated as templates or guides; each grant application will be unique to the applicant and the community the project is intended to serve. View the sample grants here.

## **Farmers' Markets: Growing the Local Food Economy**

*By Kara Keeton, Keeton Communications, Kentucky Agriculture Report*

Farmers' markets in Kentucky are growing more than just local produce across the Bluegrass, at the 147 markets in Kentucky it is estimated that

more than \$10 million in sales will go back to farmers and in turn into the local economy this year. "In 2011 markets reported \$10.5 million in gross sales, but I'm sure this number would be very close if not over \$11 million if all markets collected and reported their annual gross sales," explained Sharon Spencer, Farmers' Market Director with the KY Department of Agriculture.

Like many other aspects of Kentucky's agriculture economy, Kentucky farmers' markets have seen steady growth over the last few years. In 2009, markets reported sales of \$5.6 million and then sales increased to almost \$8 million in 2010. "This year the weather conditions this summer have taken a toll on our farmers at the market. It has not been a good year for beans and corn, but the diversity of products at the market is what has made the difference for sales," said Jeff Dabbelt, Lexington Farmers' Market Executive Director. "We have great farmers producing niche products like artisanal cheeses, wines, pasture eggs, and organic meats along with a great selection of seasonal products that bring customers out to the market each week."

Spencer explained that the diversification at the farmers' markets has happened as farmers have had to diversify to stay on the farm. "When farmers started losing their tobacco quotas ten years ago, they began looking for ways to replace their tobacco income," explained Spencer. "Many farmers turned to producing products they could direct market to the consumer. This necessity to change along with the trend in the local food movement has led to the growth and diversification in farmers' markets across the state."

Traditionally farmers' markets in Kentucky have only been open in the spring and summer, but the growth in the local food movement and diversification on the farm has led to many markets across the Bluegrass extending their season. Kentucky now has three markets open year round, providing customers the option to buy fresh meats, eggs, processed foods, and produce through the cold winter months. "We had our best winter market this past year. We had more members participate and according to members many saw sales greater than in the years before," said Dabbelt. "I had one producer tell me that he sold \$250 in product one winter Saturday before 10 a.m. While sales like that are not normal for the winter market, we hope that they are one day."

In the peak of the summer it is easy to see the variety that can be purchased in the market, but if consumers are willing to try new items there are great products year round produced by farmers. From great

greens, winter squash, sweet potatoes, meats, eggs, breads, other value added-products, consumers can get a great selection at the winter markets.

“Having a good mix of vendors, both farmers and processors, have helped the Lexington Farmers’ Market to grow year round,” said Mac Stone of Elmwood Stock Farm, one of the many family farming operations that participates year round in the market. “We are seeing a lot of new faces, a younger crowd, at the market, who are concerned about the food they eat and how it gets from the farm to the plate. I think this growth is not only good for our market, but I think it is a positive sign for the local food economy beyond the market.”

For a complete list of Kentucky’s farmers’ markets, along with locations and hours of operation, visit Kentucky Farmers Markets.

## Another Invasive Fruit Fly Found in Kentucky

By Ric Bessin, U.K. Extension Entomologist

This past summer we identified another invasive fruit fly in Daviess and Warren Counties in Kentucky. This fruit fly is called the African fig fly (AFF), *Zaprionus indianus* Gupta (Diptera: *Drosophilidae*), as it is originally from Africa and is a serious pest of figs. The fly specimens were submitted to and confirmed by the USDA. We collected the specimens in apple cider vinegar traps that were set out to monitor for Spotted Wing Drosophila (SWD) in just a few locations in 2012. With all of these traps the AFF was several times more numerous than the SWD on each sticky card. While AFF originally was reported in Florida in 2005, it has been reported this year in North Carolina, Michigan, Pennsylvania, Connecticut, Mississippi and Texas.

SWD was identified for the first time in Kentucky in October and has also been identified from the same locations as AFF in Davies and Warren counties. However, there have been reports from other counties of small fly larvae in raspberries and other small fruit. In 2013 we will be trapping for both of these new invasive pests to better understand their distributions throughout Kentucky.

Similar to SWD larvae, AFF will readily develop in small fruits including raspberries, blackberries, grapes, blueberries and strawberries but it is unclear if it will only attack damaged and rotting



Figure 1. While AFF is a bit larger than typical fruit flies, they are recognized by the characteristic black margined white stripes.

fruit or if it will serve as a primary pest. It does not have the sharp ovipositor of SWD to puncture the skin of soft fruits. It may be possible that it ‘follows’ SWD into these fruits, but more research is needed. Its presence in such high numbers this past fall is of concern. The occurrence in Kentucky in 2012 may or may not be due to the mild winter we experienced last year and the trapping program planned for 2013 may help to answer that question.

## Persimmon Production

By Shawn Wright, U.K. Extension Horticulturist, RCARS

### Site selection

The American persimmon (*Diospyros virginiana*) is found throughout Kentucky and tolerates most soil types. It will grow rapidly on good sites. The tree grows best in full sun, though it will tolerate shade and can persist in the forest understory. Prolific suckering from the roots can lead to the formation of thickets in forest openings and can help revegetate disturbed locations. The trees have a strong taproot that makes them difficult to transplant, but once established they are resistant to drought.

The American persimmon shouldn’t be confused with the Asian persimmon (*Diospyros kaki*) or the hybrids. The Asian persimmon is far more common in grocery stores where it sells for \$1-\$2 per pound. The fruit is larger than the native persimmon, the tree smaller and less winter hardy. Hybrids of the American and Asian varieties also are available.

### Fruit production

Most American persimmon are dioecious; the tree is either male or female. However most American persimmon female trees are parthenocarpic or will produce fruit without pollination. Consequently it is not necessary to plant male trees

to set fruit. Supplemental pollination is not necessary because the trees are good nectar producers and attractive to bees. Blossom loss to frost is not usually a concern because the trees are one of the last to leaf out in the spring and blossoms don't open until the leaves are approximately ½-size. You can maximize your production of high quality fruit in a few ways. Treat the tree as you would other fruit trees. Full sun is important and you should have a soil test done to check pH and soil fertility levels. The trees grow best on a slightly acid site (pH 6.0-6.5) with moderate fertility. Excess nitrogen can cause fruit drop. Trees can be pruned to a central leader when young but fruit is produced on new wood so do not prune heavily if at all once the tree is established other than to open the canopy and remove damaged wood.

Fruit production will be greatest with one of the hardy Asian persimmons or the hybrids and you can expect fruit in 7-8 years. Most Asian persimmons are not hardy below 10° F. These trees do not get much larger than 20 feet tall making them much more suited for an orchard or backyard setting. Fruit can be astringent, like the American varieties, less astringent, or non-astringent. The non-astringent varieties can be eaten while still firm and do not have as much tannin. Asian persimmon may tend to biennial bearing producing a heavy crop in one year and very little the next. To avoid this you can thin the fruit by hand in the 'heavy years.' These also will benefit from having more than one variety planted nearby for cross pollination. 'Galley' has been reported to be a good Asian male pollinator but the Asian varieties will not pollinate the native persimmon and the native persimmon will not pollinate the Asian varieties.

For those that have an interest and skill in grafting, one way to improve a native persimmon planting would be to obtain scion wood or buds from the Asian varieties and graft them on native persimmon root-stock or suckers. Native persimmon root stock can be obtained by germinating seed that has been stratified in moist media for 3 months. Whip and cleft grafting have been used with persimmon as has chip budding. This provides the advantage of a native root stock and the quality of the Asian fruiting wood.

Fruit harvest begins in late summer and can continue until early winter depending on the variety. American persimmon will fall from the tree when ripe. If it is almost ripe and you are losing the fruit to wildlife, you can pick it and place it in a brown paper

sack containing a ripe banana. This will hasten the ripening process. The less astringent Asian varieties can be picked when full-colored and firm though pruners may be necessary to remove fruit from the branch.

#### Pests and disease problems

Persimmon don't require spraying because the trees are relatively free from insect pests. Persimmon wilt, caused by the fungus *Cephalosporium diospyri*, is the main disease problem of significance. *Coniothyrium* leaf spot can cause defoliation.

## **New Law to Protect Agritourism Operators**

*By Kara Keeton, Keeton Communications, Kentucky Agriculture Report*

A new state law provides Kentucky agritourism destinations with limited liability protection. The law requires venues such as wineries, orchards, and corn mazes to warn visitors that they are assuming the risk of participating in the activities of the operation. The law, filed as House Bill 440, was passed by the General Assembly and signed into law in 2012.

"Agritourism operations provide customers the opportunity to have fun on the farm while at the same time educating them about Kentucky's farm heritage," Agriculture Commissioner James Comer said. "However, customers need to understand that there are inherent risks in any agritourism activity. This law protects agritourism participants and operators. We want people to have fun on Kentucky farms in a safe manner, and we want our farmers to take every precaution to keep their customers safe."

The law created a new section of KRS 247.800 to 247.810 requiring agritourism attractions to post an 18-by-24-inch warning sign stating that, in the absence of operator negligence: "You are assuming the risk of participating in this agritourism activity." The law provides limited liability protection if the injury or death of a participant results from the inherent risks of the agritourism activity and/or in the absence of negligence.

If the agritourism operation chooses not to post a sign, the law requires the operator to show a written warning to participants and have them sign a waiver releasing the farm from liability should an injury or death occur.

“We’re encouraging our agritourism operators to do both,” Kentucky Agritourism Director Amelia Wilson said. “Farm families operating agritourism activities need to know that the new law doesn’t prohibit lawsuits; it just provides a layer of protection in the event of a litigious situation. It’s also in no way a substitute for insurance.

After Indiana passed a similar law last summer, that state received more than 100 applications for new agritourism operations, Wilson said. Kentucky currently has more than 350 agritourism operations in its Kentucky Farms Are Fun program, which is the official state agritourism marketing program.

Agritourism operators may purchase the plastic warning signs from the Kentucky Department of Agriculture at cost for \$1.75 each. For more information, contact Wilson at [amelia.wilson@ky.gov](mailto:amelia.wilson@ky.gov) or (502) 564-4983, extension 223.

## Sampling Impacts Purchases at Farmers Markets

*By Carroll Spence, UK Ag Communications Specialist*

When vendors offered samples at their farmers market booths, they saw an immediate effect on what customers purchased. The 2011 Regional Farm Market Sampling Survey, a Web-based survey conducted by researchers in the University of Kentucky College of Agriculture, determined that 55 percent of respondents purchased the sampled product the same day, though they had not originally planned to do so.

“Direct marketing opportunities, such as farmers markets, have proved to be a popular way for small- to medium-sized producers to increase revenue,” said Tim Woods, UK agricultural economist who directed the study. “Sampling has the potential to increase it further.”

Woods and Miranda Hileman, also of UK’s Department of Agricultural Economics, have recently written and released *Best Practices for Sampling at Farmers Markets: A Practical Guide for Farmers Market Vendors*, a manual for farmers and farmer’s market managers interested in learning the best practices of providing samples to patrons. The manual was funded through a grant from the U.S. Department of Agriculture Federal State Market Improvement Program.



Aaron Begley, 4, tries some cinnamon apples at the Cooperative Extension booth at the Boone County Farmers Market.

PHOTO: Matt Barton, Lexington KY

Kentucky farmers pushed for and received new state legislation in 2009 that allows Kentucky food producers to offer food samples at registered Kentucky farmers markets without requiring food handling permits, though vendors must be certified through the Kentucky Department of Agriculture’s sampling certification program. So far, more than 1,100 producers have completed the training. Many vendors, however, still do not provide samples. Hileman believes it’s because the process felt overwhelming.

“From previous vendor surveys we found that sampling was often noted as ‘a hassle,’ and ‘labor constraints’ were an issue facing many vendors,” Hileman said. “Some also noted that they were ‘uncertain about the benefits of sampling.’ We wanted to measure consumer perceptions about sampling in order to share this information with farmer’s market vendors.”

The Kentucky Department of Agriculture expects the more than 2,490 food producers taking part in Kentucky farmers markets to report approximately \$12 million in revenue in 2012. The growth in the number of registered farmers markets over the last eight years—from 91 in 2004 to 147 in 2012—is an indication of consumers’ increased interest in local food products and their desire to build relationships with producers.

Woods’ and Hileman’s study consisted of 3,406 responses from farmers market patrons across eight states, who had a previous food sampling experience. Responses indicated that vendor friendliness, sample presentation, market atmosphere, sampling

with friends or family and interaction with the vendor significantly impacted how the patrons felt about the sampling event. They concluded that the impact derived from sampling experiences extends to future purchases and referrals, and many vendors might find that going through the certification process is worth it, because it means increasing their customer base, and in turn, their revenues.

Best Practices for Sampling at Farmers Markets: A Practical Guide for Farmers Market Vendors is available online for free at <http://www.ca.uky.edu/cmSPUBSclass/files/extensionpubs/2012-19.pdf>. Contact: Tim Woods, 859-257-7270; Miranda Hileman, 859-257-7272, ext. 223.

## Links between Certain Fungicides and Parkinson Disease

*By Paul Vincelli, Kenny Seebold, Don Hershman, and Nicole Ward, Extension Plant Pathologists*

Several years ago, we reported on a study raising concerns about chronic exposure to certain pesticides and Parkinson disease<sup>1</sup>. Parkinson disease is a progressive neurological disease that causes tremors, impaired balance, and other symptoms. Previous research has raised concerns about the fungicide maneb and the herbicide paraquat. Maneb is the active ingredient in products such as Maneb® and Manex®. Paraquat is found in a variety of herbicidal products, including Gramoxone®.

A new study raises concerns about another fungicide widely used in the past: benomyl. Benomyl was the active ingredient in Benlate®, previously labeled for use on many horticultural crops, including fruits, vegetables, turfgrasses, and ornamentals. Benomyl was present in several commercial products, and EPA registrations for those products were cancelled during the period 2001-2002.

### Key Findings

This new study<sup>2</sup> presents two lines of evidence for concern about exposure to benomyl and Parkinson disease.

- **Epidemiological evidence.** The study compared Parkinson incidence among people with no, low, or high occupational exposure to treated fields. Those in the “low” category had no increased risk of disease, but the “high exposure” group had a 67%

higher risk of the disease. In this study, residential exposure to benomyl did not present an increased risk of Parkinson disease; only high occupational exposure did.

- **Biochemical evidence.** Laboratory studies were conducted, as well. Like all complex organic molecules, benomyl natural breaks down in living cells into other chemicals, (called metabolites). In this new paper, the authors reported that certain metabolites of benomyl interfered with an important human enzyme abbreviated ALDH. Disruption of ALDH activity in nerve cells may be involved in the development of Parkinson disease.

### Significance

Although over a decade has passed since the cancellation of benomyl uses in the USA, this new study raises a cautionary note about pesticide use. It serves as a reminder to:

- Minimize worker exposure when using pesticides. Use appropriate protective clothing, wash/shower after applying pesticides, and employ all the other safety practices recommended during pesticide applicator training.
- Minimize pesticide use where possible, by using all appropriate means to manage pests, diseases, and weeds (the IPM philosophy).

There is one aspect about this new research that we are grateful for: There is no indication (at least so far) that fungicides related to benomyl pose a similar risk. In particular, thiophanate-methyl is a widely used fungicide for disease control on many crops. It has been sold in Kentucky under trade names such as Cleary’s 3336, Incognito, T-Methyl, Topsin-M, and Transom. Thiophanate-methyl is in the same fungicide family as benomyl, and upon degradation, some of the same metabolites are produced as by benomyl. However, none of the metabolites produced by thiophanate-methyl<sup>3</sup> were reported to pose a risk in the new study. So there is no reason at this time to “wave a red flag” over the use of thiophanate-methyl. However, keep in mind that further study may raise concerns over thiophanate-methyl. While we appreciate the role that pesticides play in sustainable intensification of agricultural productivity, our advice is to be careful with the use of all pesticides, so that we have no reason to look back with regret.



## Sources of Information

<sup>1</sup>Vincelli, 2009. Link between Certain Pesticides and Parkinson's Disease. Kentucky Pest News, [http://www.uky.edu/Ag/kpn/kpn\\_09/pn\\_090602.html#PNV](http://www.uky.edu/Ag/kpn/kpn_09/pn_090602.html#PNV).

<sup>2</sup>Fitzmaurice et al, 2012. Aldehyde dehydrogenase inhibition as a pathogenic mechanism in Parkinson disease. PNAS, [www.pnas.org/cgi/doi/10.1073/pnas.1220399110](http://www.pnas.org/cgi/doi/10.1073/pnas.1220399110).

<sup>3</sup>Thiophanate-methyl, JMPR 1973, <http://www.inchem.org/documents/jmpr/jmpmono/v073pr22.htm>

## Impact of the Kentucky Association of Food Banks Specialty Crop Produce Sourcing Project

*By Tim Woods & Miranda Hileman, U.K Ag Economics Extension specialist and Extension Associate*

The mission of the Kentucky Association of Food Banks (KAFB) is to end hunger by providing food and quality services to increase the capacity of Kentucky's Feeding America food banks. The Association is comprised of seven food banks that reach 620,100 people annually, or 1 in 7 Kentuckians in all 120 counties. The Kentucky Department of Agriculture provided a Specialty Crop Block Grant to KAFB in 2011, for the "Farms to Food Banks" program. This program intended to increase consumption and awareness of fresh fruits and vegetables among low-income consumers, through a targeted fresh produce distribution program; the competitiveness of Kentucky's specialty crop market was also enhanced.

A survey of food bank clients showed the following:

1. The vast majority of responses came from persons primarily responsible for the grocery shopping (94%) and preparing the main meals at home (92%). The average client responding prepared 13.2 meals at home per week – equivalent to approximately 52 meals per month. This is compared to an average of 11.0 meals per month prepared at home by the average Kentucky food consumer.

2. Awareness and familiarity with fresh produce increased some for 25.2% of the clients, and increased by a lot for 26.2%, compared to the previous year.

3. Consumption of fresh produce increased some for 29.3% of the clients, and increased by a lot for 30.3%, compared to the previous year.

4. A total of 88.5% of the clients indicated an intention to use more fresh produce in 2012 compared to 2011. The grocery store had previously been the largest supplier to many respondents. Sourcing shifted slightly to heavier reliance on the food banks – this is in share of sourcing rather than measuring absolute consumption amounts.

5. To examine barriers to sourcing and consuming fresh produce, we employed a Likert scale, using 1 = "less of a barrier" and 7 = "more of a barrier". This rating scale provided us with interesting insight into how food bank consumers think about food. Cost was identified most frequently as "more of a barrier", with an average weight of 5.42—well ahead of the other potential barriers. Family interest and home storage were rated at 3.09 and 3.07 respectively. Bulky transport (2.74), knowing how to prepare it (2.51), and no access to stores that sell it (2.50) were less significant barriers.

6. There was a strong interest in seeing more fresh produce available through the food pantry – 21.7% of consumers indicated they would like to see more of the same kinds of items currently being received, and 74.9% indicated wanting more of the same, but also additional produce offerings.

There is strong evidence of expanded awareness and use of fresh produce among food bank clients in the Farms to Food Banks program. According to our results, food bank clientele produce a significant amount of their food at home and lean heavily on groceries and food banks for produce. There was interest in an expanded program – both in volume and in the variety of items. Cost is clearly the major barrier for these individuals. Food banks significantly help consumers overcome cost barriers that deny them access to more fresh produce.

For more information on this study, contact [tim.woods@uky.edu](mailto:tim.woods@uky.edu).

## Receiving Fruit Facts Electronically on the Internet

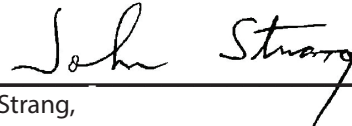
By subscribing to the email notification service you will receive an email announcement when each new issue is posted on the web with a link.

To subscribe, send an email message:

TO: listserv@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-fruitfacts@lsv.uky.edu



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