

Kentucky Fruit Facts

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Fruit Facts can be found on the web at: <http://www.ca.uky.edu/fruitfacts/>

John Strang, Extension Fruit and Vegetable Specialist, Editor
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Fruit Crop News

It's a new year and 2008 has to be better for fruit growers than 2007. The Fruit and Vegetable Conference at the Embassy Suites hotel was a success and plans are in the works to book the facility for 2009.

Fruit crop winter hardiness is holding and crop survival is good. Dwight Wolfe evaluated peach flower bud injury at the UKREC at Princeton on January 22 and found 1.4% dead flower buds on Redhaven and 7% injury on Cresthaven. An evaluation of Redhaven flower buds in Lexington on January 23 showed 2.6% injury. Bud survival at this time is more than ample for a full peach crop.

The 2007 U.S. apple crop estimate from the USDA is 222.4 million bushels. This is down from the revised estimate for the 2006 crop of 234.6 million bushels.

Upcoming Meetings

Feb. 9 Southeastern Kentucky Beekeeping School, McCreary Central High School, Stearns. Fruit topics include home tree and small fruit production and the biology of pollination. 9:00 a.m. - 3:30 p.m. Registration fee (\$10) includes lunch. Contact Greg Whitis 606-376-2524 or Phil Meeks 606-549-1430.

Inside This Issue:

- 1 -- Fruit Crop News
- 2 -- Upcoming Meetings
- 2 -- Training on How to Use Insect Traps
- 2 -- Managing Blueberry Stem Canker Diseases
- 3 -- Adament Fungicide for Stone Fruits & Grapes
- 4 -- EPA Proposes Elimination of All Chlorpyrifos Uses
- 4 -- American Cullinary Federation Ranking
- 4 -- Need Bees for Crop Pollination?
- 4 -- New Publications available
- 4 -- Fruit & Vegetable Sampling Certificates for Farmers Markets
- 5 -- Black Rot
- 6 -- Current status of streptomycin resistance in the fire blight pathogen in Michigan
- 6 -- Herbicide Cross-Reference List and Injury Symptoms
- 7 -- KDA Farm to Cafeteria Program



Feb. 13 Training on How to Use Insect Traps, Clark County Extension Office, Winchester, KY. 10:00 a.m. to 2:00 p.m. (LOCAL Time) Preregistration required. See article below.

Feb. 15-20 Annual Meeting of the North American Farmers' Direct Marketing Association (NAFDMA), Wisconsin. For more information see: <http://www.nafdma.com>

Feb. 19-20 Ohio Valley Farm Marketing Conference, Holiday Inn and Roberts Convention Centre, Wilmington, OH . <http://ocdc.osu.edu/events.php>

Feb. 20 Training on How to Use Insect Traps, UK Research and Education Center, Princeton, KY. 10:00 a.m. to 2:00 p.m. (LOCAL Time) Preregistration required. See article below.

Feb. 21 Kentucky Agritourism Summit, Center for Rural Development, Somerset, KY. Summit will provide valuable tips for business planning, insurance, signage, using MarketMaker, Kentucky Proud as marketing tools and using media to promote your farm. The owners of four successful Kentucky agritourism businesses will lead a panel discussion. Registration \$20 until Feb. 7 and \$30 after this date. Registration includes lunch. Contact Stephen Yates at 502-564-4983 or email: stephenp.yates@ky.gov

Feb. 22-23 Small Fruit Production Workshop, Shaker Village of Pleasant Hill, Harrodsburg, KY. Includes blackberry, blueberry, currant, gooseberry, grape, raspberry and strawberry culture. Workshop is taught by Dr. John Strang, begins Friday evening at 7:00 p.m. and runs all day Saturday. Registration is \$75 and includes Saturday breakfast, lunch and instructional materials. Requires advanced registration and payment. To register call 859-734-5411 x 1547 or 800-734-5611 x 1547 or email info@shakervillageky.org to register or for more information. To stay at Shaker Village throughout the workshop call 859-734-5411 x 211 or 800-734-5611 x 211.

Feb. 28 Fruit Tree Pruning and Grafting, London, KY (Laurel County) Contact Bonnie McNally or Glenn Williams 606-673-9495.

Feb. 29. Northern Piedmont Specialty Crops School, Person County Cooperative Extension Center, 304 South Morgan Street, Roxboro, NC. This meeting will feature Dr. Charlie O'Dell and his experiences in growing and marketing seedless table grapes, berries and asparagus, asparagus and seedless grape variety trial results, muscadine grape production and an update on pawpaws. 8:00 a.m. - 3:00 p.m. Pre-registration by Feb. 22 is required, \$25 for first person in family/business, \$15/person additional persons. Contact Carl Cantaluppi 919-603-1350 or email: carl_cantaluppi@ncsu.edu

Mar. 3. Apple Grafting and Pruning Workshop, Richmond, KY (Madison County) Contact: Amanda Sears Amanda.sears@uky.edu 859-623-4072

Mar. 4 Apple Grafting, Pruning and Care Workshop. Jackson, KY (Breathitt County) Time: 5:00 p.m. Contact Lowell Hamilton lhamilton@uky.edu 606-666-8812

Mar. 4-5 Illinois Small Fruit and Strawberry School, Mt. Vernon, IL. Contact Jeff Kindhart: 618-695-2444; e-mail: jkindhar@uiuc.edu

Mar. 4-7 Wineries Unlimited, Wine industry trade show and seminar program, Valley Forge Convention Center, King of Prussia, PA. See: www.wineriesunlimited.com

Mar. 6 Fruit Insect and Disease Control, Pineville, KY (Bell County) Courthouse 1:00 p.m. Contact Stacy White 606-337-2376.

Mar. 20 Apple Grafting, Pruning and Care Workshop. Inez, KY. (Martin County) Time: 10:00 a.m.. Contact Roger Mollette rmollett@uky.edu 606-298-7742.

Training on How to Use Insect Traps

Two trainings will be offered during the month of February on How to Use Insect Traps. The trainings will cover the different types of pheromone baited traps, how they work, trap placement, which trap to use for specific insect pests, using the data you collect and more.

Trainings are scheduled for February 13th at the Clark County Extension Office in Winchester and February 20th at the UK Research & Education Center in Princeton. Both meetings will start at 10:00AM (LOCAL TIME) and end at 2:00 PM.

The trainings are offered free of charge and lunch will be provided. **PLEASE PRE-REGISTER IF YOU PLAN TO ATTEND. SPACE AT EACH TRAINING IS LIMITED. To register to attend the trainings, call (270) 365-7541 extension 216 or e-mail makelley@uky.edu before February 8 and tell us if you will be attending the training at Princeton or Winchester!**

The program will apply for CEU's for certified crop advisors and hours for pesticide applicators.

Managing Blueberry Stem Canker Diseases

by John Hartman, U.K. Extension Plant Pathologist

During the 2007 growing season, weather extremes including the early April freeze and summer-long drought took their toll on blueberry crops in Kentucky. These environmental stresses created opportunities for several canker diseases to develop. By season's end, canker diseases resulting in dead twigs and branches were appearing in many blueberry plantings. Continued winter freezing and thawing now could initiate further stem cankers and dieback. Growers will want to take action this winter to prevent spread of these canker diseases.

The main blueberry stem diseases we see in Kentucky include:

- Phomopsis canker and dieback caused by the fungus *Phomopsis vaccinii*,
- Botryosphaeria stem canker caused by the fungus *Botryosphaeria corticis* and,
- Fusicocum canker caused by the fungus *Fusicocum putrefaciens* (perfect stage is *Godronia cassandrae*). This disease is perhaps less common here than the other two.

Symptoms. Cankers on blueberry stems disrupt the flow of water and mineral elements to the distal parts of the twigs and branches. Most growers notice as first symptoms, the sudden wilting and death of leaves on infected twigs or stems. Leaves often turn a reddish color and remain attached to the stem.

Phomopsis Canker and Dieback - Wilt and dieback of new shoots from the tips down is typical. In the first year, cankers can be found as brown areas between the ground and 3-4 feet high along the stem. Old cankers will appear flattened, grayish, and covered with tiny fungal fruiting bodies called pycnidia. In the heat of summer, sudden wilt and death of infected canes can occur, while healthy canes remain productive.

Botryosphaeria Canker - Soon after fungal infection, small red spots can be observed along succulent stems. The canker grows slowly, but after six months the spots are swollen and conical. However, in some cultivars of blueberry the canker becomes brown and sunken. After several years the cankers are cracked and very visible, sometimes girdling the entire stem on susceptible varieties. Resistant blueberries will have cankers that are less visible and swollen.

Fusicoccum Canker - In spring and summer, water-soaked lesions appear on one to two year old canes, from ground level to 3 feet high usually found near a leaf scar. The first year of infection, the lesions appear water soaked and later turn red by winter. The following spring the cankers enlarge ($\frac{1}{2}$ to 2 inches long) and become target like, turning reddish brown. With the onset of hot and dry weather, the leaves and twigs above the canker will wilt and die.

Disease Development. The canker-causing fungi over-winter as mycelium in diseased canes or as specialized fruiting structures called apothecia where they occur on dead stems. Generally, in the spring and summer ascospores or conidia are produced along the cankered area each time it rains. Conidia are spread via the wind or by rain-splash and can infect new growth on nearby plants as long as there is free water and temperatures are moderate. The canker diseases are most severe in seasons following winters with mild spells interspersed with cold weather. In addition, periods of hot, dry weather during the growing season may predispose plants to cankers. Infection is more likely to occur on plant canes that are wounded from mechanical injury or

freezing than healthy, undamaged plants. Once the initial infection has taken place, the fungus slowly grows through the plant cells, invading the wood and creating a cankered area, killing the stem.

Disease management

- Choose a planting site with well-drained, high organic matter, acidic soil, and which is not prone to spring frosts.
- Purchase only disease-free nursery stock from reputable suppliers.
- Avoid mechanical damage such as careless pruning and cultivating.
- Improve air circulation by pruning out the weakest stems and controlling weeds.
- Prune out and destroy diseased canes, now, before spring weather allows the canker fungi to develop further, as these are the source of spores.
- To avoid stressful growing conditions, keep the plants well-watered through prolonged periods of dry weather in the summer. Mulch plants to retain soil moisture.
- Dormant sprays of lime sulfur may help to reduce inoculum of the pathogen.
- Chemical control of canker diseases during the season is not very effective.

Adament Fungicide for Stone Fruits and Grapes

by John Hartman, U.K. Extension Plant Pathologist

Adament 50 WG fungicide has recently been registered for use in management of diseases of stone fruits and grapes. Adament consists of 25% tebuconazole (a sterol-biosynthesis inhibitor fungicide belonging to FRAC group 3) and 25% trifloxystrobin (a strobilurin fungicide belonging to FRAC group 11) and is manufactured by Bayer CropScience LP. By combining two fungicides with different modes of action, Adament is likely to be effective against a broad range of diseases.

Adament is cleared for disease management use on the following fruit crops:

Stone Fruits: Brown Rot Blossom Blight (*Monilinia laxa*, *M. fructicola*); Jacket Rot, Green Fruit Rot (*Botrytis cinerea*); Shot Hole (*Wilsonomyces carpophilus*); Alternaria (*Alternaria alternata*); Anthracnose (*Colletotrichum acutatum*); Powdery Mildew (*Podosphaera* spp., *Sphaerotheca pannosa*); Rusty Spot (*Podosphaera leucotricha*); Scab (*Cladosporium carpophilum*); Cherry Leaf Spot (*Blumeriella jaapii*); Fruit Rot (*Monilinia fructicola*); Rust (*Tranzschelia discolor*).

Grapes: Powdery Mildew (*Uncinula necator*); Botrytis Bunch Rot (*Botrytis cinerea*); Phomopsis Cane & Leaf Spot (*Phomopsis viticola*); Black Rot (*Guignardia bidwellii*); Downy Mildew (*Plasmopara viticola*).

For fungicide resistance management, growers will want to avoid making more than 2 sequential applications and more than 4 (stone fruits) or 6 (grapes) total applications of Adament 50 WG per season.

EPA Proposes Elimination of All Chlorpyrifos Uses

Cancellation of all chlorpyrifos insecticide (Lorsban) uses has been proposed by the Environmental Protection Agency. Approximately 44% of all US apple acreage is currently treated with chlorpyrifos.

American Culinary Federation Ranking

Thanks to Bob Perry, U.K. Food Systems Coordinator

The American Culinary Federation (ACF) annual chef survey ranking 194 items to discern US overall trends is quite interesting for Kentucky produce and livestock producers.

- # 2 Locally grown produce
- # 3 Organic produce
- # 7 Sustainable seafood
- # 8 Grass fed livestock
- # 19 Organic wine
- # 27 Free range
- # 40 Slow Foods

Need Bees for Crop Pollination?

by Thomas Webster, Apiculture Research and Extension Specialist, Kentucky State University

Contact Tom if you need honeybees for pollination this season. Kentucky beekeepers have the hives and the transportation to move bees to your farm.

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New Publications available through County Extension Offices or online

2007 Fruit and Vegetable Crops Research Report
<http://www.uky.edu/Ag/Horticulture/comfruit.html>

ID-92 Midwest Tree Fruit Spray Guide, 2008
<http://www.extension.iastate.edu/Publications/PM1282.pdf>

ID-94 2008 Midwest Small Fruit and Grape Spray Guide.
<http://www.hort.purdue.edu/hort/ext/sfg/>

HO-86 Crop Estimation in Vineyards
<http://www.uky.edu/Ag/Horticulture/comfruit.html>

HO-88 Viticultural Regions and Suggested Cultivars in Kentucky.
<http://www.uky.edu/Ag/Horticulture/comfruit.html>

ID-36 2008-09 Vegetable Production Guide for Commercial Growers
<http://www.uky.edu/Ag/Horticulture/comveggie.html>

FOR-89 Shiitake Production: Resources for Shiitake Growers. <http://www.ca.uky.edu/agc/pubs/for89/for98.pdf>

Fruit and Vegetable Sampling Certificates for Farmers Markets

by Linda Ison, Grower, Crestwood, KY

A Temporary Food Service permit is not necessary for giving out samples at farmers' markets thanks to an agreement worked out by the Kentucky Department of Agriculture and the Kentucky Department of Public Health. Two types of sampling certificates can be obtained through the Kentucky Department of Agriculture. The All Samples certificate covers raw fruits and vegetables as well as cooked and processed foods. GAP (Good Agricultural Practices) certification is required in order to qualify for the All Samples certificate. The Cooked and Processed Foods certificate covers cooked and processed foods only.

Applicants for both certificates take an open book test on the chapter on sampling in the new Kentucky Farmers Market Manual. Copies of the manual will be sent to market managers in January or February, applicants can order a copy from the Kentucky Department of Agriculture Marketing Division, or it can be found on the web at: <http://www.kyagr.com/marketing/farmmarket/index.htm>. Janet Eaton is the contact at: Janet.Eaton@ky.gov or call 502-564-4983.

Black Rot

by Dr. Janna Berkerman, Extension Plant Pathologist, Purdue University
From *Facts for Fancy Fruits*, 07-08.

Black rot, caused by the fungus *Botryosphaeria obtusa*, is the same fungus that causes frog-eye leaf spot, black rot fruit decay, lovely cankers, and occasionally causes a calyx-end rot that appears in early summer -- like the sample I received that can be seen in the photos. The fungus can colonize any wound that penetrates the epidermis, including insect injuries. As lesions develop, they begin as reddish spots that darken to purple and are bordered by a red ring. A key symptom that distinguishes black rot from bitter rot is that there is usually only one spot per fruit. Eventually, the infected area changes color, becoming brown as it increases in size, or it may turn black. As this rotted area enlarges, concentric bands of brown and black develop with a surprising uniformity of width. The flesh of the decayed area remains firm and leathery. Eventually, the apple rots completely, dries, and shrivels into a mummy. Pycnidia, little erumpent pustules containing spores of the black rot fungus, appear on the surface of rotted tissue.



Lesions of calyx-end rot caused by *B. obtusa* are usually dark brown to black and may completely surround the calyx or they may be offset to one side of the calyx. In orchards where inoculum levels are high and fungicide protection is lacking, *B. obtusa* can infect as soon as the bud scales begin to loosen, although infection of the flower sepals and/or fruit calyxes is more common. Unfortunately, growers are unaware of infection because the fungus usually remains quiescent; Symptoms of fruit decay develop only after fruit begins to ripen. All of the registered scab fungicides suppress *B. obtusa*, but the SI fungicides (Nova, Bayleton, Rubigan) and/or low rates of mancozeb fungicides (1 lb/100 gal) are

barely effective. Captan and Topsin M provide the best protection against black rot infection and are recommended at petal fall in orchards where black rot fruit decay has been a problem in previous years. Strobilurins also provide some level of protection; Dave Rosenberg et al. 2000 found that treatments that included a strobilurin (Flint, Sovran, or Pristine) in the scab program provided better control of frog-eye leaf spot (the foliar infection of *Botryosphaeria obtusa*) than did sprays of Nova-Dithane or Rubigan-Thiram. Although fruit rots were not evaluated in this study, I don't think I'm going out on a limb to suggest anything controlling the foliar infection phase of this disease is probably controlling the fruit infecting stage as well.

Like many plant pathogens, by the time you find the problem it is too late for control. However, sanitation in the form of mummy clean-up and cankered limb removal is something to consider during spring pruning. Apples that are mummified due to chemical thinning, or fire blighted twigs, serve as an easy site of colonization. Piles of prunings are another important reservoir of this disease. Prunings can be left if they are debarked during any sort of flail mowing.

Cultivar susceptibility is definitely an issue, as well. Studies done by Alan Biggs and Stephen Miller in West Virginia ranked 'Orin', 'Pristine', and 'Sunrise' as highly susceptible; 'Sun crisp', 'Gigger Gold', 'Senshu', 'Honeycrisp', 'PioneerMac', 'Fortune', NY 75414, 'Arlet', 'Golden Supreme', 'Shizuka', 'Cameo', 'Sansa', and 'Yataka' as moderately susceptible; and least susceptible were 'Creston', 'Golden Delicious', 'Enterprise', 'Gala Supreme', 'Braeburn', 'GoldRush', and 'Fuji'. Previous published rankings have included 'Red Delicious', 'Empire', and 'Cortland' among the most susceptible cultivars to the black rot pathogen. From the NE-183 trial, only 'GoldRush', 'Enterprise', and 'Gala Supreme' were more resistant than "standard varieties."

Last but not least, physiological stresses, especially drought stress, predispose trees to cankers caused by *Botryosphaeria*. This uptick in disease incidence may be just one more side effect of our spring freeze coupled with drought. Careful observation of trees for cankers as a source of inoculum should be high on every growers list to mark for spring pruning and removal!

Current status of streptomycin resistance in the fire blight pathogen in Michigan

*From Purdue University Newsletter,
"Facts for Fancy Fruit", FFF 07-10*

Streptomycin resistance in the fire blight bacterium *Erwinia amylovora* was originally detected in the early 1990s in Michigan, mostly in Van Buren County and in a few isolated orchards in Kent and Newaygo counties. Most of the resistant strains contained an extra sequence of DNA that encoded streptomycin-resistance genes. This distinguished the mechanism of resistance from that found in *E. amylovora* from the Pacific Northwest, in which the strains became resistant to streptomycin due to a chromosomal mutation. In the mid-to late-1990s, the streptomycin resistant strains from Southwest Michigan slowly spread westward towards the lake, and resistance was noted in an isolated orchard in Kent County. In addition, a small number of resistant strains (less than 10 percent) were found from these locations that harbored the chromosomal mutation.

In 2004, we surveyed eight apple blocks in the Fruit Ridge area, most of which were concentrated around 10 Mile Road and Kenowa Avenue. **Streptomycin resistance was detected in seven of the eight blocks sampled.** Genetic analyses of the strains indicated that most of the strains contained the same streptomycin-resistance genes found in strains from Southwest Michigan and a small number harbored the chromosomal mutation.

Our goal during the 2005-2007 growing seasons was to enlarge the regions sampled outside of the known "streptomycin resistance zone." In the Fruit Ridge area, we have detected streptomycin-resistant *E. amylovora* strains in 10 of 15 orchards sampled. Resistant strains were found south of 12 Mile road (10 of 11 orchards). We recovered only streptomycin-sensitive strains from four orchards located just north of 12 Mile road. Streptomycin-resistant strains were also detected in orchards in Ionia County near Belding and Ionia.

In Southwest Michigan, a large-scale sampling effort outside of the known resistance zone was done in 2007. Streptomycin-resistant strains were found in only 5 of 18 orchards demonstrating the slow movement of resistant strains between orchards.

In 2006, we detected streptomycin-resistant *Erwinia amylovora* for the first time in orchards

in Oceana county, Michigan. In 2007, we sampled one repeat and eight new orchards. All isolates were sensitive to streptomycin. Our results indicate that streptomycin resistance is just moving into Oceana county and is not as much of a problem as it is in Southwest Michigan and Fruit Ridge. What control measures should be adopted in orchards that contain streptomycin-resistant fire blight bacteria? Streptomycin alternatives include antibiotics such as Mycoshield and Agry-Gent. Section 18 emergency exemptions were granted for both of these materials in 2007. We expect similar Section 18s to be granted in 2008 for alternative antibiotics. Biological control materials such as Serenade Max and Bloomtime Biological also have some activity in controlling blossom blight.

The rule of thumb is that growers who have had success using streptomycin, and whose farms are not in zones where resistant strains are prevalent, should continue to use streptomycin as this is the best material for blossom blight control. If resistance is an issue, then streptomycin should not be used as it will only lead to an increased buildup of resistant strains.

Herbicide Cross-Reference List and Injury Symptoms

by Joe Masabni

A herbicide cross reference list has been developed for fruit and vegetable growers at: <http://www.uky.edu/Ag/Horticulture/masabni/xreflist.htm> to aid in weed control and herbicide selection. Growers can search data bases to find, an efficacy rating of pre-emergence and post emergent control for a specific weed for each herbicide, a listing of herbicides that can be used for each weed, a listing of labeled and tolerant crops for each herbicide and a list of herbicides used for each fruit or vegetable crop. A link is also included to view and print current labels and the MSDS information for the herbicides.

Pictures of herbicide drift injury symptoms on several fruit and vegetable crops can be found for dicamba, roundup and strategy herbicides also on this site.

KDA Farm to Cafeteria Program

Sara Williamson in the Kentucky Department of Agriculture is working to reestablish the grower produce sales to Kentucky schools. If you are interested please fill out the survey form and return it to her.

Grower Information

KDA Farm to Cafeteria Program

Business Name _____

Contact Name _____

Address _____

Mailing Address (if different) _____

Phone _____

Email _____

Website _____

Please answer yes, no, or “I don’t know”.

- **Are you a Kentucky Proud member?**
- **Are you registered on www.marketmakerky.com?**
- **Do you carry product liability insurance?**
- **How far are you willing to travel to deliver product?**
 - **Are you HACCP compliant or have you completed the Good Agricultural Practices program?**
 - **Have you ever sold product to a cafeteria or other foodservice? Please explain.**

ADDITIONAL INFO? Please write legibly on the back!

**Fax or mail to: Sara Williamson, KDA. Fax: (502) 564-0303.
100 Fair Oaks Lane, 5th Floor, Frankfort, KY 40601**

Receiving Fruit Facts Electronically on the Internet

Fruit Facts is available on the web in the pdf format. To get notification of the monthly Fruit Facts posting automatically and approximately two weeks earlier than it would normally be received via mail, you can subscribe to the UK College of Agriculture's Majordomo list processor.

New subscription requests and requests to unsubscribe should be addressed as follows.

To subscribe type "majordomo194@ca.uky.edu" in the To: line of your e-mail message. Please enter a subject in the Subject: line -- the system needs for the Subject line not to be empty (blank).

In the message body, enter the following two lines (nothing more!):

subscribe fruitfacts

end

Or, to unsubscribe, the lines:

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You should receive confirmation by return e-mail. 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-fruitfacts@ca.uky.edu



John G. Strang,
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