

Kentucky Fruit Facts

June 2004 (6/04)

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

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Fruit Crop News

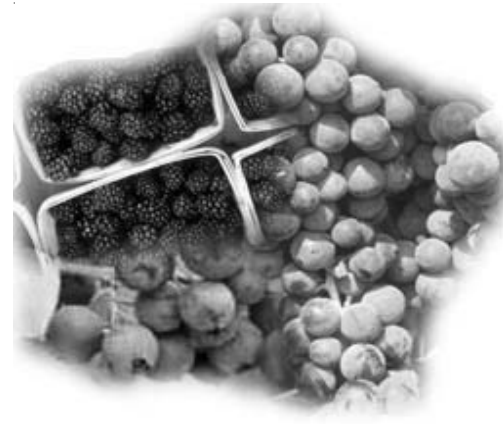
John Strang, Extension Horticulturist

Fruit crops are generally looking good for most growers although there have been a few devastating hail storms. Blueberries, blackberries, gooseberries and currants are currently being harvested and peach harvest is just beginning. The persistent rains have made a good fungicide spray schedule essential on most fruit crops making it difficult schedule sprays and keep the materials on the plants.

In apples, this has been a year for numerous apple scab, cedar apple rust, powdery mildew, and frog-eye leaf spot infections. We have accumulated 175 hours of leaf wetness since the first cover spray and growers should have started spraying for sooty blotch and flyspeck. Fire blight is present, but not a serious problem for most growers this season. Several growers that have Oriental fruit moth that are resistant to imidan and guthion are successfully maintaining spray programs to control this pest with other insecticides. Oriental fruit moth has six generations a year.

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The **periodical cicada** has fortunately proved to be a no-show for most fruit growers this year. This insect has only been a problem in some of the Ohio River counties and in a few spots around the state. If you have not seen them in or around your orchard by now, they will not be a problem. The periodical cicadas will disappear very shortly for the few growers that have them, if they haven't already.

There are several insects that apple growers should watch for and control. The second **codling moth** generation has finished laying eggs. **San Jose scale** are in the nymph stage and controls are no longer effective. Hopefully growers treated with Esteem for this pest. Several growers have noted spider mite, potato leafhopper and white apple leafhopper buildups in their apples.

Japanese beetle peak activity should occur the last two weeks of June through mid July. Volatile odors released from beetle-damaged leaves attract more beetles. In addition sex pheromones emitted by the beetles attract more beetles. Thus, control the Japanese beetles early so that they do not build up on your fruit plants. Japanese beetles lay eggs in moist soil under turf. Their grubs then feed on turfgrass roots.

In visiting grape vineyards across the state we have seen some excellent disease, insect and weed control, however in some vineyards there are some common problems. Black rot has been a persistent problem on leaves, canes and fruit this season as it was last season. The cause of this has been mostly lapses in the spray program and failure to use systemic fungicides such as nova (immunox for backyard growers) and strobilurin materials such as sovran and abound. Several growers have used mancozeb and captan for control. Both of these materials are protectant fungicides and once these are washed off of the leaves no control is provided. Captan and mancozeb will normally provide 14 days of protection if they are not washed off of the leaves. If 1-2 inches of rain are received since the last spray the spray interval to the next spray should be cut in half. If more than two inches of rain are received following the last spray, these materials should be reapplied immediately. Thus, growers that used mancozeb and captan exclusively on a two week spray schedule could not keep the black rot under control. Systemic fungicides will provide some kickback activity or will kill the black rot fungus infection in the leaf if the infection occurred several days earlier. These materials generally have about 7 days of effectiveness, but they do not wash off.

We noted several vineyards where growers were not fertilizing. The vines were less vigorous, leaves were smaller and light greenish or yellowish in color. These vines were starved for nitrogen. In these cases urea at 3-5 lb/ 100 gal./ acre added to the normal pesticide sprays will put some nitrogen into the vines through the leaves. Nitrogen does not stay in the soil from year to year unless it is tied up as amino acids or protein in organic matter. The wet springs the last two seasons have been particularly effective in leaching out even the applied nitrogen. A foliar analysis would be very helpful for growers that are not comfortable with their vine nutritional levels.

Most of you have probably noticed that June rainfall is above normal. The long-range forecast is for near-normal temperatures and normal rainfall through June. The July and August forecast is for above-normal temperatures and near-normal rainfall.

Upcoming Meetings

Jul. 8 Commercial Vegetable Production Field Day. 6:30 p.m. West KY Grower Cooperative, Stanley, KY. Small and large producers, including farmers' market are welcome to attend. Directions: Take US 60 bypass West to stoplight; Turn left toward Henderson on US 60 West; Go approximately 3.5 miles; turn right on Hwy 279 No. The Co-op will be .5 miles on the left. Contact Daviess County Extension Service at 270/685-8480.

Jul. 14-16 American Society for Enology & Viticulture, Eastern Section Meeting, 2004 Annual Technical Meeting and Symposium, Grapes, Wine and Environment - How soils, cultural practices and warm climates affect wine quality, Hotel Roanoke & Convention Center, Roanoke, VA. See web site for further details: www.nysaes.cornell.edu/fst/asev/ or contact Tony Wolf: vitis@vt.edu

Jul. 27 Horticultural Research Farm Twilight Tour, 6:00 p.m. until dark, Lexington, KY 40546. Contact Pam Compton 859/257-2909. See tour itinerary below.

Sept. 11 The KSU/Pawpaw Foundation Pawpaw Workshop, Kentucky State University Research Farm, Frankfort, KY. Contact Kirk Pomper phone:502-597-5942 or e-mail: kpomper@dcr.net

Oct. 15-16 Kentucky Vineyard Society Fall Meeting and Amateur Wine Competition, Shepherdsville, KY. Contact Len Olson 502/540-5650.

Jan. 3-4, 2005 Kentucky Fruit and Vegetable Conference and Trade Show, Holiday Inn North, Lexington, KY. Contact: John Strang, 859/257-5685.

U.K. Horticultural Research Farm Twilight Tour Program - July 27

4320 Emmert Farm Lane
Lexington, KY 40514

The U.K. Horticultural Research Farm is located on the South side of Lexington approximately one block west of the intersection of Man O'War Boulevard and Nicholasville Road (U.S. 27). The entrance to the farm (Emmert Farm Lane) is off of Man O'War Boulevard at the Traffic light opposite the entrance to the Lowe's and Walmart.

Tours will begin at 6:00 p.m. There will be two concurrent wagon tours that will be repeated until dark. Speakers will remain at their stops to discuss their work in more detail with tour participants between wagon stops.

Questions? Contact: Pam Compton
phone: 859/257-2909, e-mail:pscomp1@uky.edu

All tours will start at the Perennial Garden Flower Trial Plot just past the greenhouse structures. Here you can examine the trials at your leisure while waiting for a tour to begin. Dr. Bob Anderson, Extension Floriculture Specialist will be available to answer questions.

Fruit and Vegetable Tour

1. Sorghum Breeding
Dr. Morris Bitzer, Emeritis Extension Agronomist
2. Mini or Personnel Seedless Watermelons
April Sataneck, Research Analyst
3. Controlling Yellow Vine Disease in Acorn Squash
Dr. Ric Bessin, Extension Entomologist
4. Tomato, Pepper, & Gourmet Potato Varieties
Dr. Brent Rowell, Extension Vegetable Specialist
5. All American Vegetable Trials
Dr. Rick Durham, Extension Consumer Horticulture Specialist
6. Edamame Production Practices
Dr. Todd Pfeiffer, Agronomy Teaching and Research
7. Ubatuba Pepper Adaptation Study
Angel Santos, Graduate Student
8. Specialty Melon Variety Trials
Dr. John Strang, Extension Fruit and Vegetable Specialist

10. Thornless Blackberry Training System and Variety Trials
Dr. Douglas Archbold, Fruit Teaching and Research
11. Grape Training System Trials
Chris Smigell, Extension Associate
12. Southern Highbush and Rabbiteye Blueberry Variety Trials
Dr. Joe Masabni, Extension Fruit and Vegetable Specialist
13. Weed Control in Organic Production Systems
Derek Law, Graduate Student and
Dr. Mark Williams, Teaching and Research

Woody Cut Stem Tour

1. Lilacs, Willows, Deciduous Holly and Forsythia
Amy Fulcher, Extension Associate
2. Peonies, Callicarpa, Roses and Nandina
Sharon Bale, Extension Floriculture Specialist
3. Hydrangia Container Production and Shelf Life Studies
Todd Leeson, Graduate Student
4. Hydrangias, Bittersweet and High Tunnel Production
Dr. Bob McNeil, Extension Nursery Crop Specialist

The Woody Cut Stem Tour will provide participants information on:

- ◆ What plants grow and flower reliably in Kentucky?
- ◆ How should I prune willows and other woody plants to increase flower production?
- ◆ What shelf life can I expect from woody cut stems?
- ◆ Which woody cut stems can be forced into bloom and how many weeks early?
- ◆ What storage requirements are necessary for woody cut stems?
- ◆ What markets exist for woody cut stems?

We will provide cold drinks and fresh cantaloupe for tour participants.

Apple Foliar diseases Are Prevalent

by John Hartman

With rainy periods fairly common in many parts of Kentucky these past two months, conditions were conducive for development of several foliar diseases of commercial and backyard apple trees this spring. Growers who were able to apply fungicides in a timely way are having good success in disease management, but unsprayed trees or those which failed to receive critical sprays are showing numerous symptoms now.

Apple scab. Ascospores of the fungus *Venturia inaequalis* initiate primary apple scab infections when the leaves are wet for a sufficient length of time. Symptoms consisting of olive-green velvety fungal growth appear on the leaves a week or so after infection. These symptoms being seen now are the fungal thallus and conidia responsible for continued cycles of secondary infection whenever it is wet throughout the season. The parts of the leaf associated with the fungus develop into dark brown necrotic lesions. Eventually infected leaves turn yellow and drop from the tree, leaving the tree prematurely defoliated.

Weather data were collected and apple scab disease forecasting programs were run at the U.K. West Kentucky Research and Education Center in Princeton, and in Lexington at the U.K. Horticultural Research Farm this spring. Based on these data, severe apple scab infections likely occurred in most Kentucky orchards on unprotected susceptible trees during the periods of March 29 - April 1; April 12-14 and 21-25; April 29 - May 3; May 10-11, 12-17, 17-20 and the week of May 26-30. Three of these 8 or more infection periods lasted 85 or more intermittent hours at temperatures where 15 or 20 hours would have sufficed to favor severe infections.

Cedar-apple rust. Small orange spots have appeared on apple leaves infected with cedar-apple rust disease caused by the fungus *Gymnosporangium juniperi-virginianae*. There is no secondary cycle of infection from these spots, but the spots will develop and enlarge

until they produce spores that will cycle back to infect nearby cedar trees this summer. Cedar-apple rust needs leaf wetness for infection, but for a much shorter time than that needed for scab. Thus, it appears that there were dozens of periods for infection this spring.

Frogeye leaf spot. Symptoms of frogeye leaf spot are plainly evident on apple leaves throughout Kentucky now. In many plantings in eastern Kentucky, frogeye leaf spot will be more prevalent than other diseases such as scab or rust which are also visible now. The symptoms appearing now on leaves are small (1/8 - 1/4 inch) distinct circular, brown spots. The center portion of the spot may become tan colored, while the outer edge remains dark brown, giving it a frogeye appearance. Signs of disease in the form of tiny black pycnidia (fungal fruiting bodies) of the causal fungus may develop in the center of the spot. Pycnidia can be examined with the aid of a hand lens and will appear as tiny black "pimples" when viewed through the magnifier. These pycnidia contain thousands of spores that are the source of continued infections. As leaf spots become more numerous and coalesce, leaves yellow and fall. Frogeye leaf spot is caused by the fungus *Botryosphaeria obtusa*, a fungus which also causes black rot of apple fruits and a canker of the twigs and branches. Often a cone-shaped area of affected leaves will appear just beneath such a canker. Frogeye leaf spot infections are also favored by wet weather.

Powdery mildew. Powdery mildew, caused by the fungus *Podosphaera leucotricha*, is being observed frequently in apples this season. This disease can seriously reduce the vigor and productivity of apple trees. The mildew fungus may deform, stunt, or kill twigs, leaves, blossoms and fruit. Infected fruits may become severely russeted. Gray to white felt-like patches occur on the leaves and on new twigs. Leaves are narrow, crinkled, and folded lengthwise, and they become thickened. Disease pressure from powdery mildew is usually greater in growing seasons following relatively mild winters which we have been experiencing for the past several years.

Fire blight. Fire blight disease is being observed sporadically this spring. This bacterial disease, caused by *Erwinia amylovora*, has the potential to be very destructive. During apple bloom, when primary infections occur, weather was generally not favorable for infection. Our weather instruments and disease predictive programs at the U.K. research farms indicated that one or possibly only two times during bloom were favorable for infections this year. However, more recent severe weather events such as high winds or hail could have provided the entry the bacteria needed to infect the still-succulent shoots.

Since weather conditions statewide have varied a great deal from one location to the other, growers may have faced more or less disease pressure than we monitored at the U.K. research farms. Thus, growers will need to manage apple diseases based on what is occurring in their orchard. Guidelines on apple disease management can be found in the U.K. Cooperative Extension publication 2004 Commercial Tree Fruit Spray Guide (ID-92) and in the Midwest Tree Fruit Handbook, available at county extension offices statewide.

Fruit Foliar Analysis

By John Strang

A critical requirement for producing an excellent fruit crop is knowing the nutritional status of your planting. The only way that the nutritional status can be assessed is through foliar analysis. Soil tests provide only a portion of the picture and tell what is in the soil. Foliar analysis shows which nutrients the plant is actually absorbing and facilitates fine tuning of the fertilization program. It lets the grower know when an element is becoming deficient before symptoms show up and allows for correction of the problem before fruit quality and yield suffer. It is not necessary to sample a block every season, because nutrient levels do not change that rapidly. It is generally recommended that a block be sampled once every three years.

Since the University of Kentucky does not have a facility for conducting plant analysis for growers, we recommend that you send your plant samples to a lab that will process your

samples and provide results that are consistent with our recommended sampling periods as described in our Midwest Tree Fruit Pest Management Handbook and Midwest Small Fruit Pest Management Handbook. Both of these publications are out of print, but are available on the web at <http://www.uky.edu/Ag/Horticulture> under Commercial Horticulture and Fruit. The Midwest Small Fruit Pest Management Handbook has been revised and will be available some time this year.

The following labs have tissue analysis programs that work well with our midwest tissue analysis sampling periods. Growers should call the labs to purchase pre paid kits, available from several of the labs and to obtain specific directions from the particular lab as well as an update on analysis cost. Most of these analyses include the standard 10 elements, nitrogen, phosphorus, potassium, calcium, magnesium, manganese, iron, copper, boron, and zinc.

A & L Analytical Labs, Inc.

(Cost: \$18.00)
2790 Whitten Road
Memphis, TN 38133
Phone: (800) 264-4522 or (901) 213-2400
<http://www.allabs.com>

Cornell Nutrient Analysis Lab

(Cost: \$28.00)
804 Bradfield Hall
Cornell University
Ithaca, NY 14853
Phone: (607) 255-1785 until July 1
(607) 255-4540 after July 1

Penn State University

(Cost: \$18.00 + Shipping)
Agricultural Analytical Services Laboratory
The Pennsylvania State University
University Park, PA 16802
Phone: (814) 863-0841
<http://www.aasl.psu.edu/PA.HTM>

Waters Agricultural Laboratory

(Cost: \$12.00 + \$5.75 shipping)
Ronda Werner or Stacy Lloyd
2101 Calhoun Rd., Hwy 81
Owensboro, KY 42301
Phone: (270) 685-4039

The time of sampling is extremely important to obtain a correct analysis. The following table summarizes the sampling procedure and timing for most of our major fruit crops. These sampling periods correspond to the time for which we have nutrient level standards and are periods where the levels are somewhat stable in the plant.

In sampling, select only healthy leaves from healthy plants. Collect leaves at random throughout a block from one cultivar and one rootstock on a similar soil type. Leaves from young (nonbearing) and old (bearing) cultivars should not be mixed, since the nutritional needs of young and older plants are different.

Dust or pesticides on the leaves will affect the analysis, particularly for zinc, manganese and iron. Select clean leaves or the leaves may be washed. Dirty leaves should be washed very quickly in water with a small amount of liquid dishwashing soap and then rapidly rinsed through three containers of water. Leaves should then be air dried on a paper towel and sent to the foliar analysis lab.

Proper interpretation of the foliar analysis requires that a soil sample be taken at the same time or there should be a recent

analysis from the block where the foliar sample was taken. The laboratory will send the results of the foliar analysis directly to the grower with recommendations. **Kentucky growers should request that the lab send a copy of the analysis to either Joe Masabni or John Strang for additional interpretation using their soil sample results.** Please include one of our addresses on the foliar analysis form.

Joe Masabni
Research & Extension Center
P.O. Box 469
Princeton, KY 42445
(270) 365-7541 ext. 247

John Strang
Dept. of Horticulture
N-318 Ag. Science Bldg. North
Univ. of Kentucky
Lexington, KY 40546
(859) 257-5685

Fruit crop plant tissue sampling periods and crop specifications

Crop	Sampling Date	Leaf NUMBER	Part Sampled
STRAWBERRIES			
New and 2 nd season plasticulture plantings	June 15 – July 1	60	Youngest fully expanded mature leaves.
Renewed matted row plantings	July 15 – Aug. 15	60	First fully-expanded leaves after renovation.
BLUEBERRIES	June 15 – Aug. 15	80-100	Sample leaves during first week of harvest.
GRAPES	July 1 – Aug. 15	60-80	Select only the first fully expanded leaves on fruiting shoots located halfway between the ground and highest trellis wire. Detach petioles from leaf blades and send in only the petioles.
APPLES, PEACHES, NECTARINES, PEARS, PLUMS	July 15-August 15	60-70	Select shoots that make a vertical angle of 45 to 60 degrees from the ground. Select shoots at eye level from around the outside of trees. Remove one or two leaves from the mid-portion of new growth. No more than 10 trees should be used for each sample.
BLACKBERRIES & RASPBERRIES	Aug. 1-20	60	Fully matured leaves from mid-portion of non-fruiting canes.

Are Grape Root Borers Damaging Your Vines?

by Ric Bessin, John Hartman, and Chris Smigell,
University of Kentucky College of Agriculture

Grape root borer (GRB) is potentially the most destructive insect attacking grapes in Kentucky. GRB is one grape pest often ignored until it seriously affects the vineyard. GRB damage is uncommon in new plantings, but problems often show up after several years of production. Last year we saw damage from it in several vineyards, and expect to see more, as more young vineyards reach maturity. Larvae of this insect tunnel into the larger roots, and the underground part of the vine's crown.

Symptoms GRB damage symptoms include poor vine growth and fruit set, and sometimes vine death. Look for discolored leaves and wilting, especially on poorly growing vines. The symptoms may start to show up in hot, dry summers, because the damaged roots cannot supply water to the vines. Because damage is below ground, it often goes unnoticed until vine decline is observed.

Signs of the pest To verify that GRB is the problem, growers should examine around the bases of vines out to a distance of 18 inches for empty pupal skins (below, left).



You can also dig up the vine, or remove soil from around the crown and roots to see feeding damage, or even larvae feeding. Full-size borer larvae are whitish with brown heads, sparsely covered with stiff hairs and around 1 3/4 inches long. They have three pairs of true legs near the head and five pairs of fleshy abdominal prolegs.



Adults (above figure) are mistaken for wasps, but fly very slowly. Generally they are active from July through early August. They fly during the day, mostly from 12 p.m. to 4 p.m.

Management In Kentucky, GRB control measures are recommended if more than 5 % of the vines have GRB pupal cases nearby. Lorsban is the only insecticide labeled for GRB control. If you spray, it is most effective when the adults are just beginning to emerge in July, but the 35 day preharvest interval may make it necessary to spray after harvest. Spray only the soil, as a coarse spray, in a 15 square foot area surrounding each vine. Spray only if necessary. If GRB is not a problem, there is no reason to risk destroying the natural control processes and increasing production costs.

Other control methods:

- Eliminating weeds around the base of vines reduces the sites for egg laying and improves spray coverage.
- Tests in North Carolina indicate that plastic mulch or ridges of soil placed around the bases of vines give control. This method is effective as a physical barrier preventing adult emergence. Plastic mulch also effectively prevents the GRB larvae from burrowing into the ground.
- When possible, remove nearby wild grape vines.
- Resistant root stocks show some promise, but this approach is many years away.
- Natural enemies consist of barn swallows, mockingbirds, crested fly catchers, larvae of fireflies, and a number of fungi.
- A control method using sex pheromone to disrupt the GRB males is being tested by at Ohio State University. This method prevents the male root borers from locating the females. String ties soaked with the pheromone are placed in a vineyard at a rate of 100/acre. Results from these trials look promising, but reducing a borer population to an acceptable level requires several years. Another control method using the pheromone and traps is also being studied in Ohio. Traps baited with the pheromone are placed throughout the vineyard in an attempt to reduce the number of males. Three years of study has shown the male population is continuing to decline by an average of about 30% per year.
- A final alternative is the use of parasitic nematodes which are applied as a drench to the bases of the vines. Nematodes move through the soil and can kill the GRB larvae even after they tunnel into the roots.

<http://www.uky.edu/Agriculture/Entomology/entfacts/fruit/ef220.htm>

Receiving The Fruit Facts Newsletter Electronically on the Internet

Fruit Facts is available electronically 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 University of Kentucky Listserve.

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Addressed to: listserv@lsv.uky.edu
Subject: Fruit Facts
Message: subscribe ky-fruitfacts,
followed by a blank line

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