



# Kentucky Fruit Facts

Research & Education Center

P.O. Box 469, Princeton, KY 42445

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Prepared by John Strang, Horticulturist; John Hartman, Extension Plant Pathologist; Ric Bessin, Extension Entomologist; John Strang, Editor, Marilyn Hooks and Karen Shahan, Staff Assistants

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

## Fruit Crop and Weather Situation

Early maturing apple varieties are sizing up and coloring very well. Apples are maturing slightly earlier than normal. Codling moth populations continue to remain high and we are into the third generation. Growers are advised to monitor their local populations. Mites have been a problem for some growers. Sooty blotch and flyspeck as well as the summer rots, are showing up in some apple orchards. Several growers are trying Sovran, which is good for these diseases.

The quality and retail price of peaches for those growers that had them has been excellent. The blackberry harvest is winding down. Blackberry size and quality has also been excellent.

We are in the middle of grape harvest. Bunch rot has been a problem. Several growers have reported serious losses to birds. Ken and Jane Brumback, Cynthiana, KY reported losses from robins, mockingbirds, redwing blackbirds, goldfinches, Baltimore orioles, sparrows and phoebes until they finally netted the vines.

Most areas have benefitted from the thunderstorms that continue to sweep across the state and have adequate soil moisture. This has made this season a challenge in the weed control area, particularly for

strawberry growers. Strawberry growers should get their Devrinol on in mid-August to control winter annual weeds that are germinating now. (Strang, Bessin, Hartman)

## Meetings

**Sep. 21 - Grapes, Berries, Pawpaws, and Tree Fruits**, Kentucky State University Farm, Frankfort, KY. Contact 502/597-7871.

**Oct. 28 - Fall Kentucky Vineyard Society Meeting**, Napa River Grill, Louisville, KY. Dr. Tony Wolf, Viticulture Extension Specialist, Virginia Tech will be the featured speaker. The meeting will include a gourmet dining experience. Contact Ken Harmet, KVS Secretary phone 270/269-2411, e-mail [sharmet@apex.net](mailto:sharmet@apex.net)

**Jan. 8-9, 2001 - Annual Fruit and Vegetable Grower Meeting**, Holiday Inn North, Lexington, KY. Contact John Strang 859/257-5685.

## Dr. Jerry Brown Continuing to Improve

Jerry had a serious bicycle accident towards the end of June when he hit a dog and was thrown over the handlebars. In the fall he shattered his helmet and



landed on the back of his neck. This caused a contusion on his spine or swelling of his spinal chord. As of mid-August Jerry has regained the movement of his left arm pretty well and is beginning to get some digital dexterity. He can move his right arm horizontally and is able to move his legs a little.

Jerry is at the Stalworts Rehabilitation Center, Vanderbilt University, Nashville, TN 37232, room 2207, where he has a voice activated phone 615/963-4143. He will be going home to 501 South Willow Way, Kuttawa, KY 42055, phone 270/388-0818 on August 24.

He is actively working at rehabilitation, is in good spirits and is looking forward to getting back to work. Jerry, Mary and his family are very appreciative of the many phone calls, cards and prayers that he has received. (Strang)

## Fruit Growers Tour of New Zealand

Dr. Peter Hirst, Extension Tree Fruit Specialist at Purdue University is organizing a two week tour geared for commercial fruit growers of the New Zealand fruit industry from February 19 to March 4, 2001. Dr. Hirst was raised on a fruit farm in New Zealand and was a research scientist with the Hort Research Institute in New Zealand prior to accepting his position at Purdue.

Participants will learn about apple production techniques that result in yields of over 2,000 bu/acre, new apple varieties, including 'Pacific Rose'<sup>TM</sup>, modern kiwifruit production, fresh and processing peach production, marketing strategies from both local and international perspectives, wine grape production, wine making and marketing, post-harvest handling methods for apples, vegetable production for fresh and processing markets, fruit propagation, Asian pear, avocado and lavender production. The tour will include visits to the bubbling mud pools and geysers in the geothermal area of Rotorua, a tour of the art deco architecture of Napier, a hangi (a feast cooked in an underground pit by indigenous New Zealanders, Maori), a dinner cruise on Auckland Harbor, Kelly Tarltons underwater world, a visit to the famous Gannet Sanctuary and some of the most beautiful scenery that you have ever seen.

The package includes round trip flights from Indianapolis to New Zealand, luxury coach travel, all accommodations with a private bath (based on double occupancy), breakfast each day, 9 lunches and 6 dinners, all entrance fees, tour guides for city tours of Auckland and Wellington, an island tour of Fiji, and a pre-tour seminar at the Purdue campus. The tour cost is \$3,000 per person based on double occupancy and is limited to 30 individuals on a first come first serve basis. Contact Dr. Peter Hirst at Purdue University,

phone 765/494-1323, e-mail [hirst@hort.purdue.edu](mailto:hirst@hort.purdue.edu) for a brochure or more information.

## Kentucky Grape Assistance Program Continued

The Kentucky Department of Agriculture has provided a small grant to Murray State University to keep Garth Vinson, viticulturist employed until further funding can be found.

The amount of \$197,000 remains in the program to continue grower cost sharing. This program will cost share up to half the cost of establishing from one to 10 acres of grapes for up to \$1,500 per acre. Costs of labor, machinery and land acquisition are excluded. Payment is based on grower receipts. Entrance into the program is based on a site inspection by the viticulturist and selection of grape varieties approved by the Grape Industry Advisory Committee.

Particulars on the program can be obtained through the Kentucky Vineyard Society Web page at <http://members.xoom.com/kyvineyard/> or by contacting Murray State University, Department of Agriculture, Vineyard Assistance Program, PO Box 9, Murray, KY 42071 phone 270/762-4329 Fax 270/762-3441 or by e-mail at: [garth.vinson@murraystate.edu](mailto:garth.vinson@murraystate.edu) (Strang)

## Apple Maggots in Kentucky?

Several weeks ago apple maggot flies were found laying eggs on apples in central Kentucky. This is not the first time that they have been reported in the state, but in the past they have been restricted to the northern areas of the state near Cincinnati. Generally, we have regarded apple maggot as a problem north of the Ohio River.

While this is bad news, producers should not change their current management practices. Only a few flies have been seen in the central Kentucky area, not enough to cause economic damage. Additionally, cover sprays used to control codling moth such as azinphosmethyl and phosmet provide excellent control of apple maggot.

The apple maggot fly is small, about 1/4 inch. The thorax is dark with a white spot on the tip. The wings are very noticeable, with four dark cross-bands. There are white bands around the dark abdomen. The larva, when full grown, is about 1/3 of an inch long, cream colored, and legless.

It passes the winter as a pupa, and adults emerge from June to September, with most adults emerging in June and July. They puncture the skin of an apple and insert an egg into it. The maggots hatch and feed by

tunneling throughout the apple flesh, leaving tiny brown trails. Apple maggots are common in northern Illinois, Indiana, and Ohio. There is one generation per year. (Bessin)

## Pre-harvest Management of Fruit Diseases of Grape

New grape plantings in Kentucky have been on the increase in recent years. It is important that growers recognize the important diseases facing grapes. At this stage of the season, bunch rot and bitter rot become more important. As certain grape varieties approach 'bunch closing', a stage when berries within the cluster begin to touch, they become more prone to bunch rot. Bitter rot becomes active now because this disease only attacks after the fruit sugar content begins to rise as they ripen.

**Botrytis Bunch Rot.** Bunch rot is caused by the fungus *Botrytis cinerea*. Infections by this fungus are favored by moist weather with high humidity. As the grape berries enlarge, it becomes more difficult to get fungicide coverage to the interior of the berry cluster. Tight-clustered French hybrids, such as Seyval and Vignoles and most vinifera varieties such as Chardonnay, Pinot Noir, and Riesling are prone to bunch rot.

**Grape Bitter Rot.** Bitter rot is caused by the fungus *Greeneria uvicola*, and is a common problem in Kentucky, especially during wet years. The bitter rot fungus only attacks mature berries, unlike black rot which does not infect berries once they are past 5-8% sugar content (veraison or grape coloring). It is easy for growers to mistake bitter rot for black rot because both diseases result in black, shriveled, mummified fruit. The difference is that if the rot develops on mature berries (8% sugar or above), the cause is probably not black rot. This late season rot is likely to be bitter rot.

**Disease management.** There are some cultural practices that can be implemented to enhance grape disease control. Consider how shading, weeds, irrigation method and timing, soil drainage, plant spacing, mulch, and disease-free plants will influence the disease situation. Use cultural practices which will help the grapes to dry off faster and to reduce the humidity in the canopy of the vines. Removal of leaves around clusters before bunch closing has been shown to reduce losses caused by Botrytis. Over-ripe fruits are more vulnerable to bitter rot, so fruit should be harvested in a timely way. In addition, prune and

destroy diseased portions of vines and, if practicable, pick off fruit mummies as they appear so as to reduce inoculum loads. These measures will help to reduce disease and the need for fungicides.

Even with good cultural practices, grape diseases are so devastating that it is difficult to grow high yields of high-quality grapes in Kentucky without the use of fungicides. For commercial growers, a publication entitled Kentucky Commercial Small Fruit and Grape Spray Guide for 2000 (ID-94), available at County Extension Offices, provides details of fungicides to use. Proper timing and thorough spray coverage are essential for good control. Direct the spray toward the fruit zone, and use a minimum of 100 gal/A of water. Homeowners should refer to the Cooperative Extension publication entitled Disease and Insect Control Programs for Homegrown Fruit in Kentucky Including Organic Alternatives (ID-21).

For bunch rot management, there are four fungicide application times: a) early to mid bloom, b) just prior to bunch closing, c) veraison (beginning of fruit ripening), and d) prior to harvest if needed. Three products, Rovral, Vanguard, and Elevate, are registered for control of Botrytis. It is important to realize that these fungicides are effective only against Botrytis. They provide no protection against black rot, bitter rot, or powdery and downy mildews. These fungicides are prone to development of resistance in the pathogen population, so they should be used carefully. Do not make more than 4 applications of these materials per season. Vanguard is classified as a 'reduced risk' fungicide by EPA due to its favorable environmental and toxicological properties. Elevate can be applied up to and including the day of harvest.

Many of the fungicides used for black rot and cane and leaf spot control are also effective against bitter rot. However, the new systemic fungicides (Nova, Bayleton, and Rubigan) are not effective. Pre-harvest applications of Captan may be beneficial, but earlier sprays were more important because infection likely starts at or near bloom. Observe all pre-harvest restrictions. (Hartman)

## Pecan Diseases Appearing Now

During recent years, rural land owners have made plantings of pecans and other nut trees to provide a source of supplementary farm income. Homeowners occasionally use pecans in the landscape for shade. Many of these trees are now bearing fruit, in the form of nuts for fall harvest. There are several diseases of pecan that can reduce the nut crop and detract from the tree's shade value. Some of these diseases, such as scab, are appearing now at damaging levels; unfortunately, infections began in spring and little can be

done now.

Pecan scab. Scab, caused by the fungus *Cladosporium caryigenum*, is the most common and damaging pecan disease. Leaf symptoms first appear on leaf undersides as tiny olive-brown lesions on the veins. Later, they appear on the upper surface as small olive-brown to black spots. Severely infected leaves may be shed prematurely and weaken the tree, thus reducing nut filling and decreasing the crop for next year. Husk infection results in olive-brown to black spots which may coalesce to form black blotches or blacken the entire surface of the husks. Severely affected nuts of susceptible varieties may drop prematurely or they may stop growing, die and remain attached to the shoot.

To manage scab, plant well-adapted northern cultivars having some degree of resistance to scab. For example, the Major variety is resistant whereas Pawnee is susceptible and would need a spray program in most years. Use of "resistant" varieties does not necessarily assure complete absence of the disease as no variety is totally resistant. Consult nursery suppliers and U.K. Cooperative Extension Publication, ID-77 Nut Tree Growing in Kentucky for suggestions of resistant varieties. At the end of the season, remove and destroy fallen leaves and husks to help reduce the amount of scab the following year. A pecan pest control guide is available in ID-77 for growers who have spray equipment adequate to cover the trees, or for growers who hire custom spray applicators. Fungicides such as benomyl (Benlate 50WP), propiconazole (Orbit 3.6EC), fenbuconazole (Enable 2F), and thiophanate methyl (Topsin-M 70WSB) are used for scab management. Spray applications should be initiated in early spring and continued biweekly until early August.

Powdery mildew. Highly susceptible seedling trees are especially vulnerable to the white powdery growth of the fungus on the surface of young shoots. Scab sprays usually provide adequate control of powdery mildew.

Blotch. Blotch and several other leaf diseases can occasionally cause defoliation in late summer. Generally blotch occurs only on trees low in vigor or deficient in zinc. Nursery trees are especially susceptible. These foliar diseases appear as circular black spots or large, irregular yellow blotches on the

leaves. Remove and destroy fallen leaves; scab sprays usually will also control leaf spots.

Wood or heart rots. Wood or heart rots can cause extensive wood decay and thus weaken the branches or trunk. The decay-causing fungi enter the tree through mechanical injuries such as ice, wind, improper pruning, or construction injury. Damaged trees should be properly pruned to ensure normal healing. Tree wound dressings are not recommended.

Crown gall. Crown gall causes round to irregular swollen tumors or galls, usually found at or near the soil line on the trunk or roots. Infected trees lack vigor, and have off-color foliage. Such weekend trees occasionally die. To prevent crown gall, plant disease-free trees and only grow nursery trees in fields where crown gall has not been observed previously. For crown gall prevention, tree seeds and seedlings can be treated with Galltrol-A before planting.

Rosette and bunch. There have been inquiries made about pecan rosette and bunch disease this season in Kentucky. Rosette is caused by zinc deficiency or by certain soil types where zinc is unavailable to pecan trees. Initial symptoms occur mostly on the branches in the top of the tree. Leaves are yellowish and mottled. In advanced stages, leaflets become narrowed and crinkled on lower branches. New shoot growth is inhibited. Eventually twigs and branches die back from the tips. Zinc deficiency can be corrected by spraying the leaves with zinc sulfate. The zinc also may be applied to the soil around trees by spreading the material from near the trunk outward to the drip line. A soil test may be needed to determine the amount of zinc required.

Bunch. Bunch disease symptoms resemble those of rosette. Two differences are that leaflets of bunch-diseased trees neither become yellow between the veins nor extremely crinkled like those affected with rosette. Bunch disease is thought to be caused by a phytoplasma. There is no way to control bunch disease directly; however, spread can be reduced. Use only graft wood from bunch disease-free trees for propagation and do not top-work affected trees. On mildly affected trees, prune the affected shoots several feet below the region of symptoms.

Internal Breakdown. Internal breakdown of almost-mature nuts occurs in late summer. The inside of the nut becomes soft and watery. This is a physiological disorder the cause of which is not known. Its severity varies from year to year, but appears to be most prevalent on certain varieties. (Hartman)

## Nut weevils

Nut weevils can be very serious pests of pecans and chestnuts. These damaging insects begin to attack the kernels in the developing nuts while the nuts are still on the tree. However, problems often are not noticed until the nuts are harvested and opened. Occasionally, these weevil grubs are found in homes or other places that nuts are stored.

The pecan weevil is a serious late season pest of hickory and pecan. The greatest damage is caused by the grub that feeds directly on the developing kernel. Adults are reddish-brown and densely covered with olive-brown hairs and scales. Body length is about 3/8 inch long exclusive of the snout. The female has a snout as long as her body, while the male's is about half that of the female's snout. Two types of damage are caused by this insect; mid-season adult feeding on young nuts causing premature nut drop, and grub damage to the kernels that usually occurs after shell hardening.

Adult weevils emerge from the ground in late August through September, about the time nuts begin to harden. Peak periods of adult emergence usually follow heavy rains. After the nut kernels have hardened, the female uses her long snout to chew a hole in the side of the nut and deposits her egg in little pockets in the nut. Creamy white grubs with reddish brown heads hatch and feed inside the nuts during the fall, reaching 3/5 inch in length.

When mature, the grub chews a perfectly round 1/8 inch hole in the side of the nut and falls to the ground in late fall or early winter, usually between late September and December. They make earthen cells in the ground where they remain as a grub for one to two years. Most of the grubs will pupate the following fall. Some, however, do not pupate until the fall of the next year. Adults emerge during the summer following pupation. The entire life cycle requires 2 to 3 years to complete, most of it in the soil.

Weevils usually move only a short distance after emerging and often attack nuts on the same trees year after year, so long as there is a crop of nuts. Weevils apparently prefer trees growing in low areas or those near hickory trees. Early maturing varieties are most susceptible to the weevils. Hickory nuts are attacked by the pecan weevil as well.

### Monitoring for Pecan Weevils

Trees can be jarred beginning in mid-August to determine when to apply insecticides. Place a large harvesting sheet under the trees and jar the limbs with a padded pole. The adult weevils will fall onto the sheet and remain motionless for a short period. **When three or more weevils are jarred per tree, insecticide applications should begin.** Peak emergence usually follow rains. Otherwise spray applications should begin

when shell hardening begins and repeated at 10 to 14 day intervals. Sevin, Imidan, and Asana XL can be used to control pecan weevils on pecan. Asana XL is a restricted use pesticide.

Those not prepared to spray can reduce weevil injury by periodically shaking weevils onto a harvesting sheet. Dislodged beetles usually remain motionless on the sheet and can be easily collected and destroyed. Shaking should begin after the first heavy rain in early August and continue through mid-September or until no weevils are collected.

### Monitoring for Chestnut Weevils

Of the larger and lesser chestnut weevils, the lesser chestnut weevil is the more common of the two species of weevil infesting chestnuts in Kentucky. These weevils breed exclusively in chinquapin, American and Chinese chestnuts. At one time these weevils were common, but since the passing of the American chestnut they have become much less common.

The 1/4 inch lesser chestnut weevils emerge from the ground beginning in late May until July, about when the chestnuts bloom, but do not lay eggs until the fall. Egg laying begins when the nuts are nearly mature and most eggs are laid after the burr begins to open. Eggs are usually laid in the downy inner lining of the brown shell covering the nut. Eggs hatch in about 10 days and larval development is completed 2 to 3 weeks later. Soon after the nut falls to the ground, the grubs chew a circular hole in the side of the nut to enter the soil. Most of the lesser chestnut weevil grubs overwinter the first year as grubs, pupate the following fall, and overwinter the following winter as adults. Some pass two winters in the grub stage and a third winter as adults before emerging from the ground. The life cycle is completed in 2 to 3 years.

Biology of the larger chestnut weevil differs from the lesser chestnut weevil. Adults begin to emerge in late July and August. The adult is 3/8 inch long exclusive of the snout. The female has a 5/8 inch beak and the male's is 1/4 inch. Larger chestnut weevils begin egg laying soon after emerging, before egg laying begins with the lesser chestnut weevil. Eggs hatch in 5 to 7 days and the larvae feed for 2 to 3 weeks before leaving the nut. Larger chestnut weevil grubs chew and exit hole in the side of the nut and drop to the ground usually before the nuts fall. Grubs overwinter in earthen cells in the ground. Pupation and adults emergence takes place the following summer. A few grubs will overwinter a second year before pupating. The life cycle is completed in 1 to 2 years.

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### Management

Weevil infestations can be reduced by picking up chestnuts daily and after curing, heat them to 14°F for 30 minutes to kill the larvae in the nuts. A cold treatment of holding the nuts at 0°F for four days may also be effective, but it may also affect nut flavor. Sanitation is important, always collect and destroy fallen nuts before the larvae have a chance to escape and enter the soil. Only one insecticide, carbaryl (Sevin) is registered for use against chestnut weevils on chestnuts. Trees can be jarred similar to monitoring for pecan weevils to determine the presence of adult weevils. Wilbur Donoho in the Louisville area has been successful in controlling chestnut weevils by applying weekly sprays starting from mid to late July until September 1. (Bessin)

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John Strang, Extension Horticulturist