



Kentucky Fruit Facts

Research & Education Center
P.O. Box 469, Princeton, KY 42445

August 1999 (8-99)

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Our web site is: <http://www.uky.edu/Agriculture/HLA/extension.htm>

Fruit Situation

Our apple crop continues to look good for most growers across the state. Apples are still sizing ok in most orchards, but dry weather is taking its toll. A few orchards are drought stressed to the point that trees are dropping fruit and some are dying. Heat stress has been a problem on late peaches and on apples that ripened during excessively hot weather.

The Kentucky Division of Water reports as of the end of July that 28 counties east of the Kentucky River basin are under water shortage warnings. There are now 20 water systems in 9 counties in the 'alert phase' of water shortage response.

The maturity date for apples is running a week to two weeks earlier than normal this season. The heat, drought stress and fruit drop are contributing to this.

Apple growers should continue spraying for sooty blotch, fly speck, and fruit rot diseases. Most growers have kept mites under control up to this point. We have had a third generation of codling moths and expect a late fourth generation due to the hot season that has accelerated insect development. Make sure to monitor for the fourth generation of codling moth and apply late season sprays.

The blackberry crop was excellent where growers had adequate water. The plum crop, including Japanese plums was also excellent. (Strang, Brown, Bessin, Hartman)

Meetings

Aug. 10, 12, 17 - Kentucky Vineyard Assistance Program Update, Shelbyville, Somerset, and Princeton, KY.

Con

tact Garth Vinson, Kentucky Vineyard Assistance Program, MSU Agr. Dept, P.O. Box 9, Murray, KY 42071, phone 270/762-4329. See article below.

Aug. 11 - U.K. South Farm Twilight Fruit and Vegetable Tour, Lexington, KY. The U.K. South Farm is located on the corner of Man O'War and Nicholasville on the south side of town. Entrance to the farm is off of Man-O'-War Blvd. The tour begins at 6:00 PM EDT and will feature apple cultivars, plasticulture strawberry production research, tomato, cabbage, seedless watermelon, green fleshed melon and powdery mildew tolerant pumpkin cultivar trials. Contact Brent Rowell 606/257-3374.

Sept. 11-12 - Gourd Education Day, Natural Bridge State Park, Slade, KY. Classes will include Weaving, Painting, Pin & Ink, Woodburning. Contact Janet Barnett phone 502/477-8543, e-mail JANETB01SPRYNET.COM

Sept. 12 - Ohio Valley Harvest Festival, Waterfront Park, Louisville, KY, noon to 6:00 p.m. Contact J. K. Henshaw at Kentucky Farm Bureau, phone 502/495-5106, email: jkhenshaw@kyfb.com See article below.

Sept. 16 - National Small Farm Field Day and Kentucky Farm Safety Day, Kentucky State University Research and Demonstration Farm, Mills Lane Frankfort, KY. 9:30 a.m. - 5:00 p.m., Bonfire Discussion from 5:00 p.m. - 9:00 p.m. Program tracks will be: Livestock; Aquaculture and Water Quality; Vegetables and Horticulture; Crops and Forages; and Home Economics. The Governor will sign the Proclamation for Kentucky Farm Safety Week with live rescue demonstrations during the field day. The Keynote Speaker will discuss Sustainable Agriculture Issues and Concerns. Contact 502/564-5871 or 5869.

Sept. 17 - Farm Tours of Small Farm Agriculture

rests, KSU Research and Demonstration Farm, Frankfort, KY. 8:30 a.m. - 1:00 pm. Contact 502/564-5871 or 5869.

Oct. 21 - The Second Annual Pawpaw Field Day, Kentucky State University Research Farm, Frankfort, KY. See article below.

Oct. 23 - Kentucky Vineyard Society's Annual meeting, Maker's Mark Conference Center, Loretto, KY. Contact Mitchell Wagner phone: 502/459-6958, Fax: 502/459-2026, Email: MITCH@KORT.COM **Jan. 3-4, 2000 - KSHS/KVGA Annual Meeting and Trade Show,** Holiday Inn North, Lexington, KY

The Second Annual Pawpaw Field Day

Come join us at our second annual pawpaw field day at 9 a.m. on Thursday, October 21, 1999 at the Kentucky State University farm. Speakers will lead discussions on how to grow and market pawpaws successfully. There will be pawpaw fruit and products for participants to sample. We will have an informal meeting of PawPaw Foundation members in the afternoon. Hope to see you there!

Speakers:

Kirk Pomper, Head of the KSU pawpaw project
Neal Peterson, Pawpaw grower/founder of Pawpaw Foundation
Colleen Anderson, Pawpaw enthusiast/ PPF Board member
Chris Chmiel, Pawpaw entrepreneur

Mr. Chris Chmiel of Athens, Ohio is a Pawpaw entrepreneur who has been renting space at a USDA certified kitchen for processing his pawpaw pulp. He has been selling pawpaw pulp by mail order.

Ms. Colleen Anderson of Charleston, West Virginia, Pawpaw grower and enthusiast. Has written and presented essays about pawpaws on West Virginia Public Radio as part of her radio commentary during the last four years.

Mr. Neal Peterson of Franklin, West Virginia, Pawpaw grower and founder of the PawPaw Foundation. He has been selecting new pawpaw cultivars in cooperation with PPF.

Driving directions:

From I-64, turn south on U.S. highway 127 (exit 53) and proceed to the fourth traffic light (note Chevron Station on west side of road). Turn left (east) on Mills Lane and drive about 2 miles. The KSU research farm will be on the right (south) side of the road.

Please RSVP, so we have an idea of how many of you are coming. For a list of hotels in the area, call Ms. Jean Ward at 502-227-6174. For additional information call 502-227-5942 or see our web page at <http://www.pawpaw.kysu.edu/events.htm>.

Kirk W. Pomper, Kentucky State University, 129 Atwood Research Facility, Frankfort, KY 40601

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Check out our web site at:

<http://www.pawpaw.kysu.edu>

Kentucky Vineyard Assistance Program (KVAP) Update

The details of the 1999 planting season are almost complete and it is now time to look to next year's planting season. In a recent meeting of the Grape Industry Advisory Committee the Chambourcin variety was added to the approved list of grape varieties for consideration under the KVAP. New growers classes are being scheduled for early August as follows:

Aug 10, 5 p.m. EDST Shelby County Extension Office, Shelbyville, KY 502/663-4593

Aug 12, 5:30 p.m. EDST Pulaski County Extension Office, Somerset, KY 606/679-6361

Aug 17, 5 p.m. CDST UK Research and Education Center, Princeton, KY 270/365-7541

The new growers class is being held for anyone interested in growing grapes. Primary emphasis will be toward perspective commercial growers especially those interested in the Kentucky Vineyard Assistance Program cost-share.

Topics will include: Marketing, Variety Selection, Site Selection, Site Preparation, Planting Techniques, Trellis Construction, and Vine Training Systems

This class is given free of charge to any and all interested. Growers will be presented with enough information to make a sound decision on starting a vineyard.

Ohio Valley Harvest Festival, September 12

Plans are underway for the 1999 Ohio Valley Harvest Festival and we are looking forward to your participation. This year's event will be held in the newly opened Waterfront Park on Sunday, September 12 from noon until 6:00 p.m. With the Waterfront's high visibility and easy public access, we anticipate a record breaking attendance. The addition of the Del McCoury concert at 6:00 p.m. sponsored by Brown - Forman will attract even more people and hold the crowd later in the day.

The Harvest Festival was created to bring together restaurateurs and local farmers/producers to develop relationships of mutual benefit. The concept works like this: Local chefs and farmers are paired in advance of the event, the chefs purchase products from their farm partner and create a dish to be sold in "taste" size portions at the Festival. Usually, the farm partner has a booth next to the restaurateur.

Exhibitors keep all pro-ceedings from their sales. All booths are under tents. Tables and chairs are provided.

Please reserve your spot at this year's Festival and return it to J. K. Henshaw with \$20. Pairing will be made as reser-va-tions are received to give producers and chefs ample time to plan their menus. All reservations are due by August 27. Festival materials will be sent to print September 1.

For more information and registration forms, contact: J. K. Henshaw at Kentucky Farm Bureau, phone 502/495-5106, email: jkenshaw@kyfb.com

EPA and FQPA Announcement on Pencap-M and Guthion

Monday, August 2, the EPA announced that it is eliminating the use of methyl parathion (Pencap-M) and placing greater restrictions on the use of Azinphos - methyl (Guthion) as a result of the Food Quality Protection Act. These changes do not take effect until next year, so growers are encouraged to use existing stocks before the new regulations are implemented. August 3, 1999 was the Congressional mandated date for the EPA to reevaluate 1/3 of the pesticide tolerances under the new law.

Keep in mind that the EPA has made it clear that the use of either of these products as permitted by existing regulations does NOT pose a health threat. Families are reminded that the long-term health benefits of a well balanced diet including a wide variety of fruits and vegetables greatly outweigh theoret-ical risks associated with pesticide residues. The majority of fruit and vegetables have no detectable pesticide residues!

To some extent, both of these insecticides are used in Kentucky. Pencap-M has been used on a limited basis on tomatoes, apples and peaches. There are readily available alternatives for this insecticide that are listed in ID-36 and ID-92. Pencap-M use will not be permitted next year.

Guthion is labeled on several fruit and vegetable crops and has been used more routinely on apples for control of a wide variety of pests. Use of Guthion has not been eliminated, rather it has been limited. The new regulations for Guthion are intended to protect the applicator /field worker as much as reduce the already low residues on the fruit. The most signif-icant changes for Kentucky include:

- Application of Guthion by backpack sprayer or hand wand sprayers will be prohibited.
- Preharvest interval on apples will be extended to 21 days.
- Total amount of azinphos-methyl applied to apples and pears will be limited to 4.5 lbs of active ingredient per acre per year (3.375 lbs ai /a / year on peaches).
- All non-tree crop Restricted Entry Intervals (REI) will

be extended from 48 hours to 96 hours.

Revised Extension publications should be available before the start of the 2000 growing season, when the new regula-tions take effect. (Bessin)

Avoiding Raspberry Diseases

Good control of diseases can almost always be obtain-ed with proper site selection and timely cultural prac-tices, thus minimizing the need for pesticides. Red and black raspberries are threatened by cane diseases such as anthrac-nose, spur blight, and cane blight. Both are susceptible to gray mold fruit rot and also to Septoria leaf spot. Black raspberry is susceptible to orange rust, but red raspberries are not. Both types of raspberry are susceptible to Phytophthora root rot and Verticillium wilt.

The following is a checklist of cultural practices that will minimize raspberry disease problems:

Start with healthy plants from a reputable nursery; virus-free stocks are preferred.

Choose a well-drained planting site with good air movement and sunlight exposure. If there are doubts about the soil drainage, build a raised bed to minimize Phytophthora root rot disease. The red raspberry variety Latham is resistant and Newburgh is somewhat resistant; black raspberries such as Bristol, Dundee, and Jewel are also resistant.

To minimize the threat from Verticillium wilt, avoid sites where tomatoes, potatoes, or eggplants have been grown within the past three years. No raspberry cultivars are resistant to Verticillium wilt.

Selecting fall-fruiting varieties such as Heritage or Autumn Bliss minimizes cane blights and cankers because cane di-seases are eliminated when canes are cut and removed in late winter. Leaf spot disease fungi which are harbored on the canes are also removed in this way.

For summer-bearing raspberries, prune out the old canes just after the last fruit have been harvested in July, leaving the new canes for next year's fruit production. Otherwise the old canes can be a source of infection of the new canes.

Maintain a row width between 1-2 feet to maximize ventilation and rapid drying. Stake or trellis the rows or plants so that the canes are held upright for better air movement.

If irrigation is needed, avoid sprinkler irrigation which can spread diseases. Mulch the raspberries to conserve water and minimize disease-favoring foliage wetting.

Harvest berries promptly to avoid letting berries become over-ripe. Remove berries with gray mold or other fruit rot diseases from the planting.

Dig up diseased plants, including roots, and burn or discard them.

If black raspberries are being grown, destroy nearby stands of wild brambles to minimize the threat of orange rust disease. (Hartman)

Naturally Occurring Pesticides for Fruit Crops

Naturally occurring pesticides that are derived from plants or plant parts are commonly referred to as "botanicals". Botanicals have been around for quite a while. Along with arsenicals and other inorganic pesticides, they were pretty commonly used before the advent of the synthetic, organic pesticides rendered them "obsolete". From time to time they are re-examined for various reasons and may be familiar. Botanicals are of interest to those concerned with pest management for a variety of reasons. They are generally less toxic to the applicator than many synthetic pesticides. They may be acceptable in the organic market where synthetic pesticides are not. Because, in general, they break down quickly, they may also be of use near harvest, when control is needed but other materials may not be applied because of PHI restrictions. Rapid degradation also means they are less likely to become environmental problems. Botanicals, however, are not without concerns. They are usually broad spectrum poisons that can be hard on beneficial insects. And, unlike "biological" pesticides like B.t.'s, insect growth regulators and pheromones, they are somewhat acutely toxic to humans and their mammals. The fact that they break down rapidly in the environment, while an advantage in some respects, also means that sprays need to be:

- timed precisely to coincide with pest events,
- applied at lower thresholds and, possibly,
- applied more often.

They are also very expensive.

In the past the four most common botanicals available for use in fruit crops were rotenone, pyrethrin, sabadilla and ryania. Unfortunately, for those who found them useful, sabadilla and ryania are no longer on the list due to voluntary cancellation of their registrations.

To round out the article, we'll substitute information on a few, newer, natural materials that, while not technically botanicals, kind of fit the category. A relatively newer, and increasingly more common botanical insecticide that is receiving a lot of attention these days is azadirachtin (or neem).

ROTENONE Rotenone is derived from the root of various plants of the *Derris* or *Lonchocarpus* species from Southeast Asia, Central and South America. It is available as at least 118 formulated products from a large number of manufacturers. It is synergized by the addition of piperonyl butoxide (PBO), which is another botanical material. Rotenone is expensive compared with synthetic insecticides, but is moderately priced for a botanical. It is the most

commonly mentioned of the botanicals in pre-synthetic literature and is at least somewhat effective against a large number of insect pests. These include: pear psylla, strawberry leafroller, European corn borer, European apple sawfly, cherry fruit fly, apple maggot, cran-berry fruitworm, raspberry fruitworm, pea aphid (which is simi-lar to rosy apple aphid), European red mite and two-spotted spider mite, codling moth, plum curculio, Japanese beetle and tarnished plant bug. Unfortunately, it is also toxic to ladybird beetles and predatory mites. But, it is non-toxic to syrphid flies that feed on aphids, and to honeybees. Rotenone is rapidly degraded by sunlight, lasting a week or less.

Of the botanicals mentioned here, rotenone is the most toxic to humans and other mammals. The acute oral LD50 is from 60-1500 mg/kg. In small doses it may be irritating or numbing to mucous membranes. It is highly toxic to fish, having been commonly used as a fish poison. It is also toxic to birds and pigs.

PYRETHRIN (Pyrethrum) This compound is produced in the flowers of *Chrysanthemum cinerariaefolium* and is the fore-runner of the synthetic pyrethroid insecticides. There are not nearly as many commercially available formulations of this chemical as there are for rotenone, but it is available as an emulsifiable concentrate, in combination with rotenone, or alone as a wettable powder, from at least a couple of sources. Pyrethrin is the least expensive of these four materials.

Depending on the rate used, it may be less expensive than many synthetic insecticides. It is also synergized by PBO. Pyrethrin is labeled against a large number of pests. An ad-dendum to the label for one formulation of pyrethrin showed it to be moderately to highly effective (61-100% control) against the following pests of fruit: grape leafhopper, potato leaf-hopper, leaf curl plum aphid, blueberry flea beetle, blueberry thrips and blueberry sawfly. It is also effective against cran-berry fruitworm. It is quickly broken down in the environment and may be used up to and including the day of harvest.

Pyrethrin is relatively non-toxic to humans and other mam-mals, although the dust produces allergy attacks in people who are allergic to ragweed pollen. The acute oral LD50 is 1200 - 1500 mg/kg. It is toxic to fish, but "relatively" non-toxic to honeybees.

AZADIRACHTIN (Neem) Azadirachtin is derived from the seeds of the neem tree, *Azadirachta indica*, which is widely distributed throughout Asia and Africa. The observation that the desert locust did not eat the leaves of the neem tree, and another, closely related species, led to the isolation and identi-fication of azadirachtin in 1967. Since then, azadirachtin has been shown to have repellent, antifeedent, and/or growth regulating insecticidal activity against a large number of insect species and some mites. It has also been reported to act as a repellent to nematodes. Neem extracts have also been used in medicines, soap, toothpaste and cosmetics.

The most common commercial formulations of neem available for tree fruit is Neemix (W. R. Grace & Co.), which lists leafminers, mealybugs, aphids, fruit flies, caterpillars and psylla, and Align (AgriDyne),

which includes some minor leafrollers on the label.

Azadirachtin has shown good activity against spotted tentiform leafminer in tests in past years, but the formulation that was available at that time was somewhat phytotoxic. In Dick Straub's insecticide trials in 1992 with another azadirachtin product called Margosan-O, the insecticide showed good activity against STLM and leafhopper. Margosan-O is no longer available for fruit crops. In laboratory tests by Jan Nyrop's lab, toxicity to the predatory mite *Amblyseius fallacis* was very low. Field trials against OBLR by Harvey Reissig last year were not encouraging.

Azadirachtin is relatively short-lived and mammalian toxicity is low (rat oral LD50 >10,000). It can be used up to and including the day of harvest and reentry is permitted without protective clothing after the spray has dried. It is toxic to fish and aquatic invertebrates.

PIPERONYL BUTOXIDE (PBO) PBO is a synergist (in this case, a material that when added to a pesticide increases the activity of its active ingredient) of both rotenone and pyrethrin. It is also a botanical product, being derived from Brazilian sassafras. Acutely, it is very safe, having an acute oral LD50 of greater than 7,500 mg/kg, but it may be chronically toxic in high doses.

GARLIC (Guardian) A 10% formulation of garlic is registered on apples and a number of apple pests are on the label. In 1995, Guardian (supplied by THUMBS-UP Sales Co., Chesterland, OH) was applied in six sprays at two-week intervals, starting at petal fall, and compared with a 3-spray Imidan program. Following the manufacturer's recommendations, each application of Guardian included an adjuvant of Sylgard 309 and Tri-Fol, a buffering agent, to maintain an optimum pH below 5.5-6.0. Results showed that the garlic spray applied at a rate of 11 oz/A did not provide control of any of the labeled apple arthropod pests in N.Y. and did not affect the population density of two predator species commonly found in apples. The foliar pests - aphids, leafminers and mite populations - were unaffected by the garlic sprays. The fruit pests - plum curculio, tarnished plant bug, oblique banded leafroller and internal lepidopterans - were also not affected by the biweekly sprays. However, the garlic did not have any effect on the population density of the predators *T. pyri* or *Aphidoletes aphidimyza*.

Although not technically botanical insecticides, the following materials are unique, natural products that kind of fit the category:

ABAMECTIN (Agri-Mek) is a natural fermentation product containing a macrocyclic glycoside, used on apples and pears as an acaricide/insecticide. When used as currently recommended, it controls European red mite and pear psylla, and aids in the control of spotted tentiform leafminer. Abamectin is toxic to bees and predator mites on contact, but the foliar residue dissipates quickly, making it essentially non-toxic to these species after a few hours (low bee-poisoning hazard).

INSECTICIDAL SOAPS (M-Pede) are concentrates made from biodegradable fatty acids and are contact insecticides that can be effective against such soft-bodied arthropods as aphids, mealybugs, and psyllids. They can provide suppression of pear psylla when used in a seasonal spray program, but the residual period is short. Uniform drying conditions are required to prevent droplet residues on the fruit surface. They have a low bee-poisoning hazard.

SPINOSAD (SpinTor) is a mixture of spinosyn A and spinosyn D molecules, a naturally derived group of toxicants from a species of Actinomyces bacteria which are found inhabiting soil. Spinosad, which acts as both a contact and a stomach poison, is available for use in apples, primarily against obliquebanded leafroller, although activity against spotted tentiform leafminer is also exhibited. SpinTor is essentially non-toxic to birds, fish, aquatic invertebrates, and most beneficials. It has a low bee-poisoning hazard. (Dave Kain & Art Agnello, Entomology, Geneva, Fruit Notes Newsletter, Cornell University)

ITC Sides Unanimously With U.S. Apple Industry in Ruling Against Chinese Apple-Juice Concentrate Imports

Industry Asks Commerce Department For Early Dumping Decision and Retroactive Tariffs

McLean, VA - The U.S. International Trade Commission (ITC) ruled unanimously in favor of the U.S. apple industry's complaint that unfairly priced apple-juice concentrate imports from the People's Republic of China are causing economic injury to domestic producers.

The apple industry requested that the U.S. Department of Commerce issue its dumping determination by no later than Oct. 5, and that the agency's anticipated imposition of anti-dumping duties on Chinese concentrate imports be made retroactive to July 7. The apple industry is seeking a 91 percent duty on imports of Chinese concentrate.

"We are gratified by the ITC's decision recognizing the serious economic harm unfairly-priced imports from China are causing our industry," said U.S. Apple Association (USApple) President and Chief Executive Officer Kraig R. Naasz. "Given the massive surge of below-cost Chinese imports and their enormous damage to our industry, the government should move swiftly to deter further harm by ruling quickly and imposing additional duties on past, present and future imports of this product." If, as expected, the Department of Commerce finds that concentrate is being sold at unfairly low prices, a tariff will be levied against Chinese concentrate imports as of the day of its decision. Under the law, the tariff can also be imposed retroactively, by as many as 90 days prior to an affirmative decision by the department, if "massive" imports are found to have occurred during the period under investigation. The law considers a 15 percent increase in imports

"massive." The U.S. Bureau of the Census reports that apple-juice concentrate imports from China have surged 111 percent since the apple industry publicly announced its intent to pursue a dumping case against China, presumably in an effort to avoid paying increased duties.

Should the Department of Commerce rule that dumping is occurring, and by Oct. 5 as requested by the industry, import-ers of apple-juice concentrate from China would be required to pay additional antidumping duties on product entering the United States from July 7 onward. The department recently accepted similar requests, and made antidumping duties retro-active, in cases involving processed mushrooms from China, and hot rolled steel and steel plate from Japan.

"Let this notice serve as fair warning: We plan to pursue every legal avenue available to prevent further imports of unfairly-priced concentrate from China, and to reverse the enormous economic heartache this situation has caused our industry," said Naasz. "We intend to see that antidumping duties are imposed at the earliest possible date." Today's preliminary injury determination by the ITC follows a hearing held June 28 in Washington, D.C., at which members of the U.S. apple industry presented evidence documenting econ-omic injury being suffered by domestic concentrate producers as a result of below-cost imports from China. Also on June 28, the Department of Commerce formally initiated its investigation of Chinese apple-juice concentrate imports to determine whether they are being "dumped" - i.e. sold in the United States at less than fair value - and announced its initial intent to rule on the matter by Nov. 15.

The antidumping initiative is being overseen by the Coalition for Fair Apple-Juice-Concentrate Trade (FACT), an industry-wide coalition of state apple associations, processors and concentrators administered by USApple.

For more information, contact USApple's Naasz by phone at (703)442-8850 or visit the Newsroom section of the association web site at www.usapple.org.

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John Strang, Extension Horticulturist