



Kentucky Fruit Facts

Research & Education Center

P.O. Box 469, Princeton, KY 42445

January 2000 (1-01)

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

Tom Priddy, meteorologist at the UK Ag. Weather Center has reported that December 2000 was the fourth coldest December for the state of Kentucky in the past 106 years. (The coldest December was 1989.) Temperatures for the month averaged 26.3°F across the state which was 10.2°F below normal. However, from a fruit growers point of view, it wasn't too bad, because there were weren't any extremely low temperatures.

At this point we have sustained some winter injury on the shoot tips of grapes due to the early fall/winter cold weather. Some of you may have noticed that the leaves on many apple trees remained attached after our fall freezes. Normally apples drop their leaves with the first hard freeze. This is an indication that the trees weren't quite hardened off. I don't think that either of these will have any affect on the coming seasons crop. So far we have not had any below zero temperatures and the 2001 fruit crop potential looks good.

Keep a close watch on orchard vole populations and treat where necessary. Several surrounding states have reported high vole activity.

We have begun advertising to fill the Fruit Extension/Research position at the Research and Education Center at Princeton. Our goal is to have an individual on board in the fall.

Coming Events

Jan. 15-16 - Tennessee Fruit & Vegetable Association meeting, Read House, Chattanooga, TN
Contact Stanley Trout 615/837-5160 e-mail: jstrout@mail.state.tn.us or Dave Lockwood.

Jan 15-22 - 16th Annual North American Farmer's Direct Marketing Conference and Trade Show, Mesa, AZ. This years theme will be Diversity in the Desert. The conference will feature workshops, educational sessions, a trade show, and tours of Arizona farms and tourist sites. See the website www.familyfarms.com for program and registration information. Contact Charlie Touchette 888/884-9270.

Jan. 16-18 - Heartland Grape and Wine Coalition Short Course: Vineyard and Winery Establishment. Battlecreek, MI. See the website <http://www.msue.msu.edu/swmrec/> for the program. Contact Tom Zabadal 616/944-1477 ext 206.

Jan. 19-21 - Southern Sustainable Agriculture Working Group Annual Conference. Chattanooga Choo-Choo Holiday Inn, Chattanooga, TN. The conference will feature over 35 educational sessions. If you are looking for a ride, Kentucky State University is taking a van down. Contact Marion Simon at 502/597-6437. See the website <http://www.attra.org/ssawg/> for a detailed schedule of events.

Jan. 29-31 - Indiana Horticultural Congress, Adams Mark Hotel, Indianapolis, IN. Check the Indiana Hort. Congress website for program information at

<http://www.hort.purdue.edu> and follow the link for Indiana Hort. Congress. Contact Dick Hayden 765/463-6587, Liz Maynard 219/785-5673, or Tom Roney 317/326-2278.

Jan. 30 - Northern Kentucky

Alternative/Supplemental Crops School, Boone County Extension office, Burlington. Alternative crops will be discussed including fruits, vegetables, flowers and specialty crops. Cost is \$10, which includes lunch and materials. Check should be made out to the Boone County Extension Service. Take exit 181 off of I-75 and travel 3 miles west toward Burlington on Hwy. 18. Turn left on Hwy 237 (Camp Ernst Rd.) and turn left at the 2nd entrance to the Extension office. Contact 859/586-6101.

Feb. 3-5 - 16th Annual Midwest Regional Grape and Wine Conference, Marriot's TanTar-A Resort, Osage Beach, MO. The Conference will begin on Saturday the 3rd with a Pre-conference Symposium. The Marketing Session will be held on Sunday the 4th and the Viticulture and Enology Sessions will be on Monday. Contact Denise Kottwitz or Jim Anderson 800/392-WINE.

Feb. 6-9 - Southern Illinois Tree Fruit Meetings:

Feb. 6, Marion County, Centralia Elks Lodge, contact 618/548-1446; Feb. 7, Union County, Cobden, St Joseph Parish Hall, contact 618/833-6363; Feb. 8, Calhoun County, Hardin KC Hall, contact 618/576-2293.

Feb. 9 - Northern Piedmont Specialty Crops

School, Ramada Inn, Exit #204 off I-85, Oxford, NC. Presentations will include specialty pepper, heirloom tomato, eggplant, greens, basil Chinese cabbage, strawberry, and sweet corn marketing, raspberry and blackberry production and a variety update, the basics of trickle irrigation and fertigation, and asparagus varieties Contact Carl Cantaluppi 919/603-1350, e-mail carl_cantaluppi@ncsu.edu

Mar. 6-7 - Illinois Small Fruit and Strawberry

Schools, Holiday Inn, Mt. Vernon, IL. Blackberries, blueberries and raspberries will be featured on March 6, while March 7 will be devoted to strawberry plasticulture and matted row production. Contact Jeff Kindhart 618/695-2444.

Controlling Codling Moth: Changing Times

Ric Bessin, Extension Entomologist

Control of codling moth is changing. The use of organophosphate insecticides on apples has received considerable attention because of the Food Quality Protection Act of 1996. Because of this, Lorsban applications have been restricted to prebloom only and new restrictions have been placed on Guthion. Another organophosphate insecticide that is used for codling moth control in apples and pears is Imidan. In the past, a grower would wait until 250 degree days after biofix to apply one of these organophosphate insecticides. Danitol

2.4 EC is also available to be applied at this time (See KPN 874), but it is a pyrethroid insecticide.

Two new insect growth regulators are now available for control of codling moth on apples and pears. These are Confirm 2F and Intrepid 2F which are produced by Rohm and Haas. Both of these products are classified as General Use insecticides, have a four hour reentry interval, and a 14 day preharvest interval. They are effective against lepidopterous larvae by causing them to molt prematurely. Spray timing of Confirm and Intrepid is much different than that of Guthion, Imidan or Danitol. These products are applied at 100 to 200 degree days after biofix. A second application is then applied 10 to 15 days following the first. This may be 4 to 10 days before the 250 degree day application date. Precise timing for these newer, selective products is much more important than with the earlier broad-spectrum sprays. It will be necessary for growers to use these products in combination with pheromone trapping in order to monitor codling moth adult activity and time applications properly.

Another newly registered insect growth regulator for codling moth control in apples and pears is Esteem. This is for first generation control only. This product also has a different timing of its application and is discussed in the following article.

San Jose Scale Control on Apples

Ric Bessin, Extension Entomologist

In the past, apple and pear growers had used Lorsban 50W to control San Jose scale crawlers either in the last week of May or the first week of June. But new restrictions on Lorsban now limit its use to before bloom applications only. That has left us with only diazinon for scale control during the season. To compound this, San Jose scale problems have been increasing in commercial orchards the past few years.

A new product, called Esteem 0.86 EC, has recently been registered for San Jose scale control in apples and pears. It also controls aphids and first generation codling moth. The active ingredient is pyriproxyfen and it acts as a selective insect growth regulator. It bears the 'CAUTION' signal word and is classified as a General Use Pesticide. It has a 12 hour reentry interval, 45 day preharvest interval, a limit of 2 applications per season, and a minimum of 14 days between applications.

For San Jose scale control, it can be applied as a delayed dormant application or during the season when scale crawlers are active. Because it is an insect growth regulator, it does not control the adult stage. The delayed dormant application can be applied in oil and oils can be applied until about the half inch green stage. Applied at this time it will also help to control aphids. During the growing season it should be applied when crawlers are active and control can be improved if mixed with oil. However, growers are cautioned to use oils carefully during this period to avoid crop injury. Esteem can also be used to control first generation codling moth, but

timing for this application is much different than what we have done in the past. Esteem should be applied 100 degree days after biofix. Biofix is the date when the fifth codling moth is captured in a pheromone trap. Other insecticides for codling moth control, such as Guthion, Imidan, and Danitol, are applied 250 degree days after biofix.

Solutions for Minor-Use Crops

William Nesmith, Extension Plant Pathologist

This is the time of year when we can learn where government monies are spent and how they impact our society. As Kentucky's Liaison to one of our national agricultural programs, I would like to review what it is doing. That program is officially named: Interregional Research Project Number Four (IR-4), the National Agricultural Program to Clear Pesticides and Biological Pest Control Agents for Minor Uses.

The IR-4 program has been in existence since 1963 to help provide the registration of safe pest control solutions to growers of minor crops. Minor crops include fruits, vegetables, nuts, herbs, nursery plants, and ornamentals (floral, tree, and turf crops). Minor crops make up about 40% of the total crop value at the farm gate in the US. Minor crops are important to our state and regional agricultural economy. Moreover, these crops are very important in our diets and living environments, and the American consumer demands high quality with them.

To meet these high quality standards, pest control is a major factor in the production of most minor crops. Pesticides are a key tool in their pest management. However, because many of these crops are eaten directly or handled directly by the consumer, pesticide use must be very carefully considered. Despite the high value of minor crops, the acreage planted of any particular crop is low when compared to the major crops, so the market size for any particular use is usually small. Testing costs are high and there are high liability risks for crop injury. Consequently, there is frequently insufficient financial incentive, for the agrochemical industry to invest in the registration of pesticides for use with these minor crops. Bottom line, the manufacturer of the pest control agent is unable to label the product.

Help with this problem, comes from one of our federal programs, administered through the USDA. The IR-4 program is a cooperative effort between the USDA, the Land Grant Universities, EPA, the agrochemical industry, grower groups, food processors, and consumers. Without this program, it is anticipated that the American consumer and the overseas markets would face higher prices, lower quality, and lower quantities of minor crops. Most pesticides registered for use on minor crops in recent years have come through this program. In the last two years, this program has resulted in about 800 registrations, with over half involving "reduced-risk pesticides as replacement for

other control options. Kentucky's growers are using those products, as are growers nationally. Without the IR-4 program, the consequences would likely have been that most of these products would not have been labeled. Also, higher production costs for these minor crops would probably have resulted, along with lower quality and quantity, which would also mean higher consumer costs for fruits and vegetables. This would directly impact the competitiveness of US producers, local and overseas markets. Moreover, it would probably impact local consumption of minor crops, at a time when health experts are urging us to increase the amount of fruits and vegetables in our diets.

Apple Health Benefits, Why Aren't We Promoting These?

USA Weekend online, An Apple A Day, Nov. 18, 2000, Jean Carper

The latest research indicates that apple consumption improves lung function, reduces the chances of heart attack and stroke, and lessens the chances of contracting certain cancers. A British study has shown that men who ate five or more apples per week had almost a four fold increase in their breathing capacity and lung function as compared to those who did not eat apples. It is thought that antioxidants in apples protect the lungs from irritants and pollutants in the air, including cigarette smoke. Apples are a rich source of antioxidants. One class of these antioxidants, pyrocyanidins are found at very high levels in apples. They are particularly concentrated in the peel. In fact a single Red Delicious apple contains an average of 208 milligrams of procyanidins compared with 22 mg in 3.5 ounces of red wine and 165 mg in 1.3 ounces of chocolate according to Harold Schmitz, University of California, Davis.

A University of Hawaii study has shown that high apple consumption cut the risk of lung cancer by 40% and a Finnish study of 1,000 men and women showed that the risk of lung cancer was cut by 60%. Finns that consumed the highest amounts of antioxidants or flavonoids, which are concentrated in apples were 20% less likely to develop any type of cancer. It is thought that these antioxidants inhibit enzymes that activate carcinogens.

Studies at Finland's National Public Health Institute over a 28 year period indicate that individuals who ate the most apples were least likely to develop a blood-clot type stroke. Eating half an apple or more a day cut the risk of thrombotic stroke by about 40%.

Dr. Paul Knekt at Finland's National Public Health Institute has shown that women that eat the most apples are 43% less likely to die of heart disease than those that eat the lowest number of apples. Apple fiber lowers the level of bad LDL cholesterol. Apple antioxidants help vascular function and are similar to aspirin in that they have anticoagulant activity.

New Crop Opportunities Center

Brent Rowell, Extension Vegetable Specialist

The New Crop Opportunities Center was established in July 2000 at the University of Kentucky. The Center offers Kentucky farmers production and marketing information on new crops and value-added versions of current crops. The center coordinates multi-disciplinary teams of faculty, staff and students to research and set guidelines for producing and marketing selected crops at a profit. It also provides tools for county Extension agents to help farmers make decisions about alternative crops, and maintains a Web site offering new crop information 24 hours a day. Visit the Center's Web site at <http://www.uky.edu/Ag/NewCrops>, or e-mail your questions to newcrops@ca.uky.edu

Peach Tree Production by Tennessee Nurseries

David Lockwood, University of Tennessee

Peach tree propagation has a long history in Tennessee nurseries. Currently, most peach trees from Tennessee are propagated by three nurseries: Cumberland Valley, Hollydale and Vaughn. Approximately 98 to 99% of these trees are June-budded as opposed to dormant-budded. The advantage of June-budding is the ability to grow from seed to digging in about 13 months as opposed to 25 months for dormant-budded trees. Tennessee is at the northern extreme for June-budding.

The sequence of operations involved in **June-budding** follows the timetable outlined below:

- ▶ early September – fumigate
- ▶ October – plant seed for the rootstock
- ▶ March – seeds germinate
- ▶ early June – bud seedlings
- ▶ 9 to 14 days following budding – force bud by cutting the top out of seedlings, begin spray program
- ▶ several times throughout the duration of the summer – stump sucker trees
- ▶ after Thanksgiving – dig trees after most of the leaves have fallen, grade trees
- ▶ 1st week of December until about April 1 – ship trees

Dormant budding involves the following timetable:

- ▶ early September – fumigate
- ▶ October – plant seed for the rootstock
- ▶ March – seeds germinate
- ▶ August to early September – bud seedlings
- ▶ late winter to early spring – cut off seedling just

- ▶ above the bud to force bud growth
- ▶ summer – spray and stump sucker trees
- ▶ after Thanksgiving – dig and grade trees
- ▶ 1st week of December until about April 1 – ship trees

Budwood Collection

About 80% of the budwood comes from grower orchards. Many peach growers specify that the buds must come from their orchards. Tennessee nurseries go to Arkansas, South Carolina, North Carolina, Alabama and Georgia. Some growers in other states (Texas, Louisiana, Missouri) send budwood to nurseries.

Approximately 20% of the buds come from USDA (Byron) and university stations in Alabama, North Carolina and South Carolina. Some buds are sent to the nurseries by universities.

When budsticks are collected, their bases are immersed in water immediately. Budsticks are transported in air conditioned vans. Most budsticks are taken back to the nursery within 2 days of collection. If possible, budsticks are stored in coolers overnight. One individual from a nursery oversees budwood collection.

At the nurseries, budsticks are put in coolers held at 28°F to 40°F. By keeping foliage wet, budsticks may be held up to 2 weeks in the cooler. Prior to the actual budding operation, leaves are removed from the budsticks.

Tennessee nurseries ship peach trees to about 46 states and Puerto Rico. They also sell a portion of their production to other nurseries.

Peach tree production is a costly venture and is subject to many environmental stresses that can impact seed germination, seedling growth, bud take and tree growth. The following outlines some of the costs and factors that nurseries face:

- Methyl bromide/chloropicrin fumigation runs \$1,250 or more per acre
- Seed Cost
 - Guardian – \$0.15/seed
 - certified Lovell – \$0.07/seed
 - Nemaguard – \$0.05/seed
 - Halford – \$350/ton (about \$0.002/seed)

At a planting rate of about 60,000 seed per acre, seed cost for 1 acre will range from \$120 to \$9,000 per acre. Germination rate varies. A few years ago, Guardian may have had a 35% germination rate. Lately, it is much improved and may be in the 60 to 70% range. Other losses may result from poor bud take or poor tree growth. Nurseries often have an investment of \$12,000 to \$15,000 to fumigate the ground, plant the seeds and bud one acre of trees on Guardian rootstock. Add to that the cost of spraying, stump suckering, digging, grading, packing and shipping. With peach, it may be possible to sell about 60% of the number of seed planted as finished trees.

Deer Fencing

Illinois Fruit and Vegetable News, Vol. 6, No. 25

It's the time of year when deer depredation becomes a serious problem for many perennial fruit crop growers. Numerous methods of protecting crops are employed by Illinois growers, including frightening, taste and/or smell repellants, population control through hunting, and exclusion. Each method has both good and bad aspects and often successful programs involve a combination of methods. The problem with frightening is that the devices may lose effectiveness in a short period of time. For example, if scarecrows are to be effectively employed, it requires that they be frequently repositioned in the field. Other scare devices such as propane cannons and shell crackers are very effective when they are first put into use, but deer frequently become accustomed to them, and although the deer may leave the area during the discharge, they soon decrease the distance that they travel from the field and return more quickly to the field as usage of such devices continues. Taste and smell repellants vary from highly to poorly effective and often require frequent re-application to maintain their effectiveness. In many cases these treatments can also be quite expensive. For many growers trying to protect small acreages (5 - 20), perhaps exclusion is the best method of control. Exclusion typically involves

the use of a high tensile, electrified fence. Fence heights may range from 6.5' to over 10'. Be confident that even at 10' some deer will still be able to jump over the fence, but seldom do they continue to cause damage as was the case prior to fencing. For animals that do develop the habit of jumping these fences and continue to cause crop damage, removal permits may be available through the Department of Fish and Wildlife or they may be controlled during the regular hunting seasons. The cost to fence an acre varies depending on height of the fence and the total number of strands that will be used. Material costs for fencing a 10 acre field with high tensile fence are given in the table below.

The following is a listing of materials to fence a square or rectangular 10 acre plot. It is figured with 5 corner posts allowing for 1 gate (gate price not included). The prices are based on 40-foot line post spacing. If the ground is extremely rolling more posts may be required.

These prices are from three different vendors. The treated 6"x 6" prices are from Robbs Lumber in Simpson, IL 618/695-3330. The t-posts are from Buchheits in Sparta, IL 618/443-2455. All other materials are from Rudy's Farm Center in Kevil, KY 270/460-3156.

Materials needed to fence a square or rectangular 10 acre plot.				
	6 foot fence		8 foot fence	
Item	Quantity	Cost (\$)	Quantity	Cost (\$)
T-post	64(8')	189.44	64(10')	318.08
Treated 6"x6"	5 (10')	126.00	5 (12')	151.20
In-line tightener	17	35.70	19	39.90
Tightener Handle	1	5.50	1	5.50
Pin-Lock Insulator	11 (bag of 25)	88.00	11 (bag of 25)	88.00
Corner Insulator	2 (bag of 10)	16.60	2 (bag of 10)	16.60
Earth Anchors	5	23.75	5	23.75
6" round post – 8'	16	192.00	16	192.00
Energizer	1	79.00	1	79.00
High Tensile Wire (4000')	4	240.00	5	300.00
TOTAL		\$995.99		\$1214.03

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John Strang, Extension Horticulturist

