# Ohio
# Fruit ICM News

Editor: Ted W. Gastier, Extension Educator, Agriculture
Ohio State University Extension, Huron County
180 Milan Avenue, Norwalk, OH 44857 419-668-8219
FAX: (419) 663-4233 E-mail: gastier.1@osu.edu

Volume 9, No. 26 July 14, 2005




## Calendar

**August 3: Grape-Wine Workshop,** Vinoklet Winery, Cincinnati. See following article.

**August 10: Grape-Wine Workshop,** Firelands Winery, Sandusky. See following article.

**August 24: Grape-Wine Workshop,** Raven's Glenn Winery, West Layfayette. See following article.

**September 20-22: Farm Science Review,** Molly Caren Agricultural Center, London, OH. Details at: <http://fsr.osu.edu>

**November 15: Ohio Ag and Hort Human Resource Managers' Forum,** Hilliard, OH, 10:00 AM-2:30 PM. Registration and fee requested by November 8. Contact Mid American Ag and Hort Services at 614-246-8286, maahs@ofbf.org or visit <www.midamservices.org>and click on 'Events' for registration form and details.

## Grape-Wine Workshops

*Source: Imed Dami, OARDC Viticulturist*

The Grape-Wine Program at the Department of Horticulture and Crop Science at OARDC is offering a series of workshops. Topics will include current situations in vineyards and questions regarding grape growing and wine making in Ohio. Imed Dami, Viticulturist, Dave Scurlock, Viticulture Assistant, and Todd Steiner, Extension Enologist will be present to answer your questions. We encourage you to attend and bring your questions with you regarding your vineyard/winery operations. Also, take this opportunity to visit commercial vineyards and wineries and interact with the winemakers. For your convenience, you can choose the location closest to you to attend. We look forward to seeing you there.

**What:**

Question and answer session
Vineyard tour and current practices
Winery tour

**Where:**

1st session: Vinoklet Winery
2nd session: Firelands Winery
3rd session: Raven's Glenn Winery

**When:**

1st session: August 03, 2005, 10am – 1pm
2nd session: August 10, 2005, 10am – 1pm
3rd session: August 24, 2005, 10am – 1pm

**Cost:** Free, with lunch on your own

Steiner.4@osu.edu.

## Drought Effects on Apple Trees

*Source: Dr. Diane Miller, Ohio State University Department of Horticulture and Crop Science, reprinted from Ohio Fruit ICM News, Volume 3, Issue 27, July 30, 1999*

Over the growing season, for adequate tree growth, flower bud formation, and fruit quality, apple trees need roughly 1-1.5 inches of rain per week. Most areas of the state are way below this for the 1999 season. Obviously, a deluge of rain in September won't make up for dry conditions encountered in July.

Elena Garcia of the University of Vermont put together a nice, general overview of apple trees and water relations (http://orchard.uvm.edu/uvmapple/newsletter/1999/VAN072399/index.html) and some of that information is presented in the next paragraphs.

Then I will deal with some specific effects of drought that Ohio fruit growers are likely to have to deal with. ". . . Even though fruit trees are made up of mostly water (table 1), only about 0.15 acre inches of water is harvested in the crop. About 95-99% of the water taken up by a fruit tree is lost to the atmosphere through transpiration.

Table 1. Loss of water by transpiration

| | |
|---|---|
| Leaves | 25-50 % |
| Shoots & wood | 10-20% |
| Roots | 20-30% |
| Fruit | 80-85% |
| A mature tree | 85-87% |

Transpiration, the loss of water from the leaf tissue into the atmosphere, has two important functions in the plant. First, the cells in the leaves are cooled because water is being evaporated. This maintains the cells at an optimum temperature for metabolic processes such as photosynthesis to take place. If transpiration is limited due to water stress in the plant, photosynthesis will be limited and reductions in plant growth, fruit quality, and yield will result. Secondly, since water is moving from the roots to the different parts of the plant, this movement facilitates the passive movement of important minerals and dissolved chemicals throughout the plant. Nutrient deficiencies are likely to be present under water stress situations.

During the winter months, apple trees use very little water. Water absorption from the soil by roots increases as leaf surface of the plant increases in the spring and most of the water comes from the upper soil layer which is warmer and has greater feeder root penetration. The "potential" water available to the plant depends on the root volume and the soil water holding capacity.

The roots of deciduous trees such as apples are usually extensive and have been found at depths of six feet. In sandy soil, roots have been found to extend laterally two to three times the branch spread and 1.5 times in loam or clay soils. When roots are deep and extend well laterally and there is a good supply of winter precipitation, there is usually no need for irrigation. However, where rooting is shallow, such as the root systems of growth-controlling rootstocks of high-density plantings, the need for irrigation will be higher than for standard, low-density plantings. Today many orchards, particularly those with the shallow-rooted dwarf trees, provide some means of water application to protect the trees from water stress.

The ability of the soil to retain water is called the water-holding capacity, and this capacity to hold water varies with the different textures of the soil. Table 2 shows the relationship of soil type to its water holding capacity and the moisture available to the plant.

Table 2. The relationship of soil type to water holding capacity & moisture availability to plants

| | Water Content | | |
|---|---|---|---|
| Soil Type | % At Field Capacity | % At Permanent Wilting | % Available Water |
| Sandy Loam | 12 | 4 | 8 |
| Loam | 24 | 12 | 12 |
| Adobe Clay | 38 | 19 | 19 |

During the growing season, the water status with a tree changes from day to day and hour to hour, whereas the soil water changes slowly. Tree water usage increases mainly with increased air temperature, air movement, sunlight intensity, and with lower relative humidity.

Table 3, which appeared in the March issue of Cornell Northeast Tree Fruit Newsletter (K. Lugerman) gives you an indication of how much water is needed when canopy size and evapotranspiration (the total loss of water by evaporation from the soil surface and transpiration from plants from a given area, and during a specified period of time) are considered.

Table 3. Typical water consumption rates per tree per day

| Canopy Diameter (ft) | When evapotranspiration is (in inches per day): | | | | |
|---|---|---|---|---|---|
| | 0.15 | 0.20 | 0.25 | 0.30 | 0.35 |
| | The approximate gallons of water use per tree per day is: | | | | |
| 1 | 0.06 | 0.08 | 0.10 | 0.12 | 0.15 |
| 2 | 0.25 | 0.33 | 0.42 | 0.5 | 0.6 |
| 3 | 0.6 | 0.75 | 1.0 | 1.1 | 1.3 |
| 4 | 1.0 | 1.5 | 1.7 | 2.0 | 2.5 |
| 6 | 2.5 | 3.0 | 4.0 | 4.5 | 5.5 |
| 8 | 4.0 | 5.5 | 7.0 | 8.0 | 9.5 |
| 10 | 6.5 | 8.5 | 10.5 | 12.5 | 14.5 |
| 12 | 9 | 12 | 15 | 18 | 21 |
| 14 | 12 | 16 | 20 | 24 | 28 |
| 16 | 16 | 21 | 27 | 32 | 37 |
| 18 | 20 | 27 | 37 | 40 | 47 |
| 20 | 25 | 33 | 42 | 50 | 58 |
| 22 | 30 | 40 | 50 | 60 | 70 |
| 24 | 36 | 48 | 60 | 72 | 84 |
| Assumptions: Crop factor = 0.85; Evapotranspiration = 80% of Pan Evaporation | | | | | |

**Stomata Activity**

Stomata are pores on the leaf epidermis through which gas exchange (carbon dioxide, oxygen and water vapor) takes place. Since these gases are involved in respiration, photosynthesis, and transpiration, the opening and closing of the stomata regulate these processes in the plant. Stomata are open less wide and for a shorter duration on trees (a) in dry soils vs. those in moist soils and (b) on plants during high temperatures and low relative humidity vs. those on a cool, humid day. When dryness is severe, stomata may not open at all to prevent water loss from the leaves. When stomata are less active or closed due to drought, both photosynthesis and transpiration are reduced as much as 40% before the leaves show any wilting and over 90% at wilting. When the stomata are closed, food and energy loss by respiration are increased.

**Vegetative Growth and Water**

If there is not adequate stored soil moisture early in the season, a drought at this time will result in reduced shoot length and leaf size. However, if there is sufficient soil moisture early in the season followed by a late season drought, shoot growth may be as good in a non-irrigated tree as in an irrigated one because shoot growth is completed within six weeks after growth began. Trunk diameter may be reduced by a mid or late summer drought.

**Nutrient Supply**

When less water is available to carry the nutrients from the soil particles into the tree, nutrient deficiencies are aggravated. Uptake of water soluble nutrients, such as nitrogen, boron, magnesium, or potassium is most affected.

**Fruiting**

Reproductive growth is usually more sensitive to water stress than vegetative growth. Because flower bud initiation and differentiation is a photosynthate requiring process, water stress occurring during mid-summer and fall may result in decreased cropping the following year. In Washington state, severely drought stressed trees failed to bloom, and if they bloomed, the flowers had many abnormalities. Fruit set is also sensitive to water stress. In a study conducted in England on Cox's Orange Pippin, fruit set was reduced 65% for trees receiving no rain or irrigation from March to June.

**Fruit Growth**

Under adequate moisture conditions, apple fruit growth occurs at an almost linear rate during the entire season. During the first three to five weeks after bloom, fruit increases in size due to cell division, with some cell expansion beginning at this time. The growth of the fruit 25-30 days after petal fall is mostly due to cell expansion. This cell expansion is highly dependent upon an adequate supply of moisture which provides weight and diameter increases of the fruit; one of the first responses to water deficit by an apple tree is that fruit growth slows down. As a matter of fact, fruit circumference growth is used as a sensitive and practical measurement of water stress in the tree. Water stress during any time of the season may impair the ability of the fruit to increase in size.

**Fruit Cracking**

Fruit cracking may result after water is supplied by rain or by irrigation following an extended dry period.

**Pre-Harvest Drop**

Apple drop just before harvest is common on trees affected by water stress. The effectiveness of "stop-drop" sprays such as NAA is reduced.

**Yield and Quality**

Any tree subjected to water stress can be expected to have reduced yield and poorer fruit quality. Table 4 shows the effect of apple quality for varying periods of drought before harvest.

Table 4. Effect of apple quality of varying periods of drought before harvest
From: Tree Fruit Irrigation. Proceedings of the Washington State University Irrigation Management Shortcourse

| | Date of Last Irrigation | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | None | 5/29 | 6/15 | 7/13 | 7/27 | 8/10 | 8/24 | 9/7 |
| Weight/fruit (lb) | 0.16 | 0.28 | 0.35 | 0.41 | 0.38 | 0.38 | 0.42 | 0.38 |
| Sol. Solids (%) | 19.5 | 16.8 | 13.6 | 12.5 | 12.6 | 11.8 | 12.2 | 11.5 |
| Firmness (lb) | 23.5 | 21.5 | 21.0 | 20.5 | 20.5 | 21.5 | 20.0 | 20.5 |
| Water Content (%) | 74 | 76 | 81 | 81 | 82 | 82 | 82 | 82 |
| Starch (rating) | 2.7 | 2.8 | 2.4 | 2.2 | 2.2 | 2.2 | 2.4 | 2.0 |

Now, let's consider some additional specific problems:

**Calcium-Deficiency Physiological Disorders**

Corking is worse in apples under conditions of moisture stress. Leaf injury may occur from calcium chloride sprays during hot, dry summers. When injury is noticed, reduce calcium chloride to one-half the rate in the next spray or delete calcium chloride from the cover sprays until one-half inch of rain has fallen.

**Sunburn**

Sunburn occurs when fruit is exposed to direct solar radiation. Green and yellow cultivars are particularly susceptible, but even red cultivars may sunscald on hot, sunny days. If the injury is mild, the flesh itself may not be damaged, but longer exposure can result in severe injury to both skin and flesh, with sunken areas and dead tissue extending a centimeter or more into the fruit. As limbs bend under the weight of the growing fruit, the fruit in the interior becomes exposed and susceptible to injury.

## New Viticulture Book from OSU

*Source: Imed Dami, Viticulturist OARDC*

Contemplating establishing a commercial vineyard in the Midwest and can't find information for your unique growing conditions? Or wanting to expand your existing vineyard operation and looking for new research information on varieties and innovative cultural practices? Whether you are a novice or a seasoned grower, this guide will suit your needs and answer most of your questions regarding growing grapes in the Midwest.

This is the only comprehensive guide available in the Midwest covering all aspects of wine and table grape production in colder regions of the US including the Midwest and Northeast. It describes the physiology of the grapevine; site and variety selection; vineyard establishment; cultural practices including pruning, training, canopy management, soil management, and fertilization; disease and pest management including weeds, insects, and wildlife; and harvesting and marketing.

In this volume you will find a discussion of:

- Recommendations on new table and wine cultivars that performed well in the Midwest
- Special cultural practices for winter protection of cold tender cultivars
- New developments in establishing a new vineyard
- Step-by-step descriptions of pruning and training young and mature vines
- Improving fruit quality or fixing production or vigor problems using canopy management
- Innovative training systems (with illustrations) that increase yield and enhance quality
- The most comprehensive information currently available in the region on Integrated Pest Management (biology, identification, and management)
- Improved methods for vineyard floor management and fertilization

Over 30 years of research and over 100 years of combined experience and expertise from specialists at the Ohio State University and Purdue University, plus industry and grower experience and innovation are brought together in this production guide, sure to be an invaluable resource for the grape grower.

This 155-page guide is generously illustrated with 114 colored photographs and drawings, 18 tables, and a pullout centerfold illustrating step-by-step vine training and common training systems. A detailed appendix outlines additional viticulture resources and a glossary of common terms. Copies of this guide may be purchased from:

Media Distribution, Communications and Technology The Ohio State University
385 Kottman Hall
2021 Coffey Road
Columbus, OH 43210-1044.

Phone: 614-292-1607. Fax: 614-292-1248. E-mail: pubs@ag.osu.edu. Visa and MasterCard accepted.

## Grape Canopy Management Reminders

*Source: David Scurlock, OARDC Viticulture Assistant*

**Suckering**

Suckering is the process where unwanted shoots are removed from the trunk up to the fruiting zone of the vine. It is necessary to remove these shoots so that the vines' energies are not spent in an area of the vine that is not contributing in a positive way to the vine health or the ripening process of the fruit. This process of suckering should already be completed by now, and only the suckers that you kept for replacement trunks should remain. These replacement parts should be tied up so they will grow straight and not be mowed over or herbicided so they will be viable if needed next spring. One to two shoots are usually enough for a vine where you think a replacement trunk will be needed.

**Tucking**

Tuckering is generally used where you are growing your vines in a vertically shoot-positioned system, such as the **Low Bi-lateral cordon, Guyot, Scott Henry, Smart Dyson,** or **Pendlebogan**. This is an ongoing process throughout the growing season that allows the canopy to remain narrow and upright, exposing the leaves and fruit to the sunlight and spray material to reduce rot. The shoots are first tucked between the catch wires when they are around 10 inches long and every subsequent 10 inches of growth thereafter, until the shoots grow above the trellis height and are then hedged. The shoots are held in place with sets of catch wires that can be either fixed or moveable. Moveable catch wires offer the convenience of being able to drop them at pruning time to lessen the problem of pruning around all of the wires.

**Plucking**

Pluckering, or removal of one or two leaves around the fruit, from fruit set to veraison increases exposure of the cluster to sunlight and allows better spray penetration on the fruit and shorter drying time to help prevent fruit rots. Work that has been done at OARDC has shown the benefits of increased soluble solids and the reduction of fruit rots from leaf pulling or plucking. The leaves are generally removed so that 60% of the fruit is visible on the shaded side of the vine or, for instance, the east side of the vine that is planted to north-south rows.

Leaf plucking after fruit set allows the grape berries to acclimate to the sunlight better than exposing the fruit on or after veraison, when the sun is more intense and subjecting the berries more to sunburning. **Shoot Positioning**

Shoot positioning is the combing or separating of the shoots on a vine that is trained to a **Single Curtain** or **Geneva Double Curtain** training system. This process is usually done at the end of June and repeated at the end of July. The operation can be performed either manually or mechanically. The mechanical method uses brushes mounted on a tractor that physically separates the shoots and positions them downward. In manual positioning, the shoots are separated and forced to hang downward. It is important to allow the top of the cordon to be exposed to the sunlight to ripen and color the fruit and ripen the spurs for next year's crop. The other benefits of shoot positioning: better air penetration into the canopy to promote drying and lessen fruit rot, ease of harvesting if hand-picked, and ease of pruning if hand-pruned.

## Post-Harvest Treatments for Stone Fruit

*Source: Annemiek Schilder and George Sundin, MSUE Plant Pathology, Fruit Crop Advisory Team Alert, Volume 20, No. 13, July 12, 2005*

Fungi (molds) are the predominant organisms that cause storage rot of fruit crops. They often come in on the fruit from the field, after which they can grow, sporulate, and spread through batches of stored fruit. Examples of these are *Monilinia fructicola* (brown rot) and *Botrytis cinerea* (gray mold). Yeasts may also rot fruit in storage, and tend to be more common where there is excessive moisture. Storage bins and areas may also become contaminated with mold spores. *Penicillium, Aspergillus,* and *Rhizopus* are fungi which occur in the field, but whose airborne spores easily contaminate storage areas.

As part of an integrated approach, a good disease control program during the season and timely harvesting will suppress fruit rot before harvest. Fungicide applications close to harvest will also reduce post-harvest rot. Several fungicides can be applied up to the day of harvest, e.g., Indar and Orbit, which are very effective against brown rot, and Elevate, which is effective against brown rot and gray mold.

Cold storage and controlled-atmosphere storage will slow the growth of fungi and yeasts. Sorting out bad fruit and sanitation of sorting and storage areas can eliminate sources of infection. In addition, post-harvest treatments may be applied to fruit to delay or prevent rotting organisms from consuming the fruit in storage.

There are only a few post-harvest chemical options for stone fruit. However, efficacy data are too sparse to make specific recommendations for Michigan growers, so we will just list them for your information:

- Scholar (fludioxonil) is a reduced-risk fungicide labeled for post-harvest treatment of stone fruit for protection against brown rot, Botrytis gray mold, Rhizopus rot and Gilbertella rot. It can be applied as a spray or dip. Only one application may be made. Treated fruit should not be stored in direct sunlight as this may degrade the chemical.

- Captan (captan) is a broad-spectrum protectant fungicide that can be applied as a post-harvest dip or spray for control of various storage rots (e.g. Botrytis, Rhizopus). May leave visible residue on fruit.

- Rovral (iprodione) is no longer labeled for post-harvest use.

## Prevention of Pre- and Post-Harvest Fruit Rots in Blueberries

*Source: Annemiek Schilder, MSUE Plant Pathology Fruit Crop Advisory Team Alert, Volume 20, No. 13, July 12, 2005*

As harvest is upon us, take note of the pre-harvest interval (PHI) for the various fungicides. Most fungicides that you would use at this time of the year have a 0-day PHI, but Topsin M has a 7-day PHI. Blueberries may benefit from applications of fungicides for fruit rot control close to the first harvest and even between harvests, since anthracnose rot incidence can increase greatly at the later harvests.

The main diseases of concern at this time of the year are fruit rots, such as anthracnose (orange wet spore blobs) and Alternaria fruit rot (green velvety layer of spores). Botrytis fruit rot (gray mold) is usually not a problem in Michigan, but can occur, especially in wet years. Anthracnose is often a problem in cultivars such as Bluecrop, Jersey, and Rubel, while Alternaria fruit rot is more common in Bluecrop. Elliott is moderately resistant to anthracnose.

While fruit rot is usually not visible until the berries ripen, it is prudent to assume you will have a fruit rot problem if you had problems last year. If the first blueberries are starting to show rot, fungicide sprays can limit new infections of neighboring healthy berries. Often, these berries look healthy at harvest, but start to rot soon after in the lugs while awaiting processing. Rot may be slowed down by refrigerated storage, but will resume on the supermarket shelves, lowering fruit quality. Applications close to the first harvest or between harvests can still be beneficial in preventing these late infections. In fact, an application between the first and second harvest may be recommended as well under high disease pressure.

The strobilurins (Abound, Cabrio, Pristine) are all highly effective against anthracnose, with Pristine having the most broad-spectrum activity, since it contains two different active ingredients. However, it probably is also the most expensive of the three. Pristine will also have excellent activity against Phomopsis, while Cabrio has good and Abound fair activity against this disease. All have moderate to good activity against Alternaria fruit rot and become quickly rainfast, since they are locally systemic.

Switch (cyprodinil and fludioxonil) also has some systemic properties and provides simultaneous control of anthracnose, Alternaria, and Botrytis fruit rots. Thus it may be a good choice if several fruit rots are a concern, e.g., in 'Bluecrop.' Aliette (fosetyl-Al) is a highly systemic fungicide that provides good control of anthracnose, Alternaria fruit rot, and Phomopsis. Of course, Topsin plus Captan can still be used, provided the 7-day PHI of Topsin is taken into consideration. While Topsin is very active against Phomopsis, Captan will do most of the work against anthracnose. Therefore, if anthracnose is the disease you wish to control, a Captan or Captec spray alone may suffice. Just remember that Captan is a protectant that can be washed off in heavy rain. As such, it also does not provide any post-infection activity.

## Scarf Skin on Apples

*Source: Dr. Dave Rosenberger, Plant Pathology, Highland, Cornell University, Scaffolds Fruit Journal* <http://www.nysaes.cornell.edu/ent/scaffolds/> *reprinted from Ohio ICM News, Volume 3, Issue 17, May 20, 1999*

The dry conditions that prevail in parts of New York State (and Ohio) could make this a bad year for scarf skin and other fruit finish disorders. Fruit finish problems often are more severe in drought years, because apple fruit growth becomes a stop-and-go process. Slow growth during dry spells is often followed by very rapid fruit expansion when rains finally arrive. The rapid fruit growth following drought can contribute to scarf skin and split lenticels. Some fungicides can make the problems worse.

Scarf skin is a fruit finish disorder that makes the waxy surface of fruit appear milky or cloudy. Researchers in the Cumberland-Shenandoah region have also referred to this disorder as "opalescence". The disorder is particularly severe on Gala, Stayman, and Law Rome, but it can appear on nearly all cultivars in severe years. Scarf skin does not affect the internal quality of the fruit, but this disorder is important in a marketplace that places great emphasis on the physical appearance of fruit.

A description of the disorder and the origin of the term "scarf skin" dates back to the 1905 publication of *The Apples of New York* by Beach et al. They described scarf skin as "a dull or clouded appearance to the red skin as in 'Sweet Winesap' or 'Black Gilliflower'." Researchers have since shown that the disorder occurs when the epidermis and cuticle separate from the underlying tissue. The resulting air space beneath the waxy fruit surface disrupts light transmission and produces the milky or cloudy appearance. Unfortunately, we still do not understand what causes scarf skin to develop. Various researchers have noted that scarf skin is consistently more severe in some orchard blocks than in others. We also know that some cultivars are more susceptible than others and that the problem is more severe in some seasons than in others.

Scarf skin was studied by Dr. David Ferree, Dr. Mike Ellis, and coworkers in Ohio in the early 1980's. By bagging Rome Beauty fruit clusters in polyethylene bags at various times beginning at Petal Fall, they were able to demonstrate that scarf skin is initiated between Petal Fall and 60 days after Petal Fall. Fruit bagged for 60 days had no scarf skin. The greatest amount of scarf skin was initiated close to Petal Fall, and the severity of scarf skin from later exposures decreased gradually. Fruit protected for 40 days showed very little scarf skin. Severity of scarf skin was not affected by applications of Solubor, calcium chloride, or dimethoate, but it was reduced by applications of giberellic acid (GA 4+7).

Ferree et al. also showed that scarf skin was more severe on trees receiving a seasonal program of Benlate or Dikar fungicides than on trees sprayed with Polyram, dodine, captan, or mancozeb. However, these fungicides do not consistently cause a scarf skin problem. Other researchers have compared various fungicides for their impact on scarf skin and have found that, in some seasons and some orchards, Benlate and Dikar had no deleterious effects. Nevertheless, the work by Ferree and observations that I have made in New York both support the hypothesis that Benlate applied within 40 days of Petal Fall can contribute to development of scarf skin in some years. No other fungicide appears to stimulate scarf skin as frequently or as severely as does Benlate. The effect of Benlate is probably dependent on interactions with environmental, and possibly nutritional, conditions at critical periods in the development of the fruit.

The period of greatest mechanical stress at the surface of rapidly growing apple fruits occurs as fruit reach approximately one inch in diameter, and this period coincides with the period of high susceptibility to both scarf skin and russet. Any factors that contribute to stressing the fruit during this critical period may promote scarf skin development. Various researchers have shown that environmental conditions during the 40 days after bloom are important in determining the amount of scarf skin that will develop, but the exact weather conditions that contribute to scarf skin have not been defined.

Ferree et al. suggest that climatic **changes** that stress fruit during the critical period after Petal Fall may contribute to scarf skin. Thus, a period of cool, rainy weather followed by a hot, sunny, windy day might constitute a stress that could cause the separation in cell layers that results in scarf skin.

An application of Benlate during this critical time might decrease elasticity of the cells on the fruit surface and thereby contribute further to the problem, whereas Benlate applications under other conditions may have no adverse effects.

Given the current state of our knowledge (or lack thereof), we cannot provide recommendations that ensure scarf skin will not appear. We can only suggest that growers concerned about this problem avoid using Benlate during the 40 days after Petal Fall and, if possible, irrigate trees as needed to minimize water stress during this critical period of fruit development.

## The Serviceberry

*Source:* Ohio Trees *by T. Davis Sydnor & William E. Cowen*

I was introduced to a delightful taste sensation while visiting the Burnhams in upper Lower Michigan.
Wild serviceberry shrubs were bearing an abundant crop of delicious fruit.

Serviceberry, also known as Shadbush, Juneberry, and Shadblow, is a small, deciduous tree or shrub. The fruit is 1/3 inch (8 mm) in diameter and ripens in June. The fruit is sweet and edible, and can be substituted for blueberries in most recipes. Birds love them, as do many wild animals. Competition for the fruit is strong, so it is unusual to find a full crop on a tree. This is especially true as birds start eating the berries as soon as they begin to ripen.

It is reported that serviceberry makes an excellent pie. Some people would rank a serviceberry pie in the first order of desserts. Even straight off the tree, the berries were a delicious treat.

## Pest Phenology

| Coming Events | Degree Day Accum. Base 50°F |
|---|---|
| Oriental fruit moth 2nd flight peak | 972-1368 |
| Redbanded leafroller 2nd flight peak | 972-1368 |
| San Jose scale 2nd flight begins | 1000-1294 |
| Dogwood borer flight peak | 1001-1327 |
| Codling moth 2nd flight begins | 1018-1540 |
| American plum borer 2nd flight begins | 1020-1224 |
| Apple maggot 1st oviposition punctures | 1021-1495 |
| Codling moth 2nd flight peak | 1337-1977 |
| Oriental fruit moth 2nd flight subsides | 1379-1771 |
| Apple maggot flight peak | 1458-1770 |
| San Jose scale 2nd flight peak | 1459-1805 |

Revised thanks to *Scaffolds Fruit Journal* (Art Agnello)

## Degree Day Accumulations for Ohio Sites

**July 13, 2005**

| Ohio Location | Degree Day Accumulations Base 50° | |
|---|---|---|
| | Actual | Normal |
| Akron-Canton | 1264 | 1256 |
| Cincinnati | 1668 | 1715 |
| Cleveland | 1306 | 1230 |
| Columbus | 1540 | 1445 |
| Dayton | 1422 | 1597 |
| Kingsville | 1147 | 1118 |
| Mansfield | 1226 | 1240 |
| Norwalk | 1343 | 1225 |
| Piketon | 1559 | 1776 |
| Toledo | 1360 | 1220 |
| Wooster | 1312 | 1164 |
| Youngstown | 1137 | 1129 |

## Fruit Observations and Trap Reports

**Site: Waterman Lab, Columbus**
Dr. Celeste Welty, OSU Extension Entomologist and Gretchen Sutton

| **Apple:** 6/30to 7/6/05 | | |
|---|---|---|
| Redbanded leafroller | 3 | down from 23 |
| Spotted tentiform leafminer | 658 | up from 175 |
| San José scale | 14 | up from 0 |
| Codling moth (3 trap mean) | 3.0 | up from 2.6 |
| Lesser appleworm | 13 | up from 11 |
| Tufted apple budmoth | 2 | up from 0 |
| Variegated leafroller | 0 | same as last week |
| Obliquebanded leafroller | 3 | up from 0 |
| Apple maggot (sum of 3 traps) | .0.3 | up from 0 |

**Site: Holmes, Medina, and Wayne Counties**
Ron Becker, IPM Program Assistant

We are finding more blocks of apples going over threshold for European red mites. Two spotted spider mites are being found as well. Aphids are also going over threshold in several blocks. Trap counts for codling moth have been low for the last three weeks, with most blocks averaging less than one moth per trap. Maggot traps are being put into the orchards this week. Other pests we are seeing on a sporadic basis include white apple leafhopper, spotted tentiform leaf miner and Japanese beetle. The harvest for Transparent apples should start in the next week or so.

Black, red, and purple raspberries and blueberries are now being harvested in our area. Cherry fruit worms have been found in a few of ripe blueberries.

**Site: East District; Erie and Lorain Counties**
Jim Mutchler, IPM Scout/Technician

| **Apple:** 7/5 to 7/12/05 | | |
|---|---|---|
| Codling moth (3 trap mean) | 0.1 | down from 0.2 |
| Oriental fruit moth | 3.3 | up from 1.8 |
| Redbanded leafroller | 4.8 | down from 18.1 |
| San Jose scale | 0.0 | same as last wk |
| Spotted tentiform leafminer | 324 | up from 175 |
| Lesser appleworm | 15.0 | up from 12.0 |

Beneficials found: lacewings, native lady beetles, orange maggots, white maggots, brown lacewings

| **Peach:** 7/5 to 7/12/05 | | |
|---|---|---|
| Redbanded leafroller | 3.3 | down from 20.3 |
| Oriental fruit moth | 0.7 | same as last wk |
| Lesser peachtree borer | 7.7 | up from 6.6 |
| Peachtree borer | 4.3 | up from 0.9 |

Beneficials found: lacewing lavae and eggs, brown lacewings

**Site: West District: Huron, Ottawa, Richland, and Sandusky Counties**
Lowell Kreager, IPM Scout/Technician

| **Apple:** 7/4 to 7/11/05 | | |
|---|---|---|
| Codling moth | 0.1 | same as last week |
| Oriental fruit moth | 0.3 | down from 1.3 |
| Redbanded leafroller | 9.5 | down from 51.9 |
| San Jose scale | 0.0 | same as last week |
| Spotted tentiform leafminer | 208 | down from 509 |
| Lesser appleworm | 12.7 | up from 5.3 |

Beneficials found: lacewings, orange maggots

| **Peach:** 7/4 to 7/11/05 | | |
|---|---|---|
| Redbanded leafroller | 16.0 | down from 49.0 |
| Oriental fruit moth | 4.1 | up from 1.0 |
| Lesser peachtree borer | 3.7 | up from 3.0 |
| Peachtree borer | 0.5 | up from 0.1 |

## New Resources on the Web

Dick Funt and Mark Schmittgen published an evaluation of peach cultivars for the years 1996 through 2003. It is now available on the web at:

<http://newfarm.osu.edu/crops/documents/EvaluationofPeachCultivars1996-2003.doc>

Sandy Kuhn, OSU Berry Coordinator, has developed point of sale flyers for berry consumers. These attractive brochures are intended to help consumers recognize the nutritional value of four popular berries. In addition, consumers are advised as to how to select, prepare, and store the fruit. The back of the brochure features berry recipes.

You can download these flyers from the Web:

Blackberry: <http://newfarm.osu.edu/crops/documents/blackberrybrochure.pdf>

Blueberry: <http://newfarm.osu.edu/crops/documents/blueberrybrochure.pdf>

Raspberry: <http://newfarm.osu.edu/crops/documents/raspberrybrochure.pdf>

Strawberry: <http://newfarm.osu.edu/crops/documents/strawberrybrochure.pdf>