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The Bee Line

NEWSLETTER OF

WESTERN CASCADE FRUIT SOCIETY

A NON-PROFIT EDUCATIONAL ORGANIZATION

Volume 20 Number 2 Spring 1999

ApplesPearsFigsGrapesKiwiCherriesNectarinesPeachesPlumsBlackberriesRaspberriesStrawberriesBlueberriesCurrantsHuckleberriesGooseberriesNuts

OUR PRESIDENT'S MESSAGE

Western Cascade Fruit Society has been invited to join in the Arbor Day program at the Washington State History Museum in Tacoma on April 10. Tahoma Chapter members will represent us with displays and handouts.

We have also been asked to furnish several speakers at the Puyallup Spring Fair. We will have several members at the Master Gardener plant sale, showing our Rare Fruit Garden and helping with the parking. Looks as if WCFS has some great opportunities to educate people.

As WCFS grows the public is becoming more aware of us and we are invited to participate in more functions. This gives us a great opportunity to not only educate people, but to gain strength in our organization by encouraging them to join. After all, look at all the education you get for only $15.00 a year.

All chapters should take advantage of organizations becoming aware of what we do. I would encourage every member to participate as often as possible. This not only helps others, but helps WCFS to grow.

This is the time of year when interest is at it's high, lets take advantage of it. What a great Society we have.

More trees for the Rare Fruit Garden are coming from Dave Wilson Nursery-we are expecting a cold hardy nectarine to test. They are also keeping an eye out for any fruiting plant they think might produce in our area. It appears WCFS is getting recognition in California.

The next Board meeting is 10:00 a.m. May 8 at the Federal Way Regional Library, 34200 1st Way S, Federal Way. I hope all board members will be there as well as chapter presidents. If a chapter president can't be there, please send a representative. Your input is important.

DATES TO REMEMBER
MARK YOUR CALENDAR BE A PART OF IT

April 10	Arbor Day at Washington State History Museum, Tacoma-WCFS will be there
April 16 -18	Puyallup Spring Fair-WCFS will be there
April 24-25	Master Gardener's Plant Sale-Tacoma-WCFS will be there
May 8	**10:00 a.m. WCFS Board Meeting Federal Way Regional Library**
July 10	10:00 a.m. WCFS Board Meeting Federal Way Regional Library
September 11	10:00 a.m. WCFS Board Meeting Federal Way Regional Library
October 30/31	WCFS Fall Fruit Show
November 13	10:00 a.m. WCFS Board Meeting Federal Way Regional Library

WCFS 1999 ANNUAL SPRING MEETING

The day dawned, bright and sunny. How unusual, how nice, surely spring is on the way. What a good day to work in the yard/orchard.

The date was March 6, 1999, Western Cascade Fruit Society's Annual Spring Meeting and Rootstock/Scionwood Sale. One hundred one, yes only 101, attendees signed in, 57 were members. Now there were many members who did not sign in, volunteers who were helping at various positions, and door contributions were $210, so were the mystery 4 members or not?

Of the 43 non member attendees, four joined our organization. We welcome you to WCFS and hope you will benefit from our organization, as WCFS will benefit from your interest.

Many members came and helped out, too many to name for fear of missing someone (or not knowing who they were). You are most appreciated.

At the Annual Meeting two life memberships were presented. One to Bill Davis and one to Leonard Jessen. The text of the presentation is on page 3. WCFS is most fortunate to have these men as members.

It is probably no surprise that the members present voted to increase annual dues to $15, split 60% - 40% WCFS - Chapter. The increase is effective March 1. Our newsletter costs have increased over the years, just last year postage increased 25%, as have printing costs. The dues have not changed in the 20 years since we were chartered. We are now in line with other home orchard organizations who have increased their dues as needed.
It would be appreciated if those of you who have paid your dues at the old rate would remit the additional $5.00.

Officers and board members for the next year are:
President: Ed Jones
Vice President: T.K. Panni
Secretary: Loretta Walker
Treasurer: Evelyn Troughton
Board Members: David Snell, for a second term
Steve Whichter
Larry Rucker

It was good seeing and talking to members I don't see except at this meeting. I talked to the volunteers helping in the scion wood sales. Thought you might be interested in how many varieties of scionwood were donated by members.

Apples	140	Pears	8
Plums	9	Asian Pears	7
Grapes	8	Peach	6
Crab Apples	8	Figs	2

Several of our members offered their excess plants for sale, and donated 10% of the sales to WCFS. Keep this in mind for next year if you have more than you need. The only requirement is to let the Sale Chairman know so space will be provided for you.

We missed those of you who were unable to be there, hope you make it next year.

AS RECORDED ON THE SIGN IN SHEET

It's interesting reading the sign in sheet—attendees were asked what city they live in and how they heard about the Spring Meeting.

Non members came from Lynnwood, Buckley, Puyallup, Sumner, Seattle, Spanaway, Olympia, Edmonds, Sequim, Everett, Langley (Washington? or B.C.?), Tacoma, Gig Harbor, Hoquiam, and Dupont.

They heard about the event from the newspapers, radio, Master Gardeners, the library, nurseries, McLendon's Hardware, e-mail, and our members.

One of our members noted that he heard by rumor! ☺ Humor is much appreciated, but if he isn't getting his newsletter, we need to find out why and remedy the problem.

We extend our best wishes for a speedy recovery to Cathy Jones, our president's wife, who suffered a heart attack, with surgery following on March 30.

And our thanks to Ed for keeping the information coming for this newsletter in spite of his distraught state of mind.

WHO has the WCFS banner that we
USUALLY
display at the Spring Meeting?
(but not this year)
Please let one of the Board members know

LIFE MEMBERSHIPS PRESENTED

To: WCFS Board of Directors
From: Dick Tilbury

1999 Nomination of Bill Davis for WCFS Life Membership

In accordance with Article II, Section 2(c) of the WCFS bylaws I hereby submit the name of Bill Davis for your consideration as a nominee for Life Membership in the Western Cascade Fruit Society.

Bill is a long time member of the Society, having joined in 1985. He was elected to the WCFS Board of Directors in March 1989 and served in that position until June 1998. During that time he performed a number of duties that give evidence of his exceptional dedication and service to the organization.

He has coordinated and been in charge of scionwood sales at the WCFS annual spring meeting since 1990. He has also coordinated and been in charge of the fruit tasting table at the Fall Fruit Show for a number of years. In 1994 he coordinated and successfully negotiated with the Edmonds Community College for use of their gymnasium as a site for the WCFS Fall Fruit Show. This arrangement lasted for four years and Bill handled all coordination with the college.

Bill is truly deserving of the honor of Life Membership considering his dedication to the organization and his outstanding service in promoting the goals of the Society. His leadership in coordinating scionwood sales, fruit tasting and site facilities for the Fall Fruit Show are all examples of his exceptional dedication to the organization.

CHAPTER NEWS

Tahoma Chapter announces their officers for the coming year:

President, Carmen Franco
Vice President, Don Stewart
Secretary/Treasurer, Loretta Walker.

Peninsula Fruit Club held their regular monthly meeting Thursday March 11. Jacky King, from the WSU Research Station at Mt. Vernon, spoke on best fruit varieties grown at Mt Vernon and tree fruit pruning techniques.

To Western Cascade Fruit Society Board of Directors;
From: Don Stewart

I am writing this request to seek the awardance of Lifetime Membership in the Western Cascade Fruit Society to Leonard Jessen, a participant of long and valuable standing.

Without Leonard's outstanding leadership and dedication to the mission of the WCFS, the Tahoma chapter would likely not exist. Leonard has been described by other members as the force that kept the chapter from being "...just a bunch of guys sitting around swapping fishing stories". He spent two years as the Tahoma chapter president during which time he revitalized the group by focusing on education and achievement.

Leonard Jessen is a superb fruit grower, grafter, and sharer of knowledge. He is a member of the California Rare Fruit Growers which assisted in his gathering such a wealth of knowledge. His experiments with rare and exotic fruits since moving to the Northwest have been to the benefit of the entire community.

Leonard has been recognized as the first fruit grower in Pierce County to identify Fire Blight in Western Washington. Years before the lab work had even begun, Leonard examined the symptoms and made the correct diagnoses.

Leonard has avidly sought to improve our presence at the Western Washington State Fair and is responsible for our presence there. His work has also raised the profile of WCFS at the Puyallup Spring Fair, and with the WSU Master Gardener program from which he graduated in 1994. He is instrumental in the success of the WCFS Spring Sale and the WCFS Fall Fruit Show, as well as being an active participant at the WSU Mt. Vernon Research Station.

Please reward Leonard Jessen's advocacy and dedication to the advancement of quality fruit growing techniques by awarding him this honor that he so deserves.

CAN YOU ANSWER THIS QUESTION?

Hi, I live in Amboy, Washington. I am very interested in growing fruit trees, but we have an early frost. What types would grow well here? We own a small tree farm and keep getting a lot of requests.

belinda<kramertrees@earthlink.net.>

If you know the answer, but don't have e-mail, let me know and I will forward the message for you.
Evelyn

CONVERSATIONS WITH JEAN-LUC CARRIERES
(via e-mail)

In January I received an e-mail from our member in France, Jean-Luc Carrieres, confirming that he wanted to renew his membership with WCFS and enquiring about back issues. I responded and asked a few questions of my own.

Jean-Luc lives in the "typical small French village" of Montcuq, population 1,200 at 44°20' N. latitude, 1°12' E. longitude and 175 meters above sea level, in a hillside landscape.

Part of his address includes the name "Cairef", which is the name of his father's orchard. It is a small, family run orchard with apples (Gala, Fuji, Golden, Pink Lady) and several French antique local ones (12 cultivars).

These are sold at a home stand, the local fresh market and remnant to warehouse packer.

They also grow plums (prune, greengage and Japanese), cherries, peentos and table grapes. I had to ask what peentos are. It is "prunus persica var. platycarpa", what we call donut, saucer or flat peaches.

He has a collection of peentos and peentarine (flat nectarine), making hybrids to find better size fruit with white flesh. As a hobby, Jean-Luc has made crosses with blood peach to create blood peento and peentarine. "From my little back yard, I still have 12 different cultivars and 4-5 seedlings with good characteristic at the moment".

Some of the varieties of antique apples he has are: Api Etoilée, Astrakan Rouge, Calville Blanche, Calville d'Oullins, Calville Rouge d'été, Calville Rouge d'hiver, Caramille, Chanteclerc, Charden, Chataignier, Gersoise, Lagleyolle, Pomme d'Ille, Pomme Orange, Pomme du Prieure, Rambour, Returede, Reine des Reinettes, Reinette Etoilee, Reinette Grise, Reinette Rose, Rosalie, Rozat, San Jacinto, Sang de Boeuf Teint frais.

He first heard of WCFS two years ago when he was invited by NAFEX Board to attend the annual meeting in Wooster, OH. There were many members from western states, someone mentioned the Bee Line, said it was a good fruit newsletter. He was amazed by the name so made note of the address and now we are fortunate to have him as a member.

CONTROLLING FRUIT FLY WITH A SYSTEMS APPROACH
by Melissa Hansen

Homeowners can play a major role in controlling cherry fruit fly, said a county pest board coordinator. Many landowners are unaware of their responsibility in controlling fruit fly, including actions of removing fruit or spraying.

Orchardists should not overlook dere-lict trees when developing strategies to control such pests like western cherry fruit fly, advised Frank Wolf, pest board coordinator for Benton County of Washington State.

Controlling cherry fruit fly requires a systems approach, including trapping, spraying, and community cooperation, he observed.
Trapping is an important component of a systems approach. Trained individuals should be responsible for checking traps, and they should be monitored regularly.

A protective spray program, with thorough spray coverage, can go a long way in preventing egg laying of the pest. However, pest pressures outside commercial orchards--if not addressed--can thwart the most conscientious pest control efforts.

An active county pest board can work with orchardists and homeowners to identify and communicate control strategies and practices to growers, warehouses, and community.

Washington State Department of Agriculture officials trapped 800 cherry fruit flies in apple maggot traps in 1998. "These were incidental, not intentional, catches," Wolf said.

Additionally, some 13 larvae were detected in cherries at the warehouse level, and six were found in border inspections conducted by the California Department of Food and Agriculture.

Wolf encourages growers to keep an eye open for neglected, unpruned trees during bloom. Though an unpruned, unkempt tree does not mean it has fruit fly, it is a sign that little care and attention is paid to the tree by its owner and that tree probably has not been sprayed.

However, a well-cared-for, pruned tree doesn't automatically mean owner is spraying for fruit fly or that ground underneath the tree is clean.

Don't be afraid to politely approach a neighbor to inquire about their pest control efforts, he said. Explain the risks that cherry fruit fly poses to commercial orchards.

Many homeowners are ignorant about fruit fly pests, their impact on commercial production, and quarantine requirements for fumigation. "All they know is there is a worm in their apple or cherry. They don't know what causes it," he stated.

Wolf believes that cherry fruit fly can be controlled by working together — agriculture and community—to reduce pest pressures that exist outside the commercial orchards.

Editor's note: This article appeared in the Good Fruit Grower, March 1, 1999. Translate "commercial orchard" to "any cherry tree" and it can work for us.

DIFFERENT SPECIES OF BEES FOR POLLINATION OF TREE FRUITS

D.F. Mayer
Washington State University, IAREC Prosser, WA 99350

Introduction

All apple, cherry and pear varieties grown in Washington require or at least benefit from pollination. The principal pollinators (the agent carrying the pollen from flower to flower) are bees. The honey bee is the most common pollinator available for tree fruits and most orchardists rent honey bees from commercial beekeepers for pollination. Over the years, we have looked at several alternative bees for tree fruit pollination.

Most bee species are solitary, unlike honey bees, which are social. Social bees have a queen who lays eggs and a number of workers who look after them in a colony. Solitary bees do not live in colonies. Instead, a single female, after mating, lays eggs in her own nest. Some solitary bees nest in wood or soil, while others build nests in existing hollows.

Orchard Mason Bee

The orchard mason bee *Osmia liqnaria* is a solitary bee native to North America. Because it can not make its own holes, it uses existing holes as nesting sites. Adult bees spend the winter in their nesting holes. They emerge in the spring, mate, and the females lay eggs. Adults die in the summer and there is only one generation a year. The eggs hatch into larvae that develop into new adults by the end of the summer. Those adults overwinter until the following season. Over the lasts 20 years, we have conducted several experiments with the mason bee for pollination of apples and pears. In general, adult bees emerge just before or during pear bloom. However, despite extensive observation periods we've rarely seen an adult foraging pear or apple flowers. Also, most years we have had very little renesting and reproduction is virtually nil. Adults seem to emerge and then disappear. The orchard mason bee may be more successful in western Washington and perhaps in higher elevation areas of North Central Washington.

Bumble Bees

Bumble bees *Bombus spp.* are stouter than honey bees and have black or gray hairs tinged with yellow. They range form 1/3 to 1 1/3 inches long. Although they are supposed to forage for longer hours and in more inclement weather than honey bees, there was no evidence in our tests that they forged in cooler temperatures. We bought 15 colonies of bumble bees for $1,800 and put them out in a one acre block of Bartlett pears. The colonies were small, containing only about 100 worker bees. We observed some bumble bees foraging the pear flowers although they were too few to set a commercial pear crop. If the price of honey bees goes up and bumble bees become cheaper, they might be worth using. But, at this point, it's not economically feasible to use bumble bees.

Alfalfa Leafcutter Bee

The alfalfa leafcutter bee *Meqachile rotundata* likes warm weather, and will not fly until it's about 70°F. Females are about 1/3 the size of a honey bee and they carry pollen on the underside of their abdomen rather than on their hind legs. It is a valuable pollinator of alfalfa grown for seed in the Pacific Northwest. Although it is a solitary bee, many females will nest close together. Females nest in pe-existing holes in the ground, in logs, or in hollow stems and twigs, and will live in manmade shelters. We tested them for apple pollination for several years. We did see some females working anple flowers on warm days. However, there are not many days during tree fruit bloom when temperatures are 70° or more. The weather is just too cool for this bee to be a successful tree fruit pollinator.

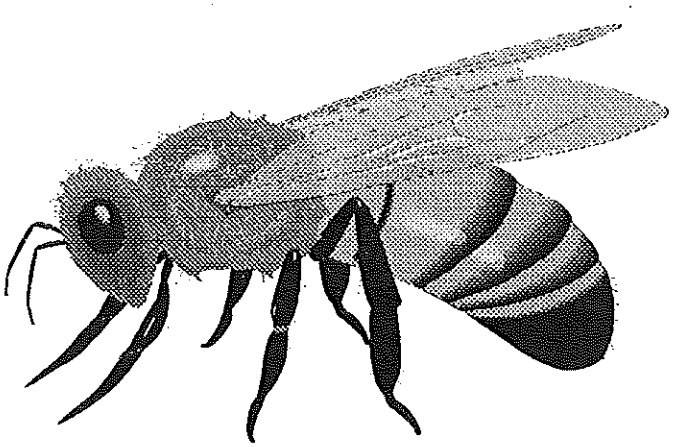
Andrena Bee

Another solitary bee species we've worked with is *Andrena nevalis*. This bee is about 2/3 the size of a honey bee. Females dig holes in the ground and construct cells there to rear their larvae. It overwinters in the soil and adults emerge in the spring. It can do a good job of pollinating pears if it emerges at the right time, but often it is too late. It might have some potential for apples.

Editor's note: The above article and the following one were sent to me by Bob Bower. He also included a list of pollen and nectar sources, including bloom time, (four pages of them) which there is not room to publish. I will suggest to the Board at the next meeting that these be reprinted and available at the Fall Fruit Show and Spring Meetings in the future.

He also sent a list of pesticides hazardous to bees and I will also recommend that it be available.

Thanks, Bob, we appreciate your input. ☺



POLLINATION POINTERS FOR APPLES

Daniel F. Mayer, Ph.D.
Dept. Entomology, WSU Prosser, IAREC Prosser, WA

All apple trees need bees for pollination of their blossoms to set fruit. Some apple varieties, like Golden Delicious, set fruit with their own pollen (self-pollination); but many varieties, like Delicious, require pollen from another variety (cross-pollination).

Apple pollen is heavy, sticky, and not wind carried. Honey bees are the main transfer agents or pollinators. Viable pollen transferred to a receptive stigma germinates and sends a pollen tube with sperm nuclei down to the ovules, resulting in fertilization.

Pollinizers

Pollinizer trees are planted to serve as the pollen source for the main variety. Pollinizers need to bloom during the same time period as the main variety, be attractive to honey bees, and not cause adverse bee constancy behavior. Golden Delicious is the primary pollinizer for Delicious in Washington.

Honey bees usually forage on only a few adjacent trees during a single foraging trip. It is essential the pollinizer and main variety be close together to ensure bees forage on both varieties. A good planting arrangement is the pollinizer as every third tree in every third row so every tree of the main variety is next to a pollinizer.

Crab apples are very good pollinizers for Delicious and many other apple varieties. There are a number of reasons why orchardists are interested in crab apple pollinizers: minimal or no space requirement in commercial orchards; assurance of annual blooming and overlap of blooming times; and profusion of flowers and abundance of pollen. Manchurian, Rosedale, and Scarlet are promising crab apple varieties being used commercially in the Pacific Northwest.

In Washington we recommend one strong honey bee colony per acre on standard plantings of apples. Two colonies per acre are recommended on high density apple plantings because such plantings have a greater number of flowers per acre than standard plantings. Colonies should be placed in apple orchards just as the first king bloom opens. King bloom has the potential to produce the best fruit. The objective is to set the king bloom and chemically thin lateral bloom.

Locating Colonies

Location or hive placement in the orchard is important. Both colony placement and distribution need to be considered. It is important that colonies be placed where they receive maximum sunlight. Honey bees don't forage in full force until temperatures are above 65° F. and winds are less than 10 miles per hour. It has been shown colonies placed in warm, sunny locations, protected from the wind, and receiving the early morning sun will have 50% more flight activity than colonies that are shaded. It is more important for the colonies to be protected and in the sunlight than directly in the orchard.

Colony distribution also has to be considered. Cross-pollination in an orchard is more efficient when bee colonies are grouped together. Individual honey bees have a tendency to remain and forage on one or two particular trees during a number of visits. This tendency can be disrupted by placing colonies in groups and creating a high degree of competition. Bees distributed by other bees will shift to different trees, extending the hive's foraging activities. There are more "wandering" bees that frequently change trees as contrasted to the foraging activity resulting from single colonies spread throughout the orchard.

Competition increases the chances individual bees will visit both pollinizer and main variety. The optimum hive distribution is probably in groups of four to 12 colonies.

Colony Strength

Colony strength refers to the bee population within the hive. Stronger hives have a larger, more efficient field force than weak hives. Weak hives are worthless for pollination. A good pollinating unit should have a queen and six frames of brood or larvae with adult bees to cover them or about 20,000 bees.

Brood is important. Newly emerged adult honey bees consume large amounts of pollen. Large numbers of larvae and emerging adults present in the colony stimulate the colony to have more pollen foragers. Pollen foragers are more effective pollinators than nectar foragers, since they pollinate every flower they visit. Sideworking nectar collectors don't pollinate flowers they visit, though topworking nectar collectors do.

Field Force

It's difficult to determine colony strength without opening and observing the number of bees in the hive. We've attempted to evaluate colony strength by counting the number of honey bees entering the hive in one minute. Preliminary data indicates the colony is fairly strong if there are more than 100 incoming bees pr minute at 65° and little wind.

The objective in apple pollination is not boxes of bees, but the field force or number of bees working the fruit bloom. The field force can be determined by slowly moving around individual trees while counting the number of bees observed in one minute. This should be done on 10 or more trees when temperatures are above 65° and

(Continued on page 7)

(Continued from page 6)
winds less than 10 miles per hour. There should be an average minimum of 20 to 25 bees per minute, which indicates sufficient pollinators are present to set the crop. Research indicates that under optimum conditions the main objective of setting the king bloom can be accomplished in about eight hours.

Some honey bees can collect nectar from Delicious flowers without pollination occurring. These sideworkers are a serious problem in eastern North America, where 86% of the nectar collectors are sideworkers. They stand on the petals, stick their tongues between stamen gaps, and obtain nectar without pollinating the flower. This behavior is due to the shape of the flower and is not a problem that the beekeeper can solve.

In the East, the number of sideworkers in the field force appears related to the kind of bloom present on the pollinizer variety. Observations have shown that sideworking bees are present in Washington orchards. The percentages of sideworkers on Delicious in various orchards ranged from 15% to 58%. The percentages of nectar collectors on Delicious that pollinated the flowers visited varied also, from 42% to 85%. No sideworkers were observed on Romes or Jonathans.

NEW CLASS OF FUNGICIDES WILL BE AVAILABLE SOON

by Geraldine Warner Good Fruit Grower March 1, 1999

Fruit growers will soon have new fungicides to fight diseases such as mildew and scab.

The new products are strobilurins, a class of chemicals that the U.S. Environmental Protection Agency actually looks favorably upon, growers heard during the Washington State Horticultural Association's annual convention.

Strobilurins are metabolic extracts of fungi that rot wood and have a powerful preventive action against disease-causing fungi. They disrupt the fungus's energy production and inhibit spore germination.

Although they have some curative activity, Dr. Gary Grove, plant pathologist with Washington State University in Wenatchee, warned against using them as eradicants for fear of increasing the risk that the fungi will develop resistance.

"We don't want to repeat the mistakes of the past," he said. "Considering the development cost that companies have to put in to get a product on the market-development costs are astronomical--we don't want to lose these products once we get them on the market."

The new products include Abound (azoxystrobin), Sovran (kresoxim-methyl), and Flint (trifioxystrohin). Abound is already registered for peaches to control peach scab, and it probably will be registered for control of mildew on cherries this season hut is extremely phytotoxic to apples. So, for example, if it is used on a cherry orchard, it can affect a neighboring apple orchard. Sovran should be registered for apples this year, and possibly stone fruit later. Flint should be registered soon on apples and grapes, and stone fruit may be added to the label in 2001

For some time, growers have been relying on the DMI (sterol inhibitor) fungicides, which have been highly effective. They include Bayleton (triadimefon), Elite (tebuconazole), Orbit (propiconazole), Procure (triflumizole), Rally (myclobutanil), and Rubigan (fenarimol). They have been used on apples since the early 1980s and on cherries and peaches since the mid-1980s. In recent times, there have been some control failures on cherries. Although resistence is not universal, it can happen, Grove said.

Sterol inhibitors prevent the proper formation of membranes in the fungus and so disrupt its metabolism. They protect the plant from disease and have some curative activity, but should not be used as eradicants, either.

Resistance

Both the sterol inhibitors and the strobilurins have narrow modes of action. Products with a narrow mode of action are more prone to resistance being developed against them than those with broad modes of action, such as sulfur and oils. Another factor in the risk of resistance is the how the product is used. If it is used when the fungus is out of control, a high population of fungi are exposed to the product, greatly increasing the risk of resistance.

Grove said Dr. Doug Gubler, plant pathologist at the University of California, Davis, has found that sensitivity of a fungus to a DMI fungicide can shift in just one season under extreme disease pressure.

Grove recommended using cultural methods to reduce disease pressure. Anything that promotes drying, or lower humidity will help. For example, the orchard should be pruned for good air circulation, and should not be overwatered, and the grass should be kept low. Although some nitrogen fertilizer is needed, using too much can be detrimental because mildew thrives on new growth.

Grove also advises growers to use mixtures of chemicals, use products no more than two or three times a season, and avoid curative use.

It is best to alternate products of different modes of action, such as sulfer's, soaps, sterol inhibitors, and strobilurins.

Resistance to the new strobilurins can be managed by using them preventatively, not to catch up after the infection has become established, and using them as no more than half the sprays in a season. Products can be alternated in blocks. For example, two consecutive sprays of one product can be used, then two sprays of another product.

To control mildew on cherries, growers will be able to use Slylet oil, followed by a strobilurin, followed by a sterol inhihitor, which all have different modes of action. Styler oil works as well as a sterol inhibitor and with less risk of resistance, but can cause serious phytotoxicity on cherries if used after shuck-fall, Grove said.

Oils, which have a wide mode of action, can be used as eradicants when a disease gets out of hand.

'FREAK' AVOCADO TREE GROWS IN SEQUIM

by Betty Oppenheimer

for The Sequim Gazette

You just never know when fate is going to tap you on the shoulder and wait to see if you're paying attention. Don and Shirley G'filogly were paying attention when the store-bought avocado seed they planted in their San Diego yard grew into a vigorous 20-foot tree that produced two crops a year. They turned that tree into a unique Internet business.

The couple enjoyed their avocados and occasionally asked at nurseries about the huge leaves and the double harvest they got from their tree. No one recognized the avocado variety, but because they liked the fruit so much and wanted to be able to sustain a tree wherever they went, they had a grower graft two-dozen cuttings from their tree.

"They grew as well indoors as they did outdoors. Why not? Citrus can grow indoors," said Shirley. She was happy having access to the best tasting avocados she's ever eaten, but Don was interested in learning more.

Finally he asked an avocado grower about his tree. Aware that Gillogly was describing something quite unusual, the grower advised him to proceed immediately and quietly with the patenting process for a new variety of avocado. That was in 1991.

What's so special about it? It's self-pollinating; only one plant is required to produce fruit. It produces two crops per year. It is cold-hardy and can live outdoors as far north as San Francisco. The fruit is flavorful, rich in texture and stays fresh long after the skin has turned black. It is 10-14 ounces, slightly larger than the Haas variety. All of these attributes are potentially attractive to commercial growers. But what the Gilloglys like about the variety is that you can grow it as an indoor house plant and it will produce fruit within three years, indoors or out.

Since they first realized that new strains of avocados derive from freaks of nature, the Gilloglys have learned about Rudolph Haas, a postman who planted lots of Lion variety avocado seeds before he realized that one of his plants had mutated into the Haas variety. They have also learned about the Pinkerton variety, another freak of nature. Both of these strains were developed commercially by the Brokaw company, a huge commercial grower in Southern California that produces more than a quarter-million plants a year.

Over the 30 years since Haas first noticed his plant's mutation, the Haas avocado has taken over the market share as growers began to recognize it attributes. Don Gillogly wanted to know if his avocado had the same potential, so he contacted Hank Brokaw, who flew his private plane to their home to see their avocado tree.

"We were astonished when Brokaw decided to take on our project," said Shirley.

"Once Brokaw decided it was worth their time, I thought this was too good not to go on with it. I had no intention of getting into avocados. I was a Chevron dealer who happened to plant a renegade seed," said Don.

Brokaw took 2,000 cuttings from the Gillogly's tree and also rooted clones to exactly replicate the strain. The Gillogly's entered into a contractual agreement under which they own all of the cuttings rooted at Brokaw, and pay a fee for the processing. It takes years of growth and several generatiom of plants to prove the hardiness of the strain needed to obtain the patent, but Gillogly has a "patent pending" on the Persea Americana avocado, variety "Don Gillogly."

Of the 2,000 plants, 1,800 are Gillogly's to sell, and the other 200 are being grown by Brokaw for experimentation purposes, to test the strain's attributes and prove that it deserves a patent.

In 1994, they decided to leave San Diego, and when they sold their home, they retained the rights to the mother tree. "The new owners can have all the avocados they want, but we own the rights to cuttings and replication of the tree," said Don.

They set up an informational website, www.avocadotrees.com, where they have sold 1-year-old trees to folks in 20 states for $16.95 from their Happy Valley home in Sequim, and so far, people are having good luck growing them indoors, even in Alaska.

"We've sold several hundred," Don said. "We recently received a call from a representative of *Martha Stewart Living,* asking if we are interested in being featured in their magazine. We're not sure we can handle that kind of volume yet -- we have to wait until the cuttings and clones have grown for two years betore we can take more cuttings."

If the Brokaw tests prove that the strain has commercial potential, growers may become interested in adding it to their groves. "Then, Brokaw will become our supplier, and we'll receive royalties on each tree sold. We'll own the patent, and we'll continue to sell the smaller plants as houseplants via the Internet, said Don. "Whatever happens, we're enjoying the Internet selling of the Gillogly avocado as a gift item."

Added Don: "We're still amazed that Brokaw would take it on in an experimental way - anything else that happens is OK!"

Thanks to Chuck Parkman for sending this article.

Oh Deer!

Maybe trickery or foul potions will deter a garden thief. Maybe.

by **Valerie Easton**

Deer drive gardeners crazy. Used to battling only slugs and a predatory heron, I had no idea how crazy until I was a guest on Ciscoe Morris' radio show. Every other call was a lament for lost plants, a litany of munched flowers, a plea for help in thwarting the four-footed, doe-eyed menace.

One gardener, writing in Pacific Horticulture magazine, tells how the deer who visited her garden used to avoid walking on paved surfaces. But her nightly visitors became emboldened, their hooves on her patio sounding like a troop of ladies in high-heeled shoes. Come morning, she found her plants (especially rare or expensive ones) decimated; the ladies came not only for tea, but breakfast, lunch and dinner as well.

Last fall I visited my sister, who gardens on 36 acres in Clatskanie, Ore. I've always been impressed by her cheerful intrepidness, as she ekes out space for flowers, fruit and vegetables on a rough hillside, competing with cows, cats, dogs, rabbits, chicken and geese (she does have a steady supply of manure). But she had clearly lost her patience (and perhaps her mind) as shown by the sign, photographed just days before the deer lifted the chicken-wire fence and ate the pumpkins. The medium was the message — they ate the sign, too. I traveled to the farm again for Thanksgiving dinner and the deer's bravado had gone unpunished—roasted bird, not venison, was served, accompanied by Brussels sprouts from Safeway.

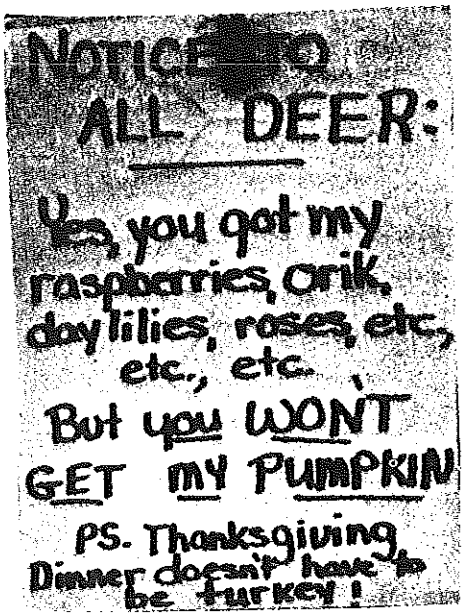
My sister's neighbor has a large Rottweiler that sleeps outside to guard against trespass. It has proved somewhat effective, but big dogs do their own damage to the garden, and eventually they become accustomed to deer. And, as my sister points out, deer do their damage mostly in spring and fall; you have the Rottweiler year-round.

Short of employing a dog the size of a truck, or building a very tall fence (deer are rumored to be able to jump 8 to 10 feet with a running start), how does a gardener co-exist with deer? Chicken wire looks like heck, but is easy to bend into cages around your most precious plants. If the deer are really hungry, though, they've been known to pull up even staked-down chicken wire, especially to get at strawberries.

My sister has for years planted a sacrificial rose near the deer path into her garden, hoping they will be enticed to go for the fast-food snack and leave her favorite roses alone. Some years it works, some years they nibble all the roses. And don't think deer will share -- she has tried leaving fallen apples on the ground for them, but they stand up on their hind legs and pick the best apples right off the tree. I'd like to see that.

Nancy Goodwin, famous North Carolina gardener, divulged the recipe for her secret deer deterrent when she spoke in Seattle last year. Put 1 tablespoon of Tabasco sauce, 1 egg and 1 cup of water into a blender, mix well, and then strain into a gallon jug (the straining is important, she says). Fill the rest of the jug with water. As the last step, add 1 tablespoon of liquid dish detergent. Mist onto plants. Goodwin swears by this stuff, saying that it saves hostas, roses and all kinds of choice plants from deer decimation. I wonder if it rains as much in North Carolina as it does here? Does she spray it on daily?

Deer are unpredictable, and some have more adventurous palates than others. I've sifted through more than a dozen lists of deer-resistant (deer-proof would be an untruth) plants and found little agreement. Only generalities are safe-- deer tend to dislike strong-tasting plants (eucalyptus, rosemary), plants with milky sap (euphorbia, poppies), twiggy plants with tiny leaves, and thorny plants like bar-berries (although they love roses). They rarely eat ferns and pass up poisonous plants such as daffodils and senecio. My sister says she is trying to learn to love irises and dahlias, two plants not found on the official lists, but so far, anyway, not a menu preference of Clatskanie deer.



Valerie Easton is a horticultural librarian and writes about plants and gardens for Pacific Northwest magazine. Her e-mail address is vjeaston@aol. com

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A NEW APPLE MAGGOT FLY (AMF) TRAP

by Dick Tilbury

During the 1998 growing season we tried out a new yellow panel insect trap from Germany. We were not aware of this trap until Dr. Jay Brunner, entomologist and head of the WSU Tree Fruit Research & Extension Center at Wenatchee, gave us four Rebell traps to try out on AMF.

Rebell traps consist of two yellow plastic panels, 5.90" x 8.25" (15cm x 21cm), with slots at the midpoint of the long dimension that extend to the midpoint of the panel. The slots allow the two panels to be assembled together egg crate fashion. The assembled trap looks much like the radar reflectors used by sailors.

We coated the traps with brush-on Tangle Trap and ammonium carbonate bait mixed in at about 30 grams per pound of Tangle Trap (roughly 1 teaspoon of ammonium carbonate per 6 tablespoons of Tangle Trap). The traps were serviced every two weeks (cleaned of captured insects and recoated with the Tangle Trap/ ammonium carbonate mix).

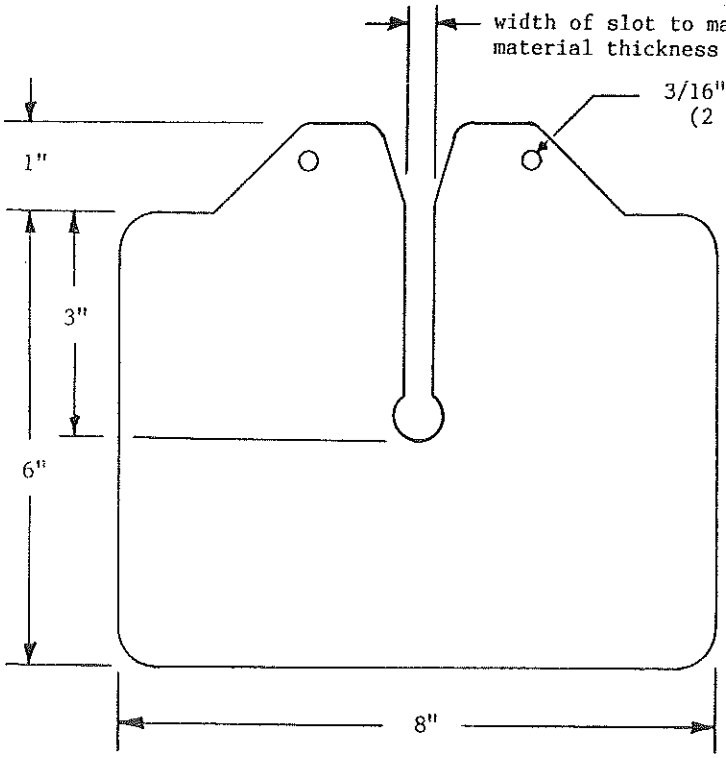
Now for the good news: these traps were extremely efficient, on a par with the Ladd trap. Since the Rebell trap is just two yellow panels :intersecting at right angles, you might expect the AMF capture to be roughly twice the catch of a single yellow panel trap. But at our site the Rebells caught about four times as many AMF (an average of 35 AMF per yellow panel trap vs 143 AMF per Rebell trap for the 1998 season). Apparently the Rebell trap presents a highly visible target to AMF over 360° compared to the narrow edge effect of the single yellow panel from two directions.

The bad news? The Rebell trap is very difficult and messy to serwice compared to the single yellow panel trap encased in a clear plastic envelope.

One source for the Rebell trap is Great Lakes IPM, 10220 Church Road, Vestaberg, MI 48891, phone (517)268-5693. It's their item RB-IOOSY. A carton of 8 traps costs $27 plus shipping.

I plan to make my own Rebell type traps per the following plan and try them this year.

I would urge other grower with an AMF problem to try these traps and let Bee Line editor Evelyn Troughton know how they work for you. Deployyour traps by June 1—in 1998 we caught our first AMF in the yellow part of a Ladd trap on June 7. This AMF was confirmed by microcsopic examination by Mike Klaus, entomologist with the Washington State Dept of Agtriculture (WSDA), who is head of the AMF monitoring program for the WSDA.



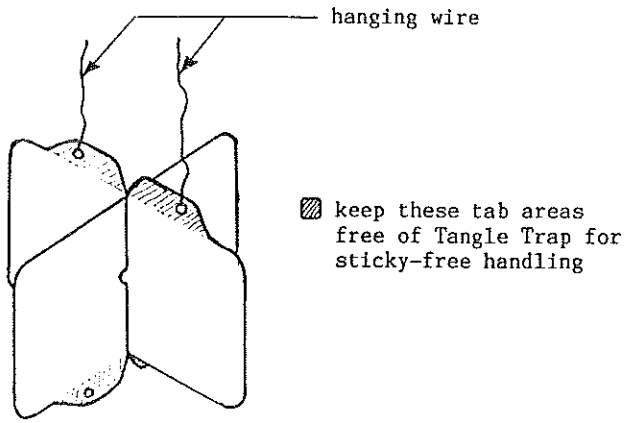
2 Panels per Trap

Material:
1/4" to 1/2" thick plywood or solid wood board

Finish:
one coat of external oil based white primer
finish coat of Lemon Yellow fluorescent paint*

Coating:
Brush-on Tangle Trap and ammonium carbonate bait*

* WCFS member, Orel Vallen, (206)772-2119 has this material available at cost.



Assembled Trap

AN INSIDE ORCHARD

by Bill Price

Bill Price mentioned this orchard in his Report from the Hinterland in our last issue and I thought we should hear more about it.

Jim and Pat Johnston live on a one acre lot in Powell River, BC. The lot is large enough to hold their modem home, a two bay automotive repair shop where Jim still works part time, and an orchard under plastic. The property is well landscaped and maintained, allowing the shop to blend in.

On the day in December that I visited with Jim, there was one of those Pacific fronts passing by, leaving trees and power lines down, and the rain was blowing in horizontally. Inside the greenhouse however, all was calm. The apple trees were motionless and dry. Only a slight ripple in the 7 mil plastic gave evidence of the storm outside.

The greenhouse itself measures 20' by 30' by14' high at the peak. The walls rise 6' vertically and then arch to the top. A pipe frame supports the plastic, which is expected to last 10 years.

There are 18 variations growing on 24 trees. Some are duplicates and some are family trees. Nine of the trees are stick (columnar) trees. All are on M-9 rootstock. Some of the trees were purchased while most were home grafted. The rootstock came from the AGM, while the scion wood was collected from all over. Half of the trees are 6 years old, the other half 2-3 years. A cross section of the nonstick varieties include; Karmijn de Sonneville, Ambrosia, Jonathan, Mutsu, Empire, and Sunrise.

All of the trees are planted in the original ground, with no mulch. They receive 3 applications of 15-30-15 liquid fertilizer. This will be cut back to two applications because growth has been excessive. Irrigation is accomplished by a manual system which casts a spray on the ground.

No heat is provided. Natural ventilation through the door and out 1ouvers cools the building in the summer. This was deemed to be inadequate as ground temperatures reached 95 degrees last summer. A fan is in the plans for next year.

Pests and diseases are almost nonexistent. The trees receive one application of dormant oil and lime sulfur in the winter, and that's it. Ants and aphids are a problem for a short while until the ants are killed with ant poison. The deer are present but don't go into the greenhouse, and the neighbour's dogs keep the bears away.

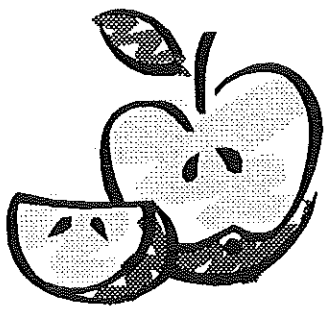
Jim likes to work in the greenhouse and does some of the pollinating himself—with a large makeup brush. Now, Jim is a large rugged individual and for Pat watching, this is a bit of summer theatre. Actually, Jim credits the Blue Orchard bees for the pollinating success. The bees live outside, but unlike the deer have no fear of going into the greenhouse to do their work.

There is one small problem that Jim does have. Because there is no wind, the trees do not sway and build up strength in the normal amount. To counter this the trees are pruned heavily in the summer and given extra support. Tree height must also be cut back.

Despite pruning the blossoms in the spring, the unmeasured bumper crops provide enough apples for themselves, 2 kids, 5 grandchildren, friends, and customers, with some left over.

Six years ago the sale of logs to clear the space covered the $2,200 cost of the greenhouse. The advantage now is picture perfect, disease free fruit with virtually no chemical sprays.

as published in
Fresh From The Cider Press
Winter 1999
newsletter of the
British Columbia Fruit Testers Association



Pruning Tips: Sterilized Pruning Tools. Nuisance or Necessity?

by Dr. Linda Chalker-Scott Center for Urban Horticulture, University of Washington, Seattle, WA 98105

Published in Plant Amnesty - Spring, 1999
A newsletter for people who don't beat around the bush

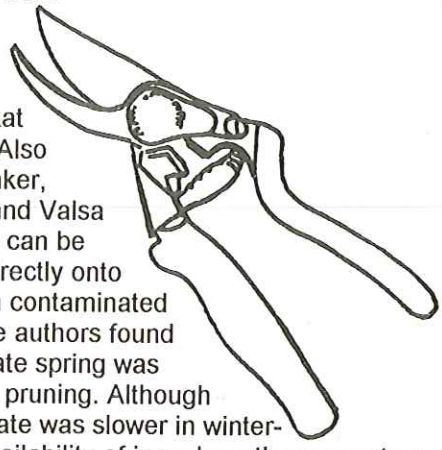
Anyone who has made an investment in top-quality pruning tools probably cleans and maintains them on a regular basis. But would you clean them every day-maybe several times? While most of us would agree that such a cleaning regime would not be cost effective, there is evidence that such measures can help reduce the transmission of certain plant diseases to healthy plants.

In spite of the ongoing debate regarding tool sterilization, there is surprisingly little information in the scientific literature that addresses this issue. Most of the research has focused on agriculturally important crops: citrus, stone fruits, and vegetable crops. We can extrapolate these results to woody ornamentals, however, and draw some rational conclusions. The focus of this article will be on when, why, and how to sterilize pruning tools.

First, the good news. It is probably not necessary to sterilize pruning tools to prevent transmission of soil- or airborne pathogens. These diseases, generally bacterial or fungal in nature, are more likely to be transferred by your hands and clothing than by your pruning tools. Obviously you should avoid being a direct vector in disease transmission, but you will probably have better success in controlling these diseases through preventative landscape management practices (e.g. pruning diseased parts, disposal of contaminated leaf litter, and use of disease-free compost and mulch).

In contrast, diseases that invade the vascular system or form oozing cankers are much more likely to be transmitted by contaminated pruning tools. As early as 1906, Waite & Smith linked fire blight *(Erwinia amylovora* Burrill) infections in nurseries to contaminated pruning tools. Others have confirmed this more recently (Beer 1979; Goodman & Hattingh 1988; Kleinhempel et al. 1987; Lecomte 1990; van der Zwet & Keri 1979), and Lecomte (1990) noted that transmission did not occur during plant dormancy - only during the growing season. Fire blight bacteria do not overwinter in the vascular system, which may explain why transmission does not occur during this time. In contrast, Goodman and Hattingh (1988) found a 66% infection rate during cool, wet conditions in trees pruned with shears treated with bacterial spot *(Xanthomonas campestris* pv. *pruni* Smith). The infection rate dropped to only 7% when trees were pruned with infected shears under hot, dry conditions. The authors speculate that the cankers are less infectious when dry; under wet conditions they become gummy and the inoculum adheres more tightly to pruner surfaces.

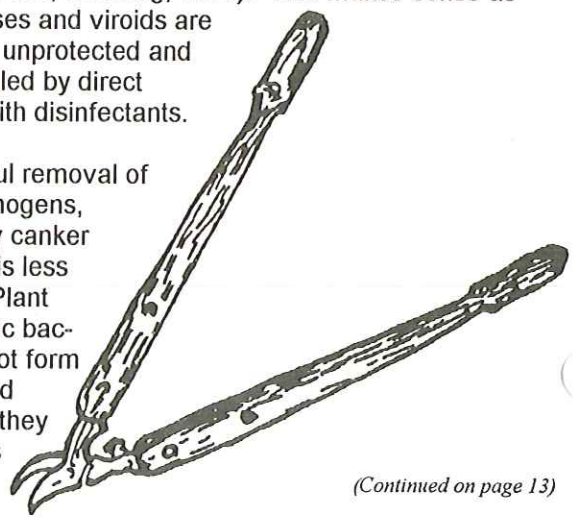
Seasonal differences in infection rates were also seen with the fungal pathogen *Leucostoma cincta* (Barakat & Johnson 1997). Also called perennial canker, Cytospora canker, and Valsa canker, this disease can be transmitted either directly onto pruning cuts or from contaminated pruning shears. The authors found that pruning in the late spring was worse than dormant pruning. Although the wound-healing rate was slower in winter-pruned trees, the availability of inoculum, the percentage of infection, and the expansion of cankers was less than in trees pruned in the late spring.



Viruses and viroids are the final group of plant pathogens that can be transmitted by contaminated pruning tools. Although Berg (1964) reported that infected pruning tools did not transmit poplar mosaic virus, the preponderance of the published literature indicates otherwise. Citrus exocortis and other citrus viroids can be transmitted with contaminated tools (Kyriakou 1992; Roistacher et aL 1969). Hadidi et al.(1997) were successful (50-70% infection rate) in transferring peach latent mosaic viroid to both lignified and green shoots of peach plants using contaminated shears. Likewise, tomato mosaic virus was transferred to healthy plants 70% of the time when contaminated pruners were used (Pategas et al. 1989).

It seems clear that if pruning tools are contaminated with vascular pathogens or active, oozing cankers, then there is an excellent chance that the disease will be spread to other plants if the tools are not disinfected. Several researchers have studied different disinfecting solutions with sometimes ambiguous results. In general it seems that any disinfectant will remove virus or viroids from tools (Broadbent 1963, Broadbent, 1965, Brock, 1952; Demski, 1981, Goading, 1975). This makes sense as both viruses and viroids are relatively unprotected and can be killed by direct contact with disinfectants.

Successful removal of other pathogens, especially canker bacteria, is less certain. Plant pathogenic bacteria do not form spores and therefore they are not as



(Continued on page 13)

(Continued from page 12)
resistant as fungi to harsh environmental conditions. However, bacteria associated with active cankers are embedded in a sticky mass, which is often difficult to remove from pruner surfaces. In fact, one study (Kleinhempel et al. 1987) argues that disinfectant solutions would not remove bacterial slime from the surface of cutting tools. Their research indicated that the pruning blades were covered with microscopic pits from which bacterial slime could not be removed. Only when they pre-coated their tools with plastic could pruners be successfully sterilized.

Obviously, the solution to spreading pathogens from active cankers is to avoid cutting the cankers altogether. For other plant pathogens, several disinfectant treatments have been compared:

Alcohol dips (ethanol or isopropyl alcohol)
Recommended: Barakat & Johnson 1997; Horticultural Abstracts 1986; Teviotdale et al. 1991.
Not recommended: Pategas et al. 1989.

Alcohol dips + flaming -
standard procedure for tissue culture
Recommended: Goodman & Hattingh 1988; Singha et al. 1987.

Chlorine treatment (Clorox, monochloramine)
Recommended: Horticultural Abstracts, 1986; Lecomte 1990; Teviotdale et al. 1991.

Household cleaners (Listerine, Lysol, Pine-Sat)
Recommended: hortIdeas 1987; Teviotdale et al. 1991.

Trisodium phosphate (Na_3PO_4; 10% solution)
Recommended: Pategas et al. 1989.

A final consideration to choosing a disinfectant treatment is how damaging it may be to your tools. Teviotdale et al. (1991), who performed the most comprehensive study, found Lysol to be least corrosive and Clorox to be the most harmful to pruning tools.

To disinfect your tools or not - what's the bottom line? To make an informed decision, you need to know your pathogen and its life history, and use common sense:

- if it's a virus or viroid, disinfect your tools.
- if it's a vascular fungus or bacteria, and/or forms oozing cankers, disinfect your tools.
- avoid cutting active, oozing cankers; wait until they dry.
- if you are pruning irreplaceable plants, disinfect your tools.
- choose a disinfectant treatment that has been shown to be effective through published research; I would probably not use alcohol but one of the common household cleaners at full strength.

(Ed. Note) Plant Amnesty would like to know how many professionals actually sterilize their tools, and if so, how often. If anybody out there has contrary opinion, or can add to this discussion on sterilization of tools, please write to us at Newsletter Editor, 906-NW 87th Street, Seattle, WA 98117.

COMPOST USE INCREASES, BUT BENEFITS ARE UNCLEAR

Chelan area growers are using compost by the truck load, but the benefits are somewhat nebulous, according to David Granatstein with Washington State University Center for Sustaining Agriculture and Natural Resources.

"The price has come down, but nevertheless, large amounts of money are being spent on soil amendments to improve tree growth," he said.

Questions remain regarding what effect compost has on tree growth and tree quality, and the economics, said Granatstein, who has helped growers with on-farm testing of composts,

"To date, we have found very little consistent benefit," he reported during a field day at Lake Chelan. "We've tried it in existing orchards to try to improve tree growth, and tried it in new plantings to improve the replant condition. In some cases, we've made a difference, but, overall, I can't say that if you put this amount of compost on this type of ground, this is the response you will get."

Granatstein said growers are investing in the long-term improvement of organic matter in the soil, but it's difficult to pencil out.

Cultivation

Granatstein also questioned whether cultivation of soil in the tree row for weed control is beneficial. He said organic growers in north central Washington seem to do more cultivating than their counterparts in other areas who have gone to mulching systems to keep weeds down and stop them competing with the trees.

Granatstein cited a report from California that compared an organic and a conventional orchard and found less organic matter in the organic.

Research in the Midwest has shown that soil tillage has a negative impact on soil quality. "One of the goals of the organic farm is to build organic matter, and tillage has the opposite effect," he said.

Flaming of weeds is an option, he added, but he has heard of people accidentally setting other things on fire besides the weeds.

The Hay, Grain, and Feed Man: G. O. Dunnell, Northfield, Massachusetts

I'm getting this axe ready to fix the fences on Christian Hill that the hurricane busted. Not that the hurricane blew 'em down but it did blow down some trees. And the trees is what busted the fences. I clim' over one. Had to, to get to camp, and I see they was more down. Couldn't do anything that night because it was getting da'k, and I had to come home, but I'm going back just as soon as the roads get settled enough so's I can.

It's a funny thing, but I don't think that, as a rule, there was as much wind over that way as we got here. What did most of the damage was the water. And, another funny thing I noticed was that of the trees that come down in the apple orchards, it was the ones that had never been grafted. Those that had been grafted stood up.

How'd I know? I know most every apple tree they is on Colrain and Shelburne mountains, and in the north part of the town of Greenfield. 'Cause I was the feller that grafted 'em, that's why! I used to go all over grafting trees. And I had ten or twelve hundred trees of my own, too, that I'd no business leaving. But people would come tease me and tell me how much extry they were willing to pay for my trouble, that I was generally on the move. Once I went to Greenfield. And I didn't get home for a week. Spent the nights there with the different ones.

'Course, they's a trick to it. But 'most anybody can put on a scion so's it'll grow. But that ain't all they is to it. You got to figure what the tree's going to be shaped like. You shouldn't get the scions growing into each other the way most people do. And you ought to fix the tree so's somebody can pick the apples without tying a couple of ladders together or hiring a balloon.

Apple trees like to grow among the rocks -that is, most kinds do. The hills each side of our valley here are just right. All we can grow here that's any good is the Blue Pearmain. And they got such a tough skin that people don't like 'em. They are an awful good flavor, though, until they got mealy - oh, they's others; russets and early transparent and so on. But what I was getting at is the way I found the best of raising good flavored apples. Apples grow wild over in Colrain. It is just as natural to find a wild apple tree in Colrain as it is to find a birch in Warwick. I had a lot of 'em in my woods. 'Course, the fruit of a wild apple tree is no good except for cider. But the trees themselves is generally healthy. I'd find a good one, then I'd saw off such limbs as I thought should be off, and put a scion in it. If it was a fairly big limb that I figured would pinch the scion off if I didn't do something about it, I'd whittle a little thin wedge and put that in just beyond the scion, for the limb to pinch on to. What do I mean by scion? What that's a little shoot from the brand of tree I wanted. I had Baldwin scions and Mcintosh scions and Porter scions, and all kinds of scions. I cut 'em in March - that's the best time to graft around here. Maybe, I'd make a Baldwin tree out of a wild apple tree, or a Greening, or a Northern Spy. Sometimes I fixed 'em so's they had different kind of apples on every limb. But that's nothing but a kind of joke. Nobody that runs an orchard wants trees with fruit all mixed up on 'em.

I said I only put one scion to a limb. I always put two, 'cause somethin' might happen to one. They break off in ice storms sometimes. And I always put 'em one above the other 'cause I figured it's better and stronger that way. You whittle off one side the scion and stick it in the crack you've made with your knife in such a way that the live bark on the scion presses up against the live bark on the tree. And then you hold the scion in place with wax. Then you cut off all the limbs below the one that you've grafted. The sap has to go somewheres. And when it finds that the limbs have been cut off, and they ain't no place to go, except into the bark of the scions, that's where it goes. You've got to figger not to cut too many limbs off, though. For if they's more sap than can get into the scion and make it grow, it'll leak out under the wax and rot the scion off. I generally left the top of the tree pretty much alone until I found out how the scions were doing. If they were growing all right, I'd cut the top off then.

Lot of people put on two scions the way I done. But when them both growed they let 'em grow together. That makes a crotch. And a crotch ain't strong. I always cut off one scion just before they growed together. And the bark would grow over the place and make a smooth branch.

Once, I grafted a whole tree. And that tree stood up through the hurricane, too. Yer see, when a crust comes on the snow, or anything happens so the mice can't hunt, you're supposed to go around the orchard tromping down the snow around the trees. You tromp it down hard right around the trunk, and the mice won't get to the bark. But I missed this tree someways. Or the mouse, maybe, was a wood rat. Anyway, it ett the bark all the way 'round. It was a good tree. Had good roots, and as it would die if I didn't do something about it, I thought I better try. I cut the trunk of the tree off and put scions all the way 'round in the bark. Enough of 'em grew so I managed to raise a tree. I told the feller who owns the place about it, and he found it hard to believe for it don't look no different than any other tree to him.

Lots of people insist on growing an orchard from nursery stock, that's all right if you want to wait ten or fifteen

years for a crop. But if you want your trees to begin bearing in three-four years you want to graft a few scions on to a full grown tree. If you take your scions from a tree that has apples you like, you can be sure that you'll get the same flavor apple when the scions begin to bear. But when you buy from a nursery you got to wait ten or twelve years to find out if you got what you paid for. 'Course, they's some crook nursery men, I s'pose, but they ain't many. It's the agent who's the crook. And it's a pretty good game when a feller don't know he's been gypped until ten-twelve years. By that time the agent ain't no longer in the employ of the company, probably. And if he was, nobody would know who made the mistake and the whole thing be outlawed so's you couldn't get it into court. I don't say that a good nursery wouldn't be awful sorry it happened and make good, too. But the way they'd make god would be to give you some guaranteed new trees that you could wait for to bear for another ten-twelve years.

When Doc Brown and his brother first come they lived in houses side by side. And they planted the two back lots for an orchard. I told the Doc that this wasn't a good place to raise apples, but the Doc said, "No, no," I was wrong. That he'd had the soil analyzed down at the State College. And that they said it was good soil and all right. "All right, Mister" I says. "Now you take out your little book and you write down what I'm going to tell yer. So's you won't forget it, I says. But you see more money when you took out your pocketbook to pay for them trees than you'll ever see coming back into it from your orchard." But, oh no, I was wrong.

"What kind of trees be they," I wanted to know. "Baldwins," he says. And it seemed he had paid an extry price to get some real good trees.

I see they wan't no use talking to him and trying to help him so I forgot about it 'til several years had gone by when I saw him and his brother working in the orchard. You know, they's a pest of borers that bores holes in the trunks of apple trees right above the ground, and if you're quick enough you can ram a wire in and either kill the borer, or fish him out, but if he's bored 'round a bend or two, you are out of luck - your tree is gone. So it pays to watch your orchard. Was a time when yer didn't need to spray your trees. But you do now - two-three times.

Well, I goes down into the orchard and asks what they was doing. They told me. And I asked what kind of trees these was. 'Baldwins," they told me. A few of 'em are, I admitted. But most of 'em is Gravensteins. "Oh, no!" Says the Doc, "that can't be! It was a reliable firm we bought them of and they was guaranteed Baldwins - a 'specially good brand.' "Well," I says, "You still get your little book? Now, put it down, so you won't forget it, or tie a string around the trees, or somethin', and you just wait 'til they's apples on 'em and see."

But they didn't wait. The brother sold out to a poor, little runt of a mean, miserable, cuss that I don't want nothin' to do with. But I didn't know what a kind of low-lived skunk he was then, so I tried to be neighborly. I asked him what kind of trees he had in his orchard. He says that they was Baldwins. That that was what the ministers said that sold him the place. "Well, they ain't," I says. "They is Gravensteins - most of'em." But they ain't no good!" he says.

I told him I didn't think they was any good myself- not even for cider. He wanted to know how I was so sure. And I showed him the difference in the leaves. He thought he had better wait and make sure before he did anything about it. That it didn't seem to him that ministers would lie. I told him he needn't wait to find that out. That everybody in Northfield knowed that ministers are the biggest liars they is, 'cause they honestly believe their lies themselves. That if he aimed to become a bonnie fidie resident of Northfield, he'd better find that out, and learn to set one against the other. That some places you needed lawyers to do business for you, but here in Northfield you needed ministers, and if you didn't have one you were all out of luck.

He was going to cut down the Gravensteins but I told him no, and showed him how to graft 'em with scions from the Baldwins. The little cuss never did it, though, he turned out to be too dumb lazy. That old fool was over eighty when he broke his hip. It mended good as new. The fall would a killed any decent person. And you know the saying, "The Good Die Young." Guess that's a fact.

EDITORS' NOTE: The above piece was sent to us by W. Lockeretz (Tufts University). It is from the Life Histories Collection from the Federal Writers' Project of the Works Progress Administration. It is a transcript of an interview of Mr. G. O. Dunnell during 1938 and 1939. At the time of the interview, Mr. Dunnell was 75-80 years old.

The above article, submitted by Dick Tilbury, was published in **Fruit Notes** volume 62 (Number 2), Spring 1997. **Fruit Notes** is a quarterly publication of the University of Massachusetts' Department of Plant and Soils Sciences.

Definitions

BOSKY

1) Having an abundance of bushes, shrubs, or trees.

2) Of or relating to woods

What growers can do to reduce risk of fruit russet

Understanding what causes russeting, and why, is the first step to control.

By Brooke Peterson

Good Fruit Grower, January 15, 1999

Every year, apples and pears are adversely affected by fruit russeting. When a season comes along like the harvest of 1998, which was a particularly bad year for russeting, attention is refocused on this malady. Russet was also bad in 1986 and 1994. Why does it happen? Can growers do something to reduce losses from russeting in the future? This article answers these two important questions.

In more humid apple growing regions, like western Washington, the Midwest, and the East Coast, russet is always more severe and sometimes disastrous. Fruit russeting is the result of a series of physiological events within the skin of the fruit and, like any physiological event, can be affected directly and indirectly by many different things.

What is russeting?

The outer layer forming the skin of the apple is called the cuticle. Immediately benealh this is a layer of cells called the epidermis. Together, these layers would be removed in the normal process of peeling an apple. The cuticle is a waxy layer held together by pectin com-pounds and secreted by epidermal cells.

When apple fruit are at the petal fall stage of development, the cuticle is generally not measurable. At this stage of fruit development, the epidermal cells are both dividing and increasing in size in a radial direction from the core to the outside. When the fruit measures 0.5 centimeters (2 inches) in diameter, the growth is continuing in the same pattern, but a cuticle becomes visible.

The same pattern holds true when apple fruits are 0.9 centimeters (.375 inch) in diameter, except that the epidermal cells elongate radially at a less rapid rate and growth in a tangential direction is more prominent. Tangential growth is from side to side, as opposed to radial growth, which is from the center to the outside.

As the season progresses, the cuticle thickens gradually and the epidermal cells continue to become shorter in radial measurement, while at the same time stretching tangentially. As the fruit passes through this critical phase in its growth, the cuticle is unable to keep up with the rapid growth of the epidermis. As a result, cracks form in the protective cuticle. Exposed, injured epidermal cells react by forming phellogen (corky cells which give the fruit the russeted appearance). Tangential cell division in the epidermis and the cracking of the cuticle appear to be almost inseparable, and are perhaps the earliest step in the etiology of russet. This occurs from about bloom until about 30 days after bloom.

Factors that make russeting worse

Understanding what causes russeting, and why, is the first step to control. It was stated earlier that russeting is affected by many things. Anything that directly or indirectly affects the growth of the fruitlet or the fruitlet environment between bloom and 30 days afterwards can affect russeting. In the interest of brevity, only the main causal factors are listed here.

Genetic makeup: Golden Delicious and Cox's Orange Pippin are examples of varieties especially prone to russet. Golden Russet, an old-time variety, is one of the probable parents of the present day Golden Delicious. As its name implies, it is covered completely with russet. Individual strains of our present-day Golden Delicious show marked differences in their susceptibility to russet. Scientists have compared the waxy cuticle of russet-resistant and russet-prone varieties under the microscope and have found, in general, that russet-prone varieties tend to have a cuticle with an amorphous, or poorly defined structure. Russet-resistant varieties tend to lay down the cuticle as waxy platelets. These platelets are better able to expand with the growth of the epidermis and provide continued protection to the cells beneath. Other work has shown that russet-resistant strains of Golden Delicious have higher endogenous levels of gibberellin (a naturally occurring plant hormone that is known to reduce russeting).

Mineral nutrition: An imbalance of essential elements has been suggested but not proven to influence the incidence of russet. Subtle mineral imbalances can have an influence in russet formation. High nitrogen, an element known to increase cell size, has been indicted in increased russeting. Phosphorus, on the other hand, when present in large amounts, is known to produce small celled fruits with less russet. Having said this, the mineral nutrition connection to russeting is minimal.

Frost: Frost or near frost during bloom or in the early fruitlet stage frequently results in russet.

Rain: is thought to increase the likelihood of russeting if heavy or pro-longed rains occur during the early fruit development. Later season rains certainly won't help matters.

Humidity: A high relative humidity can reduce russet. This has been shown experimentally by enclosing apples in bags of various materials and relating the resultant russet to moisture content of the air surrounding the fruit.

Temperature: Trials have shown that a single lowering

(Continued on page 17)

(Continued from page 16)
of the temperature near to, but not below, the freezing point made Golden Delicious liable to russet when this occurred during the second and third week after petal fall. However, high night-time temperatures following bloom result in larger-celled fruits, which could result in increased russet.

Dew: Dew on fruits can promote russeting, especially when followed by periods of bright sunshine.

Fruit exposure: Slow drying of rain, dew, or sprays in shaded areas of trees tends to increase risk of russet. Exposed fruit, on the other hand, produces thick-walled, rectangular cells which are unable to expand in response to increased turgor pressure and may burst easily. Solar radiation may also change the polymerization of cuticular waxes into an amorphous matrix which is susceptible to cracking.

Spray injury: When weather condi-tions favor russet, almost any spray chemical, or indeed, water alone, could be expected to aggravate the russet situ-ation. A few chemicals such as copper or other metals can cause injury if applied to developing fruits and leaves, irrespective of weather conditions at the time of application. Emulsifiable concentrate materials are known to cause more rus-set generally than wettable powders. Ap-plying sprays under hot conditions (above 90°F), especially emulsifiable concentrates or in slow drying condi-tions, increases the likelihood ofrusseted fruit.

Fruit injury: Mechanical injury of fruitlets can result from the impact of water alone if applied at too high a pressure and in the form of large droplets.

Russet ring virus: The only cure is removing the affected tree.

Insect damage: Apple rust mites are known to cause calyx end russeting on : Golden Delicious, and d'Anjou pears are extremely susceptible to pear rust mite damage.

Common fungi: Dr. Tom Burr and colleagues at the Geneva Experiment Station in Geneva, New York, recently discovered that certain fungi, including *Aureobasidium pullulans* and a yeast called *Rhodotorula glutinis,* can cause severe russet of apple. These are microorganisms commonly found on apple fruit and leaves in high numbers. They said that *A. pullulans* is a major factor involved in apple russet in New York.

Powdery mildew and **hormonal imbalances** are also contributing factors.

Reducing russet

The first line of defense against russeting is to plant genetically superior varieties and strains that are less susceptible to russet, especially in locations known to have a history of russet. As an example, Spur Golden has been shown to russet more than standard Golden Delicious. Still, Spur Golden was sold for many years after this discovery.

Avoiding chemical sprays that are known to cause russeting should be avoided if at all possible, and applications should be made under conditions which are neither excessively hot or very slow drying.

For those in an area with severe rus-seting conditions or those with deep pockets, the application of hormonal sprays is an option. Provide (gibberellins 4+7) is available from Abbott Laborato-ries. Treatments are begun at petal fall and approximately ten-day intervals for up to four applications.

Fruit finish sprays have become pop-ular in Washington State in recent years, particularly on russet-prone varieties such as Golden Delicious. These sprays generally include a regime of early lime-sulfur or sulfur applications pre-bloom, and the application of one or more fungicides such as Captan, Rally (myclobutanil), or Rubigan (fenarimol). Microthiol sulfur is widely used but is considered less effective than lime-sul-fur for the pre-bloom applications. Post-bloom, care must be taken not to apply sulfilr during very hot conditions.

Brooke Peterson, a former Washington State University Cooperative Extension agent in tree fruit, is coordinator of the Pear Integrated Pest Management Program in Yakima

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Greetings from the Battey Farm

All of you avid gardeners are probably aware that the RHS 'Plantfinder' in book form has overtaken Liberty Hyde Bailey's "Hortus" series as the final arbiter of plant names internationally. The plant index and lots of other information became available on CD ROM last year.

Also last year a personal e-mail address was made available in Hortriculture Magazine and I e-mailed the dude and he and I corresponded a bit—but I never purchased the CD.

There is now a website associated with the Royal Horticultural Society Plant Finder and both a standard and professional CD ROM edition are available. The exchange rate is about 1.66, so you must multiply the 'pound' rate by this to get the dollar rate of purchase. I just purchased the CD online.

The WEB address for the RHS Plantfinder is:
http://www.plantfinder.co.uk/

Dave Battey

Cider Island "Paradise Lost"

H. Fred Janson, 932 Glendale Court, Burlington Ontario CANADA L7R 4J3

For centuries the 45 square mile island of Jersey was renowned for its apple cider. No less important was its historical function as a ciderists' link between France and England. Both are now things of the past. No wonder our Apple and Cider Buff Tour, conducted by Dr. Robert Norton in 1994, bypassed cider-barren Jersey just a few miles off its route from the living cider orchards of Normandy to those of Devon and Somerset.

Jersey and 3 smaller Channel Islands are French by heritage but English by political affiliation. They are self administered and independent of the British Parliament. Their head of state is a "duke", currently Queen Elizabeth II. Over the last 700 or so years the common language, originally a Norman French, developed into Jerriais, a dialect, now widely replaced by English. Most of the cider documentation is in literary French or in Jerriais.

Up to the middle of the 15th Century the common drink of the Channel Islands had been "mead", i.e. fermented honeywater, and "dépense" or "piquette", beverages made by allowing squashed wild apples, pears, grapes and other fruit to ferment in water. Eventually noblemen and traders from Normandy, barely 20 miles away, introduced cider proper and also the cider apples the Normans had adopted some 300 years earlier from southwestern France. These were heritage cultivars from Mediterranean countries, selected for their high sugar content and seedling uniformity. They came with the technology of mills and presses the ancients had devised first for olive oil and wine, much later modified for "cicera", the Roman cider.

Following its introduction, cider developed into an important common beverage and export commodity. Production boomed after King Charles II ruled that Jersey cider would be exempt from excise and simultaneously outlawed any cider import from Normandy. Soon orchards replaced grain fields at an alarming rate. Finally, a 1673 law stopped the planting of cider apples except as replacement. About one fourth of Jersey's arable land was in cider orchards, most of the remainder in pasture for the Jersey breed of dairy cattle, the other leading product. The 1805 export records list 434 head of cattle and 3227 barrels [240 litres each] of cider.

After the revocation of the Edict of Nantes in 1680 which, in France, revoked any official protection of non-Catholics, many Jersey Huguenots moved to more tolerant England. They took along their cider know-how and cultivars. A Clément Chevallier resettled in East Anglia in 1727 and grafted 10 acres of seedlings. The cultivar "J'valyi" [=Chevallier] is probably named after this Huguenot family, prominent in Jersey since the 13th century.
Arthur Young, a leading agriculturist of the time, describes a cider press built by Huguenots from Jersey. Out of a ton of apple pulp it squeezed an average of 150 gallons of cider. "The power of the pressure by a lever and screw is such that the marc [pomace] of the apples will burn immediately on being taken from the press"

The Rev. Father François Le Couteur, Rector of the Parish of Grouville, first named the estimed cider cultivars of his time. His book "Aperçu sur la culture des pommiers et manipulation du cidre .... ", Jersey, 1801, was dedicated "for the use of the inhabitants of the island of Jersey" He listed:

Ameret-aux-Gentilshommes	
Fréquin (Frechen or Frai Chien)	Gros-Amer
Lamine	Noir-Tout
Pain-Sauce	Red Streak*
Rogneux	Romeril*

* Usually propagated from cuttings.

During the Napoleonic Wars cider export had become such a growth business that quality often suffered from unscrupulous practices. In 1806 the Jersey government instructed its 12 police chiefs to make sure no unhealthy or substandard cider was dispensed or shipped abroad. Dubious lots were dumped, especially when they were found to contain lead because "usage of this metal to end up in cider and other spirits is criminal" a government proclamation declared.

In 1856 the Ministry of Agriculture of the Lower Seine Departement in France, a region of Normandy, became concerned about the poor quality cider produced there and sent a delegation to Jersey to study cider production. They reported that never anywhere in Normandy had they drunk cider so clean and delicious as that made by Monsieur Moise Gibaut of the St. Lawrence Parish in Jersey. His "secret" as the Commission discovered were not only these 4 high class kinds but also "the best managed orchards and the heaviest crops":

L'Aum6ne
Petit Jean
Rouge Amere%
Tête-de-Chat

Not to be outdone, the Royal Agricultural Society in England offered a prize for an essay on Jersey agriculture. The jury singled out this passage as important: "Jersey especially has its more classified order of trees [compared to England] for combining their varieties of flavour, to the effect of producing cider of superior quality". The cultivars recommended in 1858 were the above four, adding:

Carré	Frai Chien [=Frequin]
Limon	Noir Binet
Pépin Jacob	Romeril

(Continued on page 19)

(Continued from page 18)
It goes on: "Many shiploads of apples are annually exported to Devonshire, for the purpose of being mixed with the fruit grown there, in order to impart to the Devonshire cider the finer character of the Jersey fruit". This need to "improve" should not be surprising. John Scott, owner of the Merriott Nurseries, thus describes English cider practices in 1868: "Most makers...throw all the different sorts indiscriminately in one heap to mellow, consequently many of the fruit are rotten before other kinds begin to mature. Such a careless mode of procedure can only be rewarded by a very inferior article".

In 1903 William B. Allwood, Assistant USDA Director, pub-lished "A Study of Cider-Making in France, Germany, and England" In it he comments on the large group of English cultivars prefixed with "Norman" or "Jersey". His ten top cider cultivars were:

Blenheim Orange (!)	Foxwhelp
Broadleaf Norman	Kingston Black
Burleigh # 14	New Cadbury
Cherry Norman	Red Jersey
Chisel Jersey	White Jersey

Jersey exported an average of 150,000 gallons of cider a year up towards the end of the last century. Under Queen Victoria, then "Duke" of Jersey, anglicization progressed relentlessly. When British breweries brought in low priced beers more and more cider producers switched to early potatoes as a second, and, eventually, major crop. As export commodities, cider and cider vinegar faded away during World War I.

Cider production became a home industry of little importance outside Jersey. Yet it was alive enough to compete for the custom of local patrons. In the early years of this century Maitre Jean Dorey of the Le Douet Farm was the acknowledged King of Cider. In 1912 he produced 1,100 barrels of about 240 litres each. Some were exported but on many farms cider was drunk with every meal. A contemporary survey lists 66 apple cultivars, mostly used for cider but also imported culinary ones such as Blenheim (England), Alexander (Russia), Mère de Ménage (France), and Bismarck (Australia).

Between the Wars cider making declined to a hobby while trees and interest lasted. Traditional cider cultivars, among them several red fleshed or veined ones such as Strawberry Norman, Pommes dé Vin, Red Foxwhelp, could no longer be found. After WW II concern about the loss of heritage cultivars came to a head with the great storm of October 1987 which created havoc among the old trees. The Historical Society and National Trust of Jersey began tracking down and identifying remaining trees all over the island, not always successfully. A museum orchard was planted on land allocated by the Agriculture and Fisheries Ministry on the Howard Davis Farm using MM 111 for understock. There are 136 trees as multiples of 20 identified and 8 unidentified cider cultivars:

Belles Filles	Caplyi
Côtard	Douces Dames
Early Têtard	Early Rouoget
Gras Binet	Gris France
Gros France	Gros Pigeonnet
Gros Romeril	Late Rouoget
Museau d'Boeuf	Museau d'Brébie
Nièr Binet	Petit France
Petit Pigeonnet	Petit Romeril
Têtard	Vert Caplyi.

Twelve of these were later incorporated in the demonstration orchard of the Hamptonne Country Life Museum, a diversified working farm. There, in the Syvret Barn of 1830, cider is made every October with equipment that delights antique loving visitors.

Another lot of old cultivars grown in Jersey is carried by the Station Cidricole at Sees in Normandy in its large collection. Among them are "Fréquin Rouge", "Binet Rouge", "Blanc Fieillu" (=Blanc Sur), "J'valyi" (=Chevallier jaune), "Doux Evêque", "Petit Jean" (Petit Jaune).

According to Ray R. Williams, grandmaster of current British cider science, some of the highest rated cider cultivars currently grown in England are clearly associated with Jersey*:

Brown Snout	Bulmer's Norman
Chisel Jersey*	Michelin
Nehou	Reine des Hatives*
Kingston Black	Stembridge Jersey*
Taylor's	Tremlett's Bitter
Vilberie	White Jersey*.
Harry Master's Jersey	Somerset Red Streak

Dabinett* (Chisel Jersey seedling)

Le Cidre by "Elie"

Le Cidre est bouan, empl'ye ta canne!
J'aime en aver à touos mes r'pas;
Si j'n'en ai pon, de vrai, j'enhanne,
D'ité breuvage, i' n'y'en a pas;
Qu'i gardent lus biéthe en Allemagne,
Et lus whiskey, les Irlandais,
Je laisse ès Angliais lus champagne,
Le Cidre est pour le vièr Jèrriais.

My translation:

The cider is good, empty your jug!
I love some with all my meals;
When I haven't any I get really worried,
There is nothing like this drink;
Let them keep their beer in Germany,
And their whiskey, the Irish,
I leave to the English their champagne,
It's Cider for the true Jerseyman.

Fred Janson contributed this article. We had as a group purchase, in 1997, his book "Pomona's Harvest".

Improved Blackberries For Expanding Markets

Several new cultivars offer a wide range of options.

By John R. Clark, James N. Moore, and Penelope Perkins-Veazie

UNIVERSITY of Arkansas' Agricultural Experiment Station has conducted a blackberry breeding program since the mid-1960s, and during this period eight cultivars have been released. Goals of this program include the development of productive, erect-caned plants that yield large, high-quality fruit.

Other areas of focus have been thornlessness, disease resistance, and improved fruit handling characteristics. The cultivars from this program continue to provide grower options in cultivar selection for the diversification of blackberry markets. In the last 10 years, our efforts have incorporated postharvest evaluations on these cultivars. This information has served as the basis for recommendations of cultivar use to meet specific market opportunities.

Thorny Cultivar Options

Among the thorny cultivars, **Shawnee** (released in 1983) has been the most popular. In a survey conducted in the early 1990s, Shawnee was the most commonly planted erect-caned cultivar in the eastern U.S. The mid-season ripening cultivar demonstrates consistently high yields, large fruit (7 to 8g), and good plant hardiness.

Shawnee's primary use is for pick-your-own (PYO) and on-farm sales, since its dependable storage life is only up to one day for most growers.

Choctaw, released in 1988, provides a very early ripening option for blackberry growers, although it's not as large-fruited as Shawnee (averaging 5g). Choctaw's place in the cultivar profile has been as a "season starter," since it's among the earliest ripening cultivars. Like Shawnee, Choctaw is also best used as a PYO or on-farm sales berry, since its storage potential is low.

Our newest thorny cultivar, **Kiowa** (released in 1996), is the program's largest-fruited cultivar. Fruit ranges from 10 to 12g and is firmer and performs much better postharvest than Shawnee or Choctaw. Kiowa ripens over a long period, beginning three days after Shawnee and continuing for up to six weeks or longer. The large fruit size offers potential for wine or juice.

Kiowa offers more options for marketing, including retail market and shipping opportunities, as well as PYO and on-farm sales. It should also be popular as a specialty item in restaurants due to its exceptional fruit size.

Thornless Cultivars Are Hot

The excitement among blackberry growers following the release of the first erect-caned, thorn-less cultivars has been substantial. The first of these cultivars was **Navaho,** released in 1988. Navaho produces medium-sized fruit (5g). It has been hailed not only for its thornless canes and excellent fruit flavor, but also for its unmatched postharvest handling characteristics.

Our early data indicated Navaho could be stored successfully for four to seven days at 38°F. Since then, Navaho has been shown to store well for up to 14 days at 36°F, and successful shipment has been made to an international location. In 1994, Navaho fruit packed in clamshell containers was successfully shipped from Dallas-Fort Worth International Airport to a broker in Rotterdam, The Netherlands. The shipped fruit was considered highly acceptable by the fruit broker and compared favorably with shipments from Spain and Italy.

Although proper temperature control is required for successful handling, the success of this overseas shipment is very promising.

Arapaho is the most recently released thornless cultivar. It ripens about two weeks earlier than Navaho and has one of the more concentrated ripening periods among existing blackberry cultivars. Arapaho also produces medium-sized fruit with good handling potential, although not quite as firm as Navaho in storage evaluations. Both Navaho and Arapaho produce consistently sweet, firm fruit, and the erect, thornless plants make harvesting enjoyable.

Market and Cultivar Outlook

The development of markets for blackberries should increase in the future. Although PYO marketing has decreased in popularity in recent years, on-farm sales of pre-picked berries have increased and offer the grower the option of receiving higher market prices with the retail outlet.

All of the cultivars discussed above have excellent potential for PYO and on-farm sales, and provide up to an eight-week production period for marketing. The potential for off-farm sales, including shipping to local and distant markets, has only recently been tapped.

Future cultivar developments from the University of Arkansas will play an important role in the ever-changing cultivar profile. On the horizon are additional thornless and thorny cultivars, with increased fruit size (especially thornless) and enhanced postharvest attributes.

Chuck is associate professor and Moore is distinguished professor emeritus, Department of Horticulture, University of Arkansas, Fayetteville; Perkins-Veazie is a plant physiologist with the USDA-ARS at Lane, OK.

The above article was published in the Fruit Grower, April 1988

Disease Resistant Apples

Over the Apple Weekend, one of our challenges was a trayful of fruit to name from Bangor. The heavy rainfall of North Wales is not ideal for fruit, yet Ian Sturrock had found many trees bearing good, scab free crops. We asked him for more details.

In a small clearing, buried in a tangle of bramble, nettle, gorse and sloe in what had once been an orchard, we found our best tree. It was alive and covered in fruit, lovely clean apples. No scab, no cracks, no canker, we had found a survivor - a resistant tree. The struggle and the hacking had been worth it! The survivor turned out to be Ross Nonpareil, a favourite garden apple of the past.

This summer, my colleague Andy and I surveyed many abandoned diseased and neglected orchards in Caernarvonshire, from Conway and Bangor down to Beddgelert and along the Lleyn peninsular. We were looking for survivors - trees with good scab resistance that could be grown organically in the north west. Fewer than 1 in 15 of the trees surveyed were worthy of note. The following we considered had excellent or very good resistance.

"Excellent" resistance:

Ross Nonpareil(l/l)	Grenadier(3/3)
Kidd's Orange Red(2/2)	Charles Ross(2/ 2),
Sturmer Pippin(2/2)	Catillac pear(1/1)

"Very good" resistance:

Lane's Prince Albert(2/1)	Winston(5/1)
Newton Wonder(2/2)	Discovery(l/l)
Claygate Pearmain(l/l)	Lord Derby(2/1)
Laxton's Fortune(2/1)	Egremont Russet(3/3)
Charles Ross(2/2)	King of the Pippins(l/l)
Kidd's Orange Red(2/2)	Rosemary Russet(l/l)
Catshead(1/1)	Mère de Ménage(1/1)
Ashmead's Kernel(1/1)	Peasgood Nonsuch(1/1)
Tower of Glamis(1/1)	May Queen(1/1)

"Good" resistance:

Winston(5/1)	Laxton's Fortune(2/2)
Pitmaston Pineapple(1/1)	Sturmer Pippin(2/2),
Ribston Pippin(l/l)	Adam's Pearmain(1/1)
Cornish Gilliflower(1/1)	Hessel pear(1 / 1)
Tydeman's Late Orange(l/l)	Sunset(1/1)

[The numbers in brackets refer to, firstly, the number of trees found and, secondly, the number of locations. 1/1 means one tree in one location; 3/3 means of total of three trees in three locations. i.e. one in each. Some varieties appear in more than one category - e.g. Kidd's Orange Red - because of the different resistance in different locations.]

Off the western tip of the Lleyn Peninsular is the island of Ynnis Enlli, or Bardsey Island. It has been a place of pilgrimage for centuries. On hearing rumours of abandoned monastic orchards on Ynnis Enlli, the intrepid Andy hired a boat to take him there. On the day before we were due to drive down to Brogdale for Apple Day I received a postcard. Unfortunately he was marooned on the island because of bad weather. After a windswept weekend in Kent, I returned to Wales to find no signs of Andy. He did eventually return, but not for more than a week, and alas with no news of any apple survivors on Ynnis Enlli.

Ian Sturrock

This article appeared in Fruit News the magazine of the Friends of Brogdale, winter 1998.
And below the Cumbrian Diary from Beryl Offley.
And in that same issue a report on CROQ'POMMES 98 a 20th anniversary celebration of Les Croqueurs de Pommes, an organization much like WCFS in France.
See page 22, please.

DIARY OF A CUMBRIAN FRUIT ENTHUSIAST

Beryl Offley

Some of our young apple trees produced their first fruit this year, so I can offer my observations on the impact of scab in these north westerly parts of England (albeit a small sample).

Epicure and Arthur Turner- scab free
Golden Noble- only a very minor amount of scab
Red Devil - some scab
Lady Henniker in a neighbour's garden, cropped well with no scab

There have been virtually no plums and damsons this year, after last year's bumper crop. This may have been due to the cold and windy weather which prevailed at blossom time. But, there have been apples in abundance, including the crabs and hedgerow trees. We had some unblemished, juicy Beth pears, but they were not as prolific as last year. The two pears harvested from Onward were fairly tasteless and again Conference and Merton Pride did not produce a crop.

Strawberries in this area were abundant, but many succumbed to mould before they could be picked, and other soft fruit also cropped well this year. We are fortunate in having four PYO soft fruit farms within ten miles of us to supply our needs until we can organise our "patch".

Our weather, like many other areas, has been generally cool, dull and wet, although last winter was not particularly cold. There were ten continuously, dry warm days in May, and a similar number at the end of September, otherwise we have had the odd decent day between the showers. Needless to say, we have had no problem with our well drying tip!

Ed's. note: does this sound familiar?

CROQ'POMMES 98

(Loosely translated "Crisp Apples")

On the occasion of their 20th anniversary *Les Croqueurs de Pommes,* organised a festival under the title *Croq'Pommes. Les Croqueurs de Pommes,* the premier society for French amateur fruit growers, acts as an umbrella organisation for the local associations that are now active all over France. The celebrations took place in the little town of La Ferté Bernard, between Le Mans and Paris on 17-18 October. All the regional sections of the Society - 33 in total -were represented.

Foreign delegations came from Germany *(Pomologen - Verein),* Italy (amateurs from *Pomona* and professionals from Turino province) and Belgium *(Nationale Boomgaarden Stichting,* NBS).

Every region had one or more remarkable fruits on display. The Italians exhibited an important selection of very typical apples, together with a few pears and a dozen varieties of olives. The most beautiful apples in the Lyon section were without doubt the Calville Mont d'Or and Calville d'Oullins next to the culinary variety Vierge du Pilat. Eye-catchers on the Haute Savoie stand were the reinette grises, such as Reinette Parmentier, de Grand Faye and Dorée.

One can have fascinating conversations at such meetings. Daniel *Valiergue, President of the Picardie-based Iz'on creuse eun pomm* explained to us in his very own and most entertaining way how the apple Jules Labitte acquired its name. I was told the ultimate method of making excellent, prize-winning cider.

Alsace presented the impressive Rose de Berne along side colossal specimens of Grand Alexandre. The prettiest were the little dark red Christkindle, a small to medium sized apple which, in the past, was used as a decoration for Christmas trees. The people from the Jura region impressed us with apples such as Pomme Camion (what a name!) Museau de Chien and the fine looking Belle Fille de Salins. On the Tourraine desk they invited us to taste *cormes,* little ugly looking berries with a lovely intense taste of wine.

The centrepiece of the Auxois-Morvan stand was a display of more than 20 varieties of walnut, which included the well known Franquette, Parisienne and Mayette next to local varieties, such as Souvenir du Congrès (which did not have the size of the pear that bears this name!). *LesFruits Oublités* of the Cévennes presented nearly 40 different sweet chestnuts. Personally I could not see a great deal of difference between them, but it was a most attractive and informative display.

On the tables of Maine, Normandy were many varieties used for making cider, calvados and poiré (perry). Aube - Champagne exhibited varieties that were raised or promoted by the 19th century fruit grower and nurseryman, Charles Baltet. Apples, such as Transparent de Croncels and Henri Dumont were on show, but unfortunately not a single Baltet pear out of the many excellent ones that he raised.

For this weekend, the Centre Athena was transformed into an enormous fruit store, of which my notes represent only a small selection of tile diversity on display. Indeed, probably the best looking stand, I have yet to mention. This was the marvellous presentation from the Anjou region, which displayed pears - Beurré Diel, Beurré Baltet Père, Belle des Arbrès, Directeur Tisserant and so on. Equally remarkable was the "show-window" of *Les Jardins du Luxembourg,* the Parisian park with a fruit garden in its midst. There are 559 fruit trees growing in this collection, of which 535 are trained trees and they comprise 360 varieties of apple and 270 varieties of pear. The "show window" contained 69 apples and 80 pears; they were not edible but made out of plaster. This historical collection was sculpted and painted by the well known French fruit artist, Denis Boucher.

Our Belgian stand placed the Belgian pear in the spotlight. We displayed 84 different pears all raised in Belgium along side 50, mainly local, apples.

We took away so many pleasant memories - the excellent organisation by our French friends; the fine cider served at the bar; the new edition of the distinguished pomological work *Les Annales de Pomologie Belge et Etrangère* and the internet bus where we could "surf" to the sites of *Les Croqueurs*.*

La Ferté Bernard was a memorable and highly successful fruit exhibition. We wish the president of *Les Croqueurs du Pomme,* Mr Scribe, and his team another 20 years to continue the good work that they do in defending and promoting regional varieties. Their success is amply demonstrated, on the one hand, by the increasing interest in fruit and in particular its diversity and, on the other, by the 4,000 visitors to La Ferté Bernard over the weekend.

Jean-Pierre Billen

Jean Pierre Billen is a member of *Nationale Boomgaarden Stichting* (NBS)

*http://www. marisy.fr/croqueurs_de_pommes/

FRENCH/ENGLISH DICTIONARY:

Croqueur	vt to crunch, vi to be crunchy
Pomme	apple
Camion	van
Museau	muzzle, snout
Chien	dog
Belle Fille de Salins	daughter in law of ——
LesFruits Oubliés	the forgotten fruit

Jean Luc, is this correct? Let us hear from you, please.

FRESH and PROCESSING PLUM VARIETIES SHOW PROMISE FOR FUTURE

From the Fruit Growers News February 1999

New and promising plum varieties are in the breeding pipeline, which could help contribute to the general increase of interest shown in the crop in recent years.

"This is a nice break from the downhill trend that the industry has been showing for awhile," said Mira Danilovich, Michigan State University Extension fruit agent based in Oceana County. She outlined some of these new varieties at the 1998 Michigan State Horticultural Society annual meeting in Grand Rapids.

Several factors are contributing to this increased interest, said Danilovich. They include changes in consumer desires, processors trying to anticipate and follow market trends, the severe 1994 winter that decreased plum acreage by 30'%, and higher prices and return to the grower in the past two seasons. These higher prices are expected to continue for at least the next three to five years.

"Plums are becoming an option in diversification. They fit nicely between cherries, possibly peaches and apples." said Danilovich.

On the fresh side, major supermarket chains have been saturated with the Japanese type of plums from California. The prospect of fresh market European plums from is improving with the introduction of large, attractive, aromatic and good tasting fruit.

Plum variety evaluation research has been taking place at the Northwest Michigan Horticultural Research Station in Traverse City and on semi-commercial blocks in private orchards in Traverse City and Ludington.

Fresh market plums

Alderman is a cross between Japanese and American varieties, which explains its relatively higher tolerance toward low winter temperature. The tree is medium-sized with an open growing habit. Fruit is very attractive with a brilliant orange-red skin color and orange-yellow flesh. The skin is very firm, shiny and waxy-like. Fruit is medium to large with good texture and taste. It ripens the fourth week of September. It is self-fruitful but will benefit from external pollinators like Toka and South Dakota.

Empress is a well-known European variety. The tree is medium size, upright with the open crown. It has large, elliptical, symmetrical fruit of very good quality. Skin is purple covered with heavy waxy bloom. The flesh is greenish-yellow, semi-cling. The problem with Empress is that it ripens very late (early October) and should probably not be grown north of Grand Rapids.

Stanley x 303-16 is a European-type plum. The tree is very productive and bears medium to large, reddish-purple fruit with golden yellow flesh. Danilovich believes the plum lacks both sugar and acid. The tree shape is rectangular - narrow at the seam and wide at the cheeks. It is extremely sensitive to mites and trees are often defoliated by September.

JG-501 is a European type plum with a tree that is a heavy producer. Fruit is large, purple with orange-yellowish flesh. It ripens in the second week of September and is a good-tasting plum, said Danilovich. It is heavily infested with mites but does not lose a lot of leaves and is quite tolerant to bacterial spot. The variety may be of interest to smaller operations or roadside markets.

Long John was introduced from the Geneva breeding program in 1993. The tree is not vigorous, rather small, and it appears the bearing wood is concentrated on the younger wood, up to four years old. It has a very good cropping history. Fruit is large and has a long and somewhat flattened shape. The skin is dark maroon, almost black. Flesh is orange, firm and pleasantly tart. It could be of interest to farm marketers.

Ozark Premier is a prolific cropper. Fruit is generally large but when the fruit set is too heavy, it is medium to small. Peak harvest is in the second week of August under normal conditions. The fruit tastes good and does not show severe winter damage.

President is a well-known older European variety. In Northwest Michigan, it has suffered from winter damage and many secondary, opportunistic pests and pathogens. Fruit quality is very good, but it's also a very late plum and would be of interest in the southern part of Michigan.

PP 6975-2 suffered plenty of winter damage in 1994. It requires good, protected sites in order to survive. Despite that, it puts out a fairly heavy crop. It produces large fruit which taste sweet with just a touch of acid. Normal harvest is in the second week of September. It is sensitive to mites to the point that it will defoliate by midsummer.

Polly has a tendency to self-thin providing regular cropping and large fruit. Fruit is very large and when ripe has purple-red skin, orange-green flesh and has a mild flavor.

Red Giant is a newer Japanese-style plum that has demonstrated good cold-hardiness. The tree is more than 15 feet tall and only about nine to 10 feet wide. The crown is open, providing plenty of sun to the fruit, and the fruit is large. The fruit is very sweet at 17% brix with just a touch of acid.

Seneca is a European type plum that is a medium-to-heavy bearer. Fruit is large with reddish-purple skin and yellow-orange flesh with good taste. Fruit has a ten-

(Continued on page 24)

(Continued from page 23)
dency to crack when exposed to heavier rain near or at maturity. It's moderately susceptible to brown rot.

Simca has regular and heavy productivity as well as partial self-thinning. Fruit is large, uniform, very attractive and has a good sweet taste. It ripens in the second week of September. This variety requires a very good site to avoid winter kill.

Valor is a European type that is quite winter hardy. It produces regularly and heavy with large and very good-tasting fruit. The average harvest date falls in the fourth week of September. Fruit is medium large, dark purple with speckles and quite attractive. Mites have not been a problem even under the heavy mite pressure.

Vanier is a Japanese-type plum that requires a frost-free site. It is historically a prolific bearer. Limbs will break under the crop lead. Taste is good. Fruit holds well in storage. The peak harvest is in the first week of September.

Vision is a very prolific cropper which sets and produces a heavy crop even when weather during pollination is unfavorable. Fruit is large to very large, purplish with amber flesh. The taste is described by Danilovich as "exquisite." It is harvested in the fourth week of September. It is suited for the very best frost-free sites.

V 72521 trees have been in poor shape due to winter injury, but still produce a tremendous crop and deserves to be looked at more, preferably on more frost-free sites. Bearing wood is well-distributed on both younger and older wood.

V 66071 is a very good dual purpose plum, said Danilovich, and is one of the best fresh market plums. The tree is moderate to vigorous with a very upright growing habit and is a moderate to heavy producer. It cooks well and is a good choice for home canning.

NY 58.900.7 is a very heavy cropper that Danilovich describes as her new discovery for the year. Fruit are very large and taste sweet with just a touch of acid. This very good eating plum is ready for harvest on September 10.

NY 66.604.2 is another very sweet, good eating plum. Its average brix is above 18%. It is very juicy and aromatic. It has a tendency to form blind wood on wood older than four years and requires rigorous pruning.

V 70031 is a prolific cropper. It produces medium to large fruit of good quality. If it isn't picked in time, the fruit has a tendency to drop. Taste is mild, with not enough acid, said Danilovich. Normal harvest is by the end of August. Trees suffered significant winter damage from 1994 and there is some dieback. Mites are a major problem - in certain years trees are almost defoliated by September. It is suited for good frost-free sites and has the most potential for farm market situations.

NY 1493 is a European type plum. It has excellent spur distribution on two-to-four-year old wood. Fruit is medium to large, purple-maroon with green flesh. Some people like the taste, while others report a gasoline-like aftertaste. It produces a regularly heavy crop. It's very sensitive to mite damage.

Processing plums

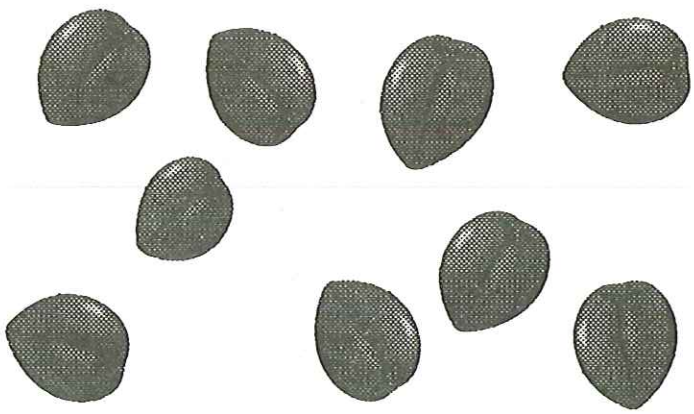
Castleton is from the Geneva program and was named in 1993. Although it's best known as a proccssing plum, it is also suitable for the fresh market. "It's definitely my favorite when it comes to home canning," said Danilovich. It has performed well in commercial blocks and requires more rigorous pruning to balance vegetative growth and cropping. It produces a very heavy crop. Taste is sweet and mildly acidic. Castleton normally ripens in the first week of September and is suitable for mechanical harvesting.

NY 12 or NY 58.900.12 fruit are small to medium in size and look a lot like Stanley. Fruit splits at the suture are of concern. The plum has excellent processing qualities, particularly for pitting and canning and could be mechanically harvested. It's very sensitive to the potato leafhopper and is relatively sensitive to black knot.

NY 9 or NY-58.900.9 have since 1996 set a consistently heavy crop at the Northwest Michigan plots. Bearing wood is well-distributed. Fruit is medium to small. The flesh has a mild, rather sweet taste. "Based on the Gerber trials on the fruit shipped from New York, this selection is outperforming all the others," said Danilovich. "This year we plan to expand the trials to its suitability for pitting and canning." The tree does very well against both black knot and potato leafhoppers.

NY 6 or NY 66.6609.6 is a good producer, with fruit too large for conventional pitters. It did well in the baby food trials done by Gerber and Heinz. Taste is very mild and it could be a good dual purpose plum. It normally matures in the second week of September.

Denaris is an Early Italian sport that produces well. However, there is an indication that it may have a tendency toward bi-annual cropping. Fruit is small, elliptical, very high in soluble solids, mildly acidic and has great flavor. It matures in the third week of September.



LETTER FROM LONDON

J. C. Slane

7th September, 1998

Fall Fruit Celebrations

Over here the season of fruit shows and celebrations is upon us again. There has been a very good crop of both apples and pears locally and doubtless there will be some high quality exhibits on view. In the Midlands there is the Malvern Autumn Show in Worcestershire on the weekend of September 26/27th. This is a large well established festival of food, wine, crafts, flowers, fruit, livestock, farm machinery etc. plus the usual funfair and family entertainments. In London, The Royal Horticultural Society have numerous shows and talks at their two large halls near Parliament Square. The main fruit shows are held in October - very prestigious occasions, not for the smaller grower like me other than to look and gape.

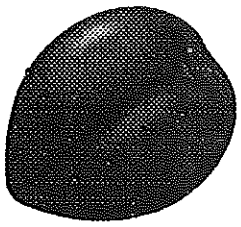
At Brogdale there will be a 5 day celebration of our Apple Day (on October 21st). This year we are mounting displays and 'recruitment' at some of the main London railway stations for the first time, in addition to the show at Brogdale itself. At Brogdale, from some of the 2300 varieties of apple growing in the orchards are selected choice examples from over 100 cultivars piled in large woven wicker baskets arranged in the packing house, - quite a sight and aroma to behold for enthusiasts! There is also supporting family entertainment, the odd cricket match and plenty to eat and drink plus of course the orchard walks.

Commercial Plum Growing Developments

I was fortunate enough in mid August to visit New Cross Fruit Farm near West Lambrook, Somerset, in the south west of the country, a farm covering some 240 acres mostly plums and apples. (This is quite large for the UK). The Proprietors are William and Liz Hebditch.

'Victoria' is the main-stay plum crop and they were looking and tasting very good. Some 10 other plum cultivars are grown including Edwards, President, Valor, Marjories Seedling and Sanctus Hubertus.

Most of the trees seemed to be on St. Julien 'A' however it was interesting to see several trial rows of Victoria also on Ferlenain and Pixy. These trees were approximately 4 years old and starting to crop well, and were noticeably smaller than the St. Julien trees of the same age. Those on Ferlenain had a l0% crop improvement compared to Pixy and the fruits were marginally larger but they did however sucker more heavily than either Pixy or St Julien. (My own experience of Pixy is that it crops much earlier than St. Julien but is not so tolerant of dry or waterlogged conditions. St. Julien is still ahead in the hardiness stakes, and is perhaps still a good choice as an orchard tree where size is not the critical factor). I also saw some rows of President on Pixy that had an over upright growth characteristic and which were very difficult for the staff to pick.



William Hebditch, growing as he does so many plum trees, has a very practical and down to earth approach to plum tree mortality. He expects to loose about 15% of his Victorias during their lifetimes, mostly due to Silver Leaf or Bacterial Canker. Once his trees have survived their first 6 years they seem to be relatively safe. Trees exhibiting minor Silver Leaf characteristics are first trimmed back to sound wood then drilled and plugged with pellets of a biological control *Tricoderma Viride* an aggressive fungus which reduce the severity of fungus causing the Silver Leaf (*Chondrostereum purpureum)* and which is itself seemingly harmless to the tree. William was, however, a little reserved about the degree of control being achieved.

I have not seen *Tricoderma* being used commercially before however I understand that as a remedial measure against Bacterial Canker, Victoria trees are sometimes frameworked with Denniston's Superb this cultivar being far more resistant than Victoria.

Events not to be missed

The annual Brogdale Cider Festival is almost upon us when all the faithful will congregate from far and wide to check out the local brews. There will be quaintly dressed 'musicians' from Somerset playing and singing the good old cider songs around enormous cider presses and vats. Hopefully the seasonal delicacies will be available in great variety. All this reminds me, I must get my cider mug ready again and get into training for this strenuous event which demands much stamina especially from the newcomers!

Editor's note:This letter was received after the October newsletter went to press, and I didn't have room for it in the January issue. I thought you might be interested in reading about the plum developments and conditions and events in other parts of the world. We look forward to hearing from Jerry again. Do you have an e-mail address, Jerry? If you do we could communicate easier.

WCFS members, do any of you have plums on Ferlenain or or Pixy? Share your experience with us.

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The Bee Line is the newsletter of the Western Cascade Fruit Society.
It is published quarterly; January, April, July and October and is included with membership.

SEND IN YOUR E-MAIL ADDRESS AND WE WILL START A FILE OF WCFS MEMBERS

NEXT NEWSLETTER JULY 1999

WE WANT TO HEAR FROM YOU

Your Board of Directors needs guidance, as does your newsletter editor. So we are trying to make it easier for you. As you renew your membership would you let us know what you think. You may respond even though your membership is not due for renewal!

Are you interested in articles on vegetable or other gardening? No_____ Yes___What? _____

What would you like to read about? _____
Please be specific use a separate sheet if you need to
Do you prefer the Bee Line pages stapled or loose? _____

What changes would you like to see at the Fall Fruit Show? _____
Location?
What changes would you suggest for the Spring Sale/Meeting? _____
Location?
What topics for speakers? _____

Is there a particular speaker you would like to have? No ___Yes___Name_____

How else can we help the home orchardist? _____

What area do you have for planting, acreage (how much?) or city lot? _____

Any other comments? _____

_____

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SPRING 1999

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California Rare Fruit Group	http://www.crfg.org/
Good Fruit Grower	http://www.goodfruit.com
Home Orchard Society	http://www.wvi.com/~dough/HOS/HOS1.html
North American Fruit Explorers	http://www.nafex.org

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