

The Bee Line

NEWSLETTER OF
WESTERN CASCADE FRUIT SOCIETY
A NON-PROFIT EDUCATIONAL ORGANIZATION

WINTER 1996

Apples Pears Figs Grapes Kiwi Cherries Nectarines Peaches Plums Blackberries Raspberries Strawberries Blueberries Currants Huckleberries Gooseberries Nuts



1996 ANNUAL SPRING MEETING ROOTSTOCK, SCION WOOD and FRUITING PLANT SALE

Saturday, March 2, 1996

at

**United Methodist Church
1919 Pioneer Ave SW
Puyallup**

DONATION \$1.00 - UNDER 16 AND VOLUNTEERS FREE

The addition of fruiting plants to the 1995 Rootstock and Scion Wood sale was so successful that it is being repeated for 1996. See page 5 for plants that will be available and prices.

**TELL YOUR NEIGHBORS--BRING A FRIEND--COME ONE, COME ALL
THE FIRST 100 TO REGISTER (ONE PER FAMILY) WILL RECEIVE FREE A NEWLY BENCH GRAFTED
APPLE TREE - A VALUE OF OVER \$10.00**

Those of you new to WCFS can come and learn how to graft hands-on, or our experienced members will graft a tree for you (donation of \$1.00 per graft). Select from over 150 varieties of apple, pear, and stone fruit scionwood many of them rare and gourmet varieties impossible to find in local nurseries.

Learn about grafting inexpensive fruit tree rootstock and which ones are best suited for you and your growing space so you can be sure to have the right combination for your specific needs.

**CALL STEVE JACKSON 868-8344 AFTER 6:00 TO HELP IN THE ROOTSTOCK & FRUITING PLANT SALE
OR IF YOU WILL GRAFT ROOTSTOCK OR ANYTHING ELSE YOU WOULD LIKE TO HELP WITH
CALL BILL DAVIS 771-8978 AFTER 5:00 TO HELP IN THE SCION WOOD SALE
CALL EVELYN HOYME 485-3835 TO HELP AT THE REGISTRATION OR MEMBERSHIP TABLE OR AS A
CASHIER AT THE PLANT SALE**

SCHEDULE OF EVENTS

- 9:00 REGISTRATION AND COFFEE
- 9:30 WCFS GENERAL MEETING - Election of Board Members, Annual Report
- 10:00 Bruce Kelley, WCFS Member,
Selection and Care of Grapes in the Puget Sound Area
- 11:00 Dr. Bob Borgeau, WCFS Member
Fruit Cultivars That Do Well in Our Area-Based on 20 Years of Experience
- 12:00 LUNCH BREAK
- 1:00 Scott Conner, KOMO Radio Garden Show Host
Edible Landscaping Using Native Plants
- 2:00 Art Antonelli, WSU Experimental Station, Puyallup
Fruit Pests
- 3:00 Board of Directors Meeting-all WCFS members are welcome to attend
- 10:00 to 3:30 Rootstock Sale
Scionwood Sale
Grafting Instruction and Workshop
Grafting tool available for free use at rootstock table
Bob and Carol Norton with Apple Bags

LOCATION OF ABOVE EVENTS WILL BE POSTED AT REGISTRATION TABLE

Bob and Carol Norton will again offer their apple growing bags and be available to answer your questions and demonstrate the procedure for attaching the bags to the apples. The price is \$11.00 per 100, plus sales tax. This year they will have two sizes, larger bags for Jonagold, Mutsu, King, etc., and the regular size they had last year. They will also have available to Chapters for fund raising boxes of 2500, at wholesale price. Be sure to talk to Bob or Carol if you are interested.



DIRECTIONS TO UNITED METHODIST CHURCH

Southbound I-5: Take exit 142B at Federal Way, highway 18, go west a short distance, to highway 161, turn left (south) and continue (it becomes Meridian St E) to Pioneer Ave SW, turn right -west-building is on right about 5 blocks

Northbound I-5: take exit 127 in south Tacoma area, go east on highway 512. Exit 512 at Meridian (161), go left (north), at Pioneer go left, building is about 5 blocks on the right.

Southbound 167: take highway 512 to Puyallup, exit on Pioneer, so west, cross Meridian, building is about 5 blocks on the right.

ABOUT THE ANNUAL SPRING MEETING

The WCFS Annual Spring Meeting is being held at the United Methodist Church in Puyallup this year. Orel Vallen and Dick Tilbury researched several sites. Criteria was: rental fee, parking, location (easy to find!) and space available to use. At the United Methodist Church **everything will be under cover** (good weather not guaranteed in March) and the price was right. **Free coffee will be available at registration, as well as donuts** (although donations gratefully accepted). The rootstock and scion wood sale will start at 10:00 a.m. after the annual meeting is adjourned. The Board hopes to see a good attendance for the Annual Meeting indicating your support for their time and for this once a year gathering of all the membership. **The first 100 to register (one per family) starting at 9:00 o'clock will receive a free bench grafted apple tree—a value of over \$10.00.**

SAVE SCION WOOD FOR SPRING MEETING

Bill Davis, in charge of scion wood sales, says it is not too early to start thinking about saving your scionwood for sale at the Annual Spring Meeting on March 2. The scion wood will be sold for 50 cents each. (You won't find that price any where else!) All members are requested to save scions of their favorite varieties and any other varieties they think other members would like to have. In the past we have had shortages of plum, apricot, cherry, peach and grape. These varieties need to be pruned earlier than others.

The scions for spring grafting should be collected in January and February before the buds start to swell. Select new wood, about pencil size, 8" to 10" long, 18" maximum for ease of handling during sale, that grew last year on **healthy** trees of a **known** variety. Please, no patented varieties. It is very important to label **each one** accurately. Masking tape works well, **print** legibly, (spelling and neatness count!), and specify fruit if it isn't apple: Frost peach, Comice pear.

Protecting the scion from drying out is also important. They can be placed in an air tight plastic bag with a slightly moist paper towel and stored in the crisper of your refrigerator. If that isn't possible, bury the bundles in sawdust or soil on the north side of a building, deep enough so they will stay cold even in late spring.

PLEASE DELIVER YOUR SCIONWOOD PRIOR TO THE GENERAL MEETING
SALES WILL START AT 10:00 A.M.

Call Bill if you have any questions: 771-8978 after 5:00 p.m.

IS THERE SOME ONE YOU KNOW WHO HAS GIVEN OUTSTANDING SERVICE TO WCFS? For many years WCFS has recognized outstanding contributors to the organization with a "Life Membership". The bestowal of a Life Membership honors those who have given of time and talent. Although recipients no longer are required to pay dues, many of those so honored continue to give; financially with contributions and dues, and with their time and talent.

Many of the members in our group, charter members as well as those who have joined through the years have been honored: Walt Lyon; Ed Lewis, John Parker, James Anstis, Bob Sestrap, Dal Leaf, Emory Leland, Bob Norton, Gerald Pate, Tom Perkins, Tom Thornton, Nancy Jo Cushman, Helen Zuelow, Daphne Lewis, Paul Donaldson, Dick and Marilyn Tilbury, Aaron Haynes, Norm Schut, and in 1994 David Battey.

If you would like to nominate someone for Life Membership, please prepare a short resume of the nominee's volunteer service to WCFS that are above and beyond the norm, to be read on the floor at the general meeting, and provide the information to the newsletter editor (for publication in the next newsletter) if your nomination is accepted.

NOMINATING COMMITTEE REPORT

Joe Zeppa, Nominating Committee Chair, reports that three Director positions need to be filled. The terms of Larry Barelo, Bill Davis, and Dick Tilbury expire. Nominees confirmed at this time for the 1996 to 1999 term are Eric Simpson of Sequim (North Olympic Fruit Club), Bill Davis of Edmonds (At Large) and David Snell, Federal Way (Tahoma Chapter). If you would like to serve as a Director, or help on a committee, call Joe Zeppa (206) 524-8943. Meetings are held about every other month, usually in a centrally located site. Serving as a Director is very rewarding and a good way to get to know the intricacies of putting on the Fall Fruit Show and the Spring Sale. Also a good way to become better acquainted with many of the other members of WCFS. To paraphrase one of our late United States Presidents "Ask not what the WCFS can do for you, but what you can do for WCFS". Nominations will be open from the floor. Please have permission from the nominee.

MINUTES OF THE WCFS ANNUAL MEETING MARCH 4, 1995

The minutes are printed here for approval at the 1996 annual meeting:

The 1995 WCFS Annual Meeting was called to order by President, Chuck Parkman, at 9:30 a.m. March 4, 1995 at Allmendinger Center, WSU Research Center, Puyallup. Minutes of the 1994 meeting were approved as printed in the Bee Line. Treasurer, Evelyn Hoyme reported:

Beginning balance 1/1/94				\$ 8783.08
Income:		Expenses:		10702.50
Dues	2545.00	Operations	\$1951.07	(8546.97)
Contributions	267.00	Insurance	551.00	
Spring Sale	2578.63	Spring Sale	1107.09	
Fall Fruit Show	2417.49	Fall Fruit Show	2182.84	
Group Purchases	2727.45	Group Purch	2640.07	
Bank Interest	<u>166.93</u>	NW Flower Show	<u>100.00</u>	
	10702.50		8546.07	
Contributions				(2000.00)
Ending balance 12/31/94				\$ 8939.51

Joe Zeppa, Nominating Committee Chair announced that no one would accept the nomination as president for the 1995 year. Directors elected for the 1995 to 1998 term are Chuck Holland, T.K. Panni and Steve Jackson. Joe also proposed the formation of the Executive Committee to fulfill the duties of president, and outlined its structure. (Ed's. note: Please refer to The Bee Line, Spring 1995 for details). Orel Vallen volunteered to fill the position, 1994 to 1997, created by Paul Hoyme's resignation.

Meeting adjourned at 10:00 a.m.

BOARD MEETINGS 1995: In general, the Board planned the 1995 Fall Fruit Show for October 28 & 29 at Edmonds Community College; cider pressing will not be offered because of the potential danger of e coli bacteria from apples whose source is unknown. The 1996 Spring Annual Meeting was set for March 2, location, chair persons, speakers, etc. were assigned. The rootstock and scion wood sale to be enhanced with fruiting plants again. WCFS will have a booth at the 1996 Northwest Flower and Garden Show February 7-11. A motion was approved to purchase a commercial quality three panel display for use at WCFS events-chapters are welcome to use it- not to exceed \$600.00. A donation of \$1500.00 to WWTFRF for research at Mt. Vernon was approved. Directors assignments were made for the year. In filing the Secretary of State's Annual Report, since WCFS is a corporation, we had to have a president-an Executive Committee was not acceptable-Joe Zeppa accepted the nomination of President, Chuck Holland accepted Secretary, the position Joe had.

Ernie Mazzei resigned from the Board due to ill health-he will be missed, and we hope he recovers soon. Ernie was very eager to be the liaison between WCFS and the chapters, a position he initiated, and to help in the formation of a new chapter in the Mt. Vernon area.

Sally Musseter, a member of Piper Orchard Chapter, is filling the Director position for the remainder of the term, to 1997. Sally is going to take care of Publicity for our events. Sally is a welcome addition to the Board, her enthusiasm, which she has exhibited in the sale of raffle tickets for the cider press at the Fall Fruit Show, will be appreciated.

PESTICIDE INFORMATION SERVICE Good Fruit Grower, January, 1996

A new toll-free pesticide information service is available at Oregon State University. The National Pesticide Telecommunications Network is co-sponsored by OSU Cooperative Extension and the U.S. Environmental Protection Agency. The EPA has provided funding of \$2.5 million for a five year period. Pesticide specialists are available to answer questions on topics such as pesticide products, management of pesticide poisonings, toxicology, environmental chemistry, safety practices, health and environmental effects, and clean-up and disposal.

The information service operates from 6:30 a.m. to 4:30 p.m., Pacific time, Monday through Friday, excluding holidays. It can be reached by telephone at (800) 858-7378, by fax at (503) 737-0761, or by mail at NPTN, Agricultural Chemistry Extension, OSU, 333 Weniger, Corvallis, OR 97331-6502

GRAFTING IN FEBRUARY ON POTTED ROOTSTOCK IN ALASKA

by Dwight Bradley

Alaska Pioneer Fruit Growers' Newsletter
Winter 1994-1995 Volume 9, Number 4

Old Method.---Like most growers in Alaska, I've usually done my apple grafting on bare rootstock in April. With whatever thawed soil I can rob from the greenhouse, I pot the new bare-rooted grafts as soon as I can, and stick them in a warm place to callous over and start growing. The pots give the trees a great headstart. If, alternatively, the bare rooted trees are planted out in the ground as soon as the grafts have calloused over and the ground has thawed (mid-May or so), more than half of the grafts will fail and those that do take will put on very slow growth.

Usually I'll transplant the more vigorous grafts out in the orchard in June, once the graft has put on perhaps two feet of new growth. The slower-growing grafts get to spend their first winter in a heated garage, to give them an extra boost. I bring these trees inside just before the first frost and grow them at about 50°F under lights for another few months, until they finally notice that it's time to shed their leaves. Then I turn the heat down to 35°-40° and try to keep them from reawakening until sometime around the first of May when it's safe to put them in the unheated greenhouse. The ultimate aim of all this, of course, is to get a better rate of survival in grafting, and to get trees into production sooner.

One interesting result of spending the winter indoors is that many one-year whips will bloom at the tip of the central leader. Whips that are going to tip-bloom usually show a pronounced thickening of the last inch or two of the stem. These blossoms should be removed, of course, since the object of the first few years is to grow a tree, not a couple of apples. That is, if you can get other family members to admit that it really is better for the tree in the long run.

New Method.---In February, 1994, I was forced into an experiment that turned out to have even better results. I had turned up the temperature in the garage to around 60°F for a few days to paint our old truck. A few days later I was surprised to see about 20 potted Ranetka rootstocks starting to bud out. Most of these were either leftovers from the previous year's grafting workshop, or survivors of earlier grafting attempts. Fearing that my 20 rootstocks were about to turn useless, I went around town for scionwood. Needless to say, what I got was still very dormant. Using a grafting machine, I made 20 whip-and-tongue grafts of about average quality. I stuck the pots in a 60°F room. Within a week, the first buds were poking through and within three weeks, all 20 grafts had sprouted new growth. (This is a much better batting average than I usually have. For comparison, at the April grafting workshop, only about half of my bare-root graft took.)

I turned on the grow lights in the garage, turned up the heat, and watched as the new grafts took off. When the weather finally warmed up around the beginning of May, I moved the trees to the greenhouse, and started giving them a few hours of direct sun whenever I could. Around May 25, I put them outdoors for good, first in partial shade under some birch trees and finally in full sun. With this coddling they hardened off pretty well, although the older leaves (the bottom six or eight) eventually got sunburned and looked as though they stopped photosynthesizing. In mid-June (a bit late, but this was the first chance I got), I planted the most vigorous trees in the orchard. One of these, a Geneva Early, was 7' tall by summer's end, and it had two or three lateral branches that were two feet long! Ginger Gold and Parkland did almost as well. For lack of space inside the existing orchard fence, I couldn't plant out all of the trees, so about 5 of the weakest remained in pots all summer. A couple of these stragglers had reached 6' by the time they came into the garage for the winter.

With the success of 1994 in mind, I had been planning on doing more grafting on potted rootstocks in March 1995. A few weeks ago (early January), however, I discovered most of my dozen or so Ranetka rootstocks were already starting to bud out. This meant that I had to do my grafting even earlier than last year. Interestingly, my Borowinka and Prunifolia rootstocks are still fully dormant at this writing, February 10. Ranetka seems to break dormancy at a lower temperature than the other two.

I would draw the following conclusions from what I've learned so far.

- (1) Grafts on potted rootstock have a better chance of taking than grafts on dormant, bare rootstock.
- (2) Rootstock that is just breaking dormancy seems to work very well.
- (3) Grafting onto potted rootstock gives stronger first-year growth, presumably because the root system is already well established.
- (4) Given my set up (garage with grow lights, greenhouse, etc.), mid-March is probably about the optimum time for grafting. Much later and the trees won't be well enough established to take full advantage of the long May days. Much earlier and the new trees will spend an awful lot of time under grow lights, and then may suffer sunburn when they are finally moved outside. I certainly wouldn't recommend grafting in January!
- (5) The only disadvantage of which I'm aware is that some additional care is needed (watering, turning on lights, moving trees in and out of the greenhouse, etc.).
- (6) One final advantage is that it gives a stir-crazy apple grower something to do during the long months indoors.

CORRECT CALCIUM DISORDERS

Calcium sprays and cultural practices can help control bitter pit and cork spot

by George M. Greene and Rob Crassweller

from Fruit Grower October 1995

Cork spot and bitter pit are physiological disorders related to calcium deficiency, and sometimes to high nitrogen, in fruit flesh. Low calcium has also been implicated in poor storage quality. York Imperial, Delicious, Golden Delicious, and, even more recently, Braeburn are varieties that are particularly susceptible, although others can be affected. These problems continue to cause producers economic losses.

Corking, which is an orchard disorder, is characterized by spherical dead areas in the fruit's flesh. However, low calcium may not be the sole cause of the condition, which is worsened by excessive tree vigor and moisture stress.

Bitter pit, which is primarily a storage disorder that attacks the skin and adjacent cells, is aggravated by early harvest and extended storage.

Symptoms of the two disorders vary by area, variety, and environmental conditions. No one cultural practice can guarantee control below the economic injury level. Effective management should involve almost all cultural practices, as outlined in the five points that follow.

Calcium Chloride Sprays Applying calcium has reduced or commercially controlled corking and bitter pit, though seldom eliminating the problems completely. Used effectively, these sprays may be the most cost-effective, quickest cultural practice for reducing low-calcium physiological disorders in apples. We recommend 4 pounds to 14 pounds of actual calcium per acre per season in six to eight cover sprays. Many products that supply calcium are available, although many are recommended at lower rates of actual calcium. These may be beneficial when only small amounts of calcium are needed to correct the problem. Select the rate of calcium needed to minimize corking, bitter pit, and other calcium deficiency fruit disorders under your specific conditions. Growers experiencing severe bitter pit on summer cultivars may need to apply special calcium sprays in addition to cover sprays.

Moderate Fruit Density Trees bearing a light crop normally have very large fruits that are low in calcium and may exhibit corking and bitter pit. Fruit from trees with a heavy crop generally do not show these disorders and tend to be small. Factors that help produce a more uniform crop and fruit size include frost protection, good pollen source, adequate bee population, and good pollinating weather. To have moderate annual fruit density, trees must produce high-vigor fruit buds each year. This can be accomplished by effective use of growth regulators to help thin excessive crops and encourage high-vigor flower buds for the next year's crop.

Moderate Tree Vigor Since the vegetative parts of the tree have relatively high concentrations of calcium, excessive tree vigor can use calcium that otherwise would be available for the fruit. Be sure to avoid excessive pruning and overfertilization with nitrogen, both of which can encourage excessive tree vigor. An inadequate fruit load can also cause the tree to have excessive vigor, so use growth regulators, as mentioned above, to regulate cropping.

Balanced Nutrition In order to prevent low fruit-calcium levels, avoid excessive levels of nitrogen, potassium, and magnesium and deficient levels of calcium, zinc, and boron. Soil testing to check soil pH and leaf analysis to determine the plant's uptake of essential nutrients are the best tools for fertility management. By determining nutrients already present and their amounts, a grower can avoid wasting money on unneeded fertilizer and can improve the nutrient balance.

Correct Soil Conditions Water stress caused by either too much or too little soil moisture can contribute to an increased incidence of bitter pit and corking. If necessary, tile your orchard to remove excess water or provide supplemental irrigation. Correct low soil pH by applying agricultural limestone to reduce the availability of soil aluminum and manganese and thereby maximize the size of the root system. Regulate magnesium content of the lime according to your trees' need for magnesium and the total amount of lime needed, but do not use high magnesium (dolomitic) lime for routine soil pH correction unless large amounts of magnesium are needed.

Greene and Crassweller are members of the Department of Horticulture, The Pennsylvania State University, University Park, PA, at the Fruit Research and Extension Center at Biglerville, and the campus at University Park, respectively.

IMPROVING THE NATIVES

By Lon J. Rombough, B.S., M.S., ATM

Amelanchier (Service Berry), *Cornus* (Dogwood), *Crataegus* (Hawthorn), *Gaultheria* (Salal), *Viburnum*, etc. These are some of the native plant genera we treat as ornamentals, but which were important food sources to Native Americans.

With most of our fruit and nut species of European and Asian origin, we ignore many American species as insignificant, or just for novelty foods. But while Europeans selected larger, better quality selections of their fruits, the philosophy of the Native American was to accept plants in the form the Great Spirit gave them to them. Present commercial horticulture isn't geared to that sort of attitude, requiring fruits and nuts to be uniform, attractive, and otherwise have certain traits for efficient production and harvest, not to mention appeal to the consumer. So anything not suiting those needs is pretty much ignored.

Such an attitude means a great number of plants go unused that might be valuable, possibly even more so than some of our present crops, because we overlook other ways of evaluating their true worth.

In Sweden, *Sorbus* (Mountain ash) is being selected for fruits with high levels of certain pigments as a source of food colorings. In China, fruits of the *Eleagnus* (Silverberry, Russian olive) genus, among others, are grown for their vitamin content and processed into nutritional syrups and concentrates. Sweden and China each have programs to develop rose hips for commercial production as vitamin sources, as well as for popular foods. In Eastern Europe *Cornus mas* is highly prized for its fruit for fresh eating, preserves, liqueurs, etc. The list goes on, with similar work in other countries. Types of fruits largely ignored in this country are being utilized in others. Crops are being developed for their nutritional and chemical content, as well as being adapted to areas otherwise unsuited to production, and for items pleasing to ethnic or regional tastes. How many plants are being overlooked here that might contain substances of great value, not to mention being good to eat?

At least some, if not all of those reasons could apply to development of native plants in the U.S., but it is rarely done because it seems uneconomical or too long-term. But is it? Take just one aspect, developing new edible fruits.

One flaw of many of our commercial fruits is that they originate in other countries and are imperfectly adapted to American conditions, necessitating elaborate pest controls to produce crops here. Were we to develop crops from plants native to the regions where they were to be grown it might be possible to produce types easier and more economical to produce than current commercial crops.

A strong objection to developing native fruits, in many cases, is small, seemingly undesirable fruit which would appear to take too much work to develop. Evidence suggests it would not be as hard as some think.

Though Native Americans tended to accept fruits as they found them, they did do some unconscious selection of them. When they found exceptional fruits in the wild they often planted the seeds near their villages, so better types tended to be gradually developed near the villages. But that type of selection is very slow because improved types are still open to pollination by average ones and their seedlings are not cared for, so it was mostly by chance that seedlings with better fruit reached maturity. But if superior selections are brought together and intentionally crossed, with the seedlings protected to allow them all to fruit, so the best of them can be chosen, the rate of improvement skyrockets. (In other words, if controlled plant breeding is used.)

In Illinois, a private breeder of American persimmons has made crosses using the best selections available, which almost all came from the wild. The average wild American persimmon ranges from 3/4 to just over an inch in diameter with the best wild-selected types about 1 1/2 inches in diameter. Using such "best of the wild" the breeder has produced selections with fruit 2 plus inches in diameter. This is comparable with a number of Asian persimmons, which have been in cultivation for thousands of years. This took less than 20 years, and part of that time was spent in selecting useful parents. Once the right parents were found, the large fruited types appeared in less than ten years. More than large size was found, too. There are types with very high quality, low astringency, firmness for good shipping, high color, and even seedlessness. Not all these good traits are combined in one variety, but they all exist, in fruits only one or two generations removed from the wild.

The only advantage the American persimmon had over any other wild fruit is it was attractive enough to start many people seeking superior wild forms over a number of years, giving a good number of useful selections to use as a breeding base.

In Minnesota a breeder has developed new forms of the species *Vitis riparia* (grape). Breeders usually cross the species with other grapes to bring in new traits, but this man has improved the pure species. He started with the best wild types he could find, having lower acid than usual for this very acid species, higher sugar, and less of the herbaceous "wild" flavor. He planted seeds of these in remote areas where they were unlikely to be pollinated by ordinary types and left them for Nature to select the survivors. He selected the best of these and repeated the process. He developed a hollow planting wand which, when pushed into the ground, would release seed into the hole, allowing him to plant large quantities of seed quickly. Five or more generations of this has yielded types sufficiently good, with lower acids and higher sugar, to produce wines that have won local awards. This with a native species perfectly suited to the area. A vineyard of these grapes wouldn't need much more than pruning and picking, even in the harsh climate of northern Minnesota.

Screen enough plants of any wild fruit and useful selections can be found. And while screening for chemical compounds would require a lab, finding types with superior fruit only requires the observer's own senses.

In the Pacific Northwest we have dozens of wild fruits with excellent potential, some with proven worth. For example:

Amelanchier. While named cultivars have been selected in Canada, most are types adapted to the dry, cold prairie areas. When grown in moister areas many develop diseases such as rust. I've seen enough variation in local plants to know there must be some fruit as good as the named fruiting types, but with better disease resistance. This is a plant whose fruit value is already proven, so it should be easy to get commercial acceptance of locally adapted cultivars. Even without previous selections, the value of a fruit so like the already popular blueberry, but able to grow in drier, more alkaline soil should be apparent.

Cornus. It's surprising how few people know dogwoods have edible fruits. One especially promising native species is *C. canadensis*, the bunch berry. Even in unselected types the fruits have acceptable quality for fresh eating, and the fruit has several uses. Additionally, the upright growth habit of the low, spreading plant should lend itself well to machine harvest of the fruits. Selection of it would be in the direction of greater fruit size and production.

Crataegus. This genus has already gotten a lot of attention for fruit, even in other parts of this country. In the South, the Mayhaw, *C. opaca* and *C. aestivalis* are being planted for commercial juice and jelly production. In China, selections of *C. pinnatifida major* with fruit up to 3 inches in diameter are grown for fruit flakes, syrups, and more. The Northwest *C. douglassi* shows good variation in its edible blue fruit and could be selected for production of preserves and other products. Further, it ripens at a time when there is a break between other fruits, which would make it convenient for producers. Additionally, it has already been proven in tests at Oregon State University to be a good dwarfing rootstock for pears, if non-suckering types could be selected, that being the main drawback to its use commercially.

Gaultheria. *G. shallon*, Salal, is already known as a useful wild food and is even made into commercial preserves by one small Oregon company. Already an outstanding edible landscape plant, having evergreen foliage and edible fruit, it only needs a few improvements, including: opening calyx ends on the berries, as the usual closed calyx tends to attract small insects that find it a good place to hide; easier release of the berries from the stems, so they aren't smashed trying to pick them; more regular bearing--the wild types seem to have variable crop levels from year to year. All these probably already exist in individual wild plants, needing only to be found and the traits combined by breeding.

Viburnum (high bush cranberry). This genus is overlooked in many ways. While *V. opulus* has been selected for fruit, many other species have edible fruits as well, one bush with excellent hardiness and disease resistance. Ironically, some types have been selected for large flower masses, but low fruit production. High yielding types could have large flower trusses and fruit production. Some species, such as *V. opulus*, need further selection of quality fruit, to remove undesirable flavors or aftertastes, but others, such as *V. prunifolium*, are already sweet and pleasant to eat.

This touches only a very few plants as examples of what might be done. There are many other obvious ones, such as *Eleagnus*, *Pinus* (Pine), *Prunus* (Prune), *Ribes* (Currant, Gooseberry), *Rubus* (Blackberry, Raspberry), *Vaccinium* (Blueberry, Huckleberry, Cranberry), as well as less obvious ones, *Quercus* (Oak), *Empetrum* (Crowberry), *Berberis* (Barberry, Oregon grape, Mahonia), and many more. And while any good plant person watches for improved ornamental traits in their plants, I encourage watching for superior fruiting forms as well. And I would like to hear from those who do find such selections. I work with unusual, uncommon and native fruits, but there is a limit to how much material one person can evaluate by himself.

Lon J. Rombough 13113 Ehlen Rd. Aurora, OR 97002 (503) 678-1410

The above article appeared in Pome News, Spring 1994, the publication of The Home Orchard Society.

HERE'S A CHALLENGE TO ALL OF YOU! I, who know next to nothing about varieties, figured out the first one, and part of another one, so far. This quiz was published in FRUIT NEWS, the magazine of the Friends Of Brogdale, Autumn 1995 edition. The answers were to be sent by Dec 1 and the winner (the first correct entry received) would receive a box of fruit of their choice, if able to call at Brogdale, or a gift voucher for £10. We aren't offering a prize, just the chance for you to have a bit of fun during the long winter evenings. Anyone care to send your answers so they can be published in April? I would appreciate it, I'm sure I'll never solve all of the clues. Oh, they recommend *The Fruit and Veg Finder* as a reference book, available at Brogdale for £7.99, does that help?

AUTUMN FRUIT QUIZ

Compiled by Douglas Lancaster

Each clue has two parts: one leads to the name of the variety, the other to the name of the fruit. for example, Bramley/apple. The two parts, not always in the order variety/fruit, are separated by a comma or a full stop. In solving the clues, the sound of the words is all-important.

1. Boatman's citrus seeds overboard. Try a pull.
2. Olé, bringer of Christmas presents, not vanilla flavour this time.
3. Russian's dish. The electricity meter man did this.
4. Sheep's been at the dip too often. Nod Sam, you're mixed up.
5. Trim figure, anaemic parent embarks.
6. U.N. peacekeeper, ready to cultivate.
7. Only a penny each, bringing a smile to the face of the fairy.
8. Castles in pain. O! Roy's grebe tumbled.
9. Shave, and stick to it.
10. Haddock's ready, Francois's a dear.

Ω ϑ Φ ε Σ λ κ Ψ γ

Here's another quiz I found in the Spring 1995 edition. Same prize for the first correct entry was offered.

GOLDEN FRUIT QUIZ

set by Brian Self

Familiarity with Greek Myths will be an advantage in puzzling out the golden fruit connections.

1. What tree was presented by Gaia to the god, Zeus, and his bride Hera?
2. What is the name of the garden in which this tree grew?
3. Who as one of his Labours stole fruit from this tree?
4. How did Hippomenes win the race with Atlanta?
5. What did Eris, the Goddess of Strife, hurl into the wedding feast of Peleus and Thetis?
6. What was written on the hurled object?
7. Who had to make the delicate choice between the three goddesses present at this feast?
8. Who, after some bribery, did he choose?
9. What and whom was he promised as a reward?
10. What did this provoke?

And again, if you figure out the answers, send them in and I'll publish them in April's newsletter.



Edmonds Community College is offering a class, Pruning the Home Orchard. "This class is six sessions only, from January 17 to February 21, Wednesdays 12:30 to 4:15 p.m., Hort 255D - 2 ½ credits. This course will focus on the training and pruning of fruit trees, nut trees, and cane growers. Field practice will be emphasized, students must provide their own hand pruners and hand saws. Prerequisite: Hort 117 or INSTRUCTOR'S PERMISSION." Contact Bess Bronstein 640-1500. Edmonds Community College has an excellent Horticultural department. Seniors may take classes at no cost on a space available basis.

STRATIFICATION

by Rex Welland

Your seeds did not germinate you say! First you blamed the seeds. then you blamed the soil. Finally you decided it was your lack of a "green thumb". But did you ever think about stratification. Yes, **stratification** - "the practice of storing seeds in a moist cool place, 0 degrees C (32° F) - 7 degrees C (45° F), such as sand, soil, peat moss or similar material that is kept moist to prevent the seeds from drying out and thereby promoting germination.

Seeds of most temperate climate fruit require a period of moist chilling to overcome dormancy.

The seed of most fruits can be dried and stored until they are to be stratified. As usual there are exceptions. Some fruit such as Persimmon and Pawpaw do not like a dry period. Also seed of citrus and tropicals usually should not be allowed to dry and usually do not require stratification.

Stratification should be timed to have the seeds germinating just in time for planting out. The following list is a general guideline to assist you with timing. Many pome and stone fruits will begin to sprout when they have received sufficient stratification, even though they are still in the refrigerator. Once the seeds have sprouted, they should be planted as soon as possible as the white sprouts are susceptible to rot and breakage. Again there are exceptions. For example, persimmon, grape and quince seeds seem to stay dormant as long as they are in the refrigerator.

Stratification can and does take place outside, but where a mild winter is involved it could take two or more seasons for some seeds to break dormancy.

For a more controlled stratification, seeds can be placed in a refrigerator. One of the best materials for this purpose is peat moss. Peat moss has a natural fungicidal action that prevents rot and mold. Simply soak the peat moss until it is thoroughly wet. Then squeeze out excess water until it is moist, but not soggy. Mix the seed with enough moist peat moss to thoroughly cover and surround it and put the whole mess in a plastic bag in the refrigerator.

Finally, don't forget moist fruit varieties are complex hybrids that can only be duplicated by vegetative (asexual) propagation. Even when two excellent varieties are crossed, the chance of producing a seedling as good as the parents is remote. With apples, experts claim the odds are as high as 10,000 to 1. Still, that's better than the lottery. On the other hand, if all we do is graft existing varieties, the source of a lot of the exciting new varieties will be eliminated. After all, most of our classic apple varieties to date originated as

chance seedlings - grown from seed by patient amateurs.

<u>Fruit</u>	<u>Stratification Req.</u>
Almond (<i>Prunus amygdalus</i>)	4 weeks
Apple (<i>Malus baccata</i>)	4
(<i>M. communis</i>)	13
(<i>M. hupehensis</i>)	13
(<i>M. pumila</i>)	8
(<i>M. sargentii</i>)	13
(<i>M. sikkimensis</i>)	13
(<i>M. toringoides</i>)	13
Apricot (<i>Prunus armeniaca</i>)	15
Butternut (<i>Juglans cinerea</i>)	16
Cherry (<i>Prunus avium</i>) sweet	17
(<i>P. cerasus</i>) sour	17
Chestnut (<i>Castanea sativa</i> & hybrids)	(not dormant)
Citrus	(not dormant)
Cornelean Cherry (<i>Cornus mas</i>)	17
Feijoa	(not dormant)
Filbert/hazelnut (<i>Corylus avellana</i> & <i>C. cornuta</i>)	16
Grapes	12
Heartnut (<i>Juglans ailantifolia</i> var. <i>cordiformis</i>)	19
Hickory, Shagbark (<i>Carya ovata</i>)	(not dormant)
Hickory, Shellbark (<i>Carya laciniosa</i>)	(not dormant)
Jujube (<i>Zizyphus jujube</i>)	8
Kiwi (<i>Actinidea deliciosa</i>)	2
Medlar (<i>Mespilus germanica</i>)	up to 39
Pawpaw (<i>Asimina triloba</i>)	13
Peach/nectarine (<i>Prunus persica</i>)	13
Pear (<i>Pyrus</i> spp.)	
<i>P. amygdaliformis</i>	4
<i>P. betulifolia</i>	8
<i>P. calleryana</i>	4
<i>P. communis</i>	13
<i>P. pyrifolia</i>	17
<i>P. ussuriensis</i>	13
Pecan (<i>Carya illinoensis</i>)	(not dormant)
Persimmon (<i>Diospyros</i> spp.)	
Oriental (<i>D. kaki</i>)	(not dormant)
(<i>D. lotus</i>)	9
American (<i>D. virginiana</i>)	12
Plum (<i>Prunus domestica</i>)	12
Saskatoonberry (<i>Amelanchier alnifolia</i>)	
Walnut (<i>Juglans</i> spp.)	
California Black (<i>Juglans hindsii</i>)	13
Black (<i>J. nigra</i>)	13
Persian (<i>J. regia</i>)	13
Paradox walnut	13

* Def. - "green thumb": Common condition suffered by gardeners in which the skin of the thumb develops a greenish hue from handling large amounts of currency at the nursery.

Note: "ssp" means multiple species of the same genus----Ref. - Agroforestry News

This article was published in the B.C. Fruit Testers Fall 1995 edition of The Cider Press

NAMING A VARIETY A SENSHU BY ANY OTHER NAME....

by Dr. Bob Norton with Carol Norton

The naming of a new fruit variety (or cultivar) can have a strong influence on how quickly a new introduction is accepted by the industry and by the consumer. You just don't come up with a name as "Delicious" every day; and, when you do, you often find it's already been trademarked, perhaps for a commodity totally unrelated to your apple, pear, or other fruit.

Add to the trademark trap, the problem of someone's "finding" a variety out there—original tag lost, tree abandoned, informally exchanged scionwood—and deciding to name it (and possibly, patent it) on his or her own. This almost happened to me. We had a very attractive, dessert-type crab apple at Washington State University's research station in Mount Vernon when I arrived there in 1962. For 15 years I attempted to find its true identity and was about to give it a name and release it when the truth came to light: our potential windfall was Centennial, an introduction from Minnesota.

Such is the case with Senshu. Senshu originated at the Akita Fruit Tree Experiment Station in Japan, from a cross of Toko x Fuji made by Tanno, Taguchi, Tanba, Suzuki and Kon. The variety was named in 1980 and received Japan patent No. 42. It has since become the sixth or seventh most popular variety in Japan.

Senshu has medium to large fruit (larger than Gala, smaller than Fuji), a skin combining dark red stripes over a pinkish blush over a greenish-yellow ground color. Occasionally, fruits are fully colored, but more commonly the ground color shows through, giving the character of a bicolor apple similar to Jonagold.

Senshu, along with McIntosh, Jonathan, or Honeycrisp, ripens about 10 days before delicious. In a warm climate, such as the lower Yakima Valley of Washington State or California, it is likely to ripen and soften before optimum color develops; under those circumstances, it can be quite dull and homely. In a late area or at higher elevation, Senshu can be extremely attractive. One may even dare to call it "sensuous."

The flesh quality of Senshu can be superb wherever grown, if picked properly—to our taste, as good as or better than that of Fuji, Jonagold, or Empire (all of which we consider top class). No exaggeration would be made if the apple's name were Sensational, rather than Senshu. The flesh texture and palatable skin combine to provide crunch, juice, and a slightly subacid kick; then it just disappears from the mouth. No wonder there are those who would like to rename Senshu, to patent it or trademark it with another, perhaps more acceptable, name.

I have watched Senshu and its look-alikes in this country, as well as in Japan. We planted it in our WSU plots at Prosser, Wenatchee, and Mount Vernon in 1988 and have fruited it at those locations for five years. Reports of Senshu's performance, including its good and bad features, were published in our WSU variety trial reports from 1988 to 1993. The project was supported by the Washington Tree Fruit Research Commission.

In 1992, I saw the first instance of Senshus being referred to by another name, and we heard talk of patenting the new find. Then, in 1993, Stark Bro's purchased propagation rights for what they were led to believe was an early ripening strain of Fuji. They had made progress along the route to patenting the "Ultra Earli Fuji" (Lalilewis cv.), when it was noted by several identification experts, including Dr. Bob Stebbins, Jim Ballard, and me, that the alleged new cultivar was, indeed, Senshu. Stark Bro's immediately acknowledged the error and changed the name to Ultra Earli (Senshu cultivar), and on October 22, 1993, sent a letter to orchardists and to the media giving full disclosure of what Stark Bro's termed were "the fraudulent claims of the originator." Many trees have been planted in California and elsewhere under the Ultra Earli (Senshu cultivar) name, so information on its performance in commercial plantings should start coming in during 1996. One planting in north central Washington had a significant crop this year.

In February 1992, in response to yet another report of a Senshu look-alike, we went to California to see the originator of "Sommerfeld" at La Grange, near Modesto. August Sommerfeld received us cordially and showed us where the "Original tree" had grown between trees of Gala and Fuji. However, that original tree and the possible parents all had been removed several years earlier, according to Sommerfeld. He showed us what presumably were second-generation trees nearby, but they were just past bloom stage, so no comparisons could be made with Senshu.

Subsequently, I have compared fruit of Sommerfeld and Senshu in Washington and British Columbia and have been unable to find any definitive difference. Senshu is one of the most easily recognized varieties. Distinguishing characteristics not shared in common with any other variety I know:

- 1) Tendency for greenish color in the cavity (stem bowl).
- 2) Rather stiff stem, commonly with a knob on its end.

- 3) Shallow basin (calyx end), with knobs around the basin (rather than uniform lobes, like those of Red Delicious.
- 4) Very tender, juice flesh and tender skin; slightly more sprightly (acidic) than Fuji.
- 5) Ripening before Delicious and at least a month before Fuji.
- 6) Color pattern of dark red stripes over pinkish blush over yellow-green ground color; not similar in this respect to any other variety (certainly not similar to Fuji).
- 7) Tendency to crack in the stem bowl if overripe.
- 8) Tendency for leggy growth on young trees.

In summary, Senshu, by whatever name it may carry, has some outstanding features and some definite short-comings that growers need to recognize before making a decision about how, or if, it fits their operation. Senshu has dessert quality as good as or better than Fuji or any other variety. It appears to be best suited to a cool area or a higher elevation, if it is to develop color and avoid untimely ripening in a hot period. It could be a winner for local marketing, for a niche market, or for a gift pack. A home orchardist definitely should have it. On the other hand, expect mediocre yield, inferior color, stem punctures, cracking around the stem, bruising, and limited storage capability for the commercial grower (3-4 months maximum).

On some of our trips to Japan, we asked fruit breeders and experts to name their favorite apple. Senshu was in the top three—always. Yet we also learned that few growers were planting it. The United States is a much better place than Japan to grow apples, so don't let this discourage you. Just don't go overboard.

Above all, be sure you know and understand the fruit you are planting, that the name means what it says, and is what it is purported to be. As we have seen with Senshu, there is complexity in a variety's name. It is vital for the integrity and continuing success of the growing/packing/marketing system as we know it to protect cultivar names perhaps more stringently than ever before. As we assimilate more international varieties and as we realize the propensity of some of these varieties to throw mutant strains—any of which may prove to be commercially rewarding to the individual who patents the cultivar or trademarks the name—we may watch more diligently for sports among our own orchards. A Senshu is still a Senshu, but there are many more new apples to come.

Bob and Carol Norton own a consulting business, AppleCorps, in Wenatchee, Washington. Good Fruit Grower published the above article in its December 1995 edition.

RESEARCHER LEAVES WSU, MORE OR LESS

From Washington State University, as printed in the Capital Press December 8, 1995

Don't let seeing Ralph Byther at WSU's Puyallup Research and Extension Center fool you. He really has retired. Although no longer on the payroll, Byther continues some research. He retired this fall after serving 20 years as WSU's extension plant pathologist.

He received his doctorate in plant pathology from Oregon State University and worked at the Hawaiian Sugar Cane Institute for 8 years before joining the WSU facility in 1975. At WSU Puyallup he was responsible for the university's extension plant pathology programs in Western Washington. Until recently he operated the WSU-Puyallup Plant Clinic. Byther worked closely with county faculty and with horticultural groups such as the Washington Bulb Growers Association, Washington State Landscape and Nursery Association, Ornamentals Northwest Seminars and the Western Washington Tree Fruit Society.

He also was a frequent instructor in pesticide recertification and Master Gardener training programs throughout Western Washington. Other scientists are filling in for Byther while university officials discuss the future of the now-vacant position.

Dick Tilbury adds: Ralph is a longtime supporter of WCFS, being a past member of Tahoma Chapter and currently an honorary member at large. He has always been gracious of his time in giving lectures at the WCFS Fall Fruit Show and Spring Meeting, also at chapter meetings and at the Mt. Vernon Research Station field day/open house. We have all looked to Ralph for answers to our tree fruit disease problems. He is co-author, along with Dr. Art Antonelli, of a paper titled "Controlling Tree Fruit Pests in Western Washington Home Gardens" which is a valuable resource to us all. We still make this paper available to the public at our Fall Fruit Show. Ralph did a great deal of research on canker diseases of tree fruit during his tenure at the Puyallup Research Station and developed the blow torch method of cauterizing these canker wounds.

We wish him well in whatever endeavors he has planned in his retirement years and look forward to many more educational lectures from him.

THE SASKATOON

by Bob Harris

The saskatoon is a shrub or small tree which suckers freely and reaches a height of 5 m. The cream-colored flowers open before the leaves expand in spring and are borne in racemes with 10-16 flowers. They are generally self-fertile but a few genotypes appear to need cross-pollination.

The fruit are up to 1.6 cm in diameter, and usually a purple-black color but white and red-fruited bushes are not uncommon. Barely ripe fruit contains a higher percent of vitamin C and gels more rapidly than fully ripe fruit which contains the most sugar. The fruit is 17.7% - 27.9% total solids, 1.2% - 1.8% pectin, has a pH of 4.5 and requires 31 ml of 10% N NaOH to neutralize the mostly malic acid in 100 g of fruit.

The name saskatoon was derived from the Indian name mis-sask-quah-too-min. It was an essential constituent of pemmican and often the only source of fruit for the early settlers. Saskatoon is the common name for *Amelanchier alnifolia*, one of about 20 species of *Amelanchier*. It is not a berry but a pome belonging to the *Rosaceae* the same as apples, pears, mountain ash, etc.

Of the twenty species *A. ovalis* is a native of Europe and *A. asiatica* of Asia. The remaining species are native to North America where they are called service berry, shadbush, Juneberry and many other common names. All species hybridize with one another and some even hybridize with other members of the Pomoideau. In addition to the fruit many *Amelanchier* make very attractive ornamentals, especially *A. ovalis*, *A. grandiflora*, and *A. alnifolia* cv *Altgold*.

The true saskatoon is found on the North American prairies from Fort Wrigley in the north to south of the Canada - U.S. border. In the east it merges with *A. canadensis* near the Manitoba - Ontario border and with *A. florida* in the Rocky Mountains. Taxonomists do not agree on the status of some species and some have combined *A. florida* with *A. alnifolia*. However there appears to be at least four different types in B.C. Typical *A. alnifolia* is found in the Peace River region; a drier, smaller-fruited type along the coast including Vancouver Island, a recumbent, greyish-green leafed type around Spence's Bridge and a large-fruited upright type from the Okanogan to the Rockies.

About a dozen selections of saskatoon have been named but most plantings are 'Smoky' seedlings with some 'Northline' and 'Thiessen'. 'Smoky' grows well on Vancouver Island but the other two have not been grown long enough to assess.

'Smoky' was one of the first saskatoons to be named and is the most widely grown. It produces a bush 2 - 3 m tall and is a very consistent producer of mild-flavored sweet fruit, in clusters of up to 16. ~~On Vancouver Island it blooms about two weeks earlier than the native plants.~~

Although neither 'Northline' or 'Thiessen' have been grown long enough to evaluate properly for B.C., they are receiving a lot of consideration on the prairies and should do well in our province. 'Northline' produces larger fruit than 'Smoky' and flowers about a week later. 'Thiessen' has the largest fruit of the three, has good flavor and flowers about a week earlier than 'Smoky'.

Saskatoons thrive in a wide range of environments and soils but prefer deep, fine to medium loams. Avoid poorly drained soils and frosty locations.

A plant spacing of about 2 m produces the highest yield per plant and is ideal when only a few plants are to be grown in the garden. A hedge-row system is generally preferred for large plantings. At a spacing of about 1 m the plants will soon form a solid row. Row width can be adjusted to suit the equipment to be used between the rows. Allow about 2 m for the row width and clearance and add this to the width of the equipment to determine the distance between rows.

Before planting ensure all perennial weed have been eradicated. Cultivating and hoeing are the most practical methods for small planting, but be careful not to cultivate too deeply and sever the roots. In larger plantings weeds in young plantings can be controlled with per-emergent applications of Linuron, Treflan or Casaron; older plantings, with Linuron 444L, Afalon F, Lorox and Casaron. Follow the latest instructions on how and when to apply the chemicals. Keep up to date as recommendations change frequently.

Irrigation, especially during the first two years, when the fruit is sizing and immediately after harvesting, when the flower buds are forming for next year's crop, will greatly increase plant survival, bush size and the size and sweetness. It will also promote uniformity of both ripening and yearly production.

A soil analysis is the best guide to the fertilizer requirements and is essential for identifying minor nutrient deficiencies. In the absence of a soil test apply nitrogen at the rate of 95 kg/ha, and phosphorus and potash at 70 kg/ha. Adjust the rates on the basis of the previous year's growth.

Saskatoons start to fruit 3 - 4 years after planting and will continue producing for many years. As the wood gets older the fruit gradually loses size, becomes drier and does not ripen as uniformly. To retain size and quality remove five year and older wood and weak root sprouts.

In small plantings most fruit is harvested by hand, but in large plantings by hand-held vibrators. Over-the-row combines enable the crop to be harvested in a once-over operation.

The plants can be propagated in a number of ways, but root sprouts, seed and tissue culture are the most common. Root sprouts are expensive as only a few plants can be obtained each year from each parent bush. The plants from root sprouts are identical to the parent and fruit a year earlier than plants propagated by other methods. To avoid heavy plant losses the sprouts must be handled with great care. Shipping of root sprouts is not recommended unless they have been grown in a nursery for a year to develop a good root system.

Plants from seed are cheap and easy to produce. About 90% of all plantings are from seed. While saskatoons are largely self-pollinated about 5% of the seedlings from field-pollinated seed of 'Smoky' are not identical to the parent. The differences are usually small but the results indicate that some cross-pollination does occur.

The most uniform seedlings come from self-pollinated seed of a clone and each generation the parent and seed is removed from the original clone the greater the danger of off-types occurring. Some plants sold as clonal seedlings are in fact seedlings of seedlings of the original clones. When purchasing seedlings try to find out the pedigree - that is, how many generations the seedlings are away from the original clones.

The first tissue-cultured clones of saskatoons were produced over 15 years ago and field tests showed very good uniformity. A number of production problems arose and some poor plants were distributed but these problems were resolved. Tissue culture is the most promising method for producing large numbers of completely uniform plants for mechanical harvesting. When purchasing tissue-cultured plants insist that the plants are at least 20 cm tall with a good root system.

A number of pests attack saskatoons on the prairies but only fruit maggot, mummy berry and birds are presently a problem on Vancouver Island. In the past a combined application of Malathion and Funginex gave good control of both fruit maggot and mummy berry when applied at first bloom and again at 90% petal drop. Unfortunately Decis 5.OEC is the only insecticide approved for saskatoons. It will control Saskatoon Bud Moth, Tarnished Plant Bugs and Leaf Miners if applied at 25 - 50% of bloom, 90% petal drop and again 30 days later. It may also control fruit maggot.

Funginex is registered for use on saskatoons and should be applied at early bloom and again at 90% petal drop to control mummy berry.

Robins and starlings commence eating saskatoons as soon as they start to turn red and can strip a bush in a very short time. Protection is essential.

Bob Harris is a member of the B. C. Fruit Testers Association. He served as Research Scientist at the Beaverlodge Research Station in Alberta. The above article was published in the Spring 1995 issue of the B.C.T.F.A. publication, Fresh From the Cider Press.

Editor's Note: Saskatoons thrive in Western Washington, and several nurseries list them in their catalogs, as edible landscaping or a crop plant. Look for serviceberries or saskatoons. They will be available at the Spring Sale!



The new WSU Extension Bulletin - EB1804, Growing Jonagold in Western Washington, by Gary Moulton - is now available at your local Extension Office. This bulletin, fifteen pages, with color pictures, is reasonably priced at \$5.00.

ALBERT ETTER AND THE PINK-FLESHED DAUGHTERS OF 'SURPRISE'

by Ram Fishman©

Reprinted by permission of the author

The apple is without doubt the most ubiquitous and familiar form of fruit in the temperate world. In English-speaking countries, a child's formal education begins with "A is for apple" since even the very young can instantly recognize and appreciate the fixed characteristics of this common pome fruit. But for all its comforting predictability, the apple still retains an intrinsic capacity to defy expectations or even to surprise.

Just this sort of unexpected moment occurred during the early part of the nineteenth century when a mysterious and novel apple variety suddenly found its way into Western Europe and pomological history. Its origin is undocumented but it most likely came from the remote wilds of Russian Turkestan, a mountainous region now recognized as the ancestral home of numerous forms of temperate fruit. On first glance, this apple seemed entirely unexceptional and plain—smallish, pale green and rather dull in appearance. Revelation, however, came with the first bite. The interior flesh was colored a bright rosy pink. Although the European public was not quite ready for something so bizarre, this rare and remarkable pink-fleshed apple began to circulate among pomologists in Germany and England. It was reported growing at the London Horticultural Society's gardens around 1830 and became known in England—and subsequently North America—as the 'Surprise' apple.

'Surprise' turned up in the United States in the 1840s, brought here by German immigrants settling in the Ohio River Valley. While some prized and planted it for its novelty value, others scorned it for the same reason. Discriminating variety collectors tended to be skeptical about an apple whose main virtue was as a conversation piece. Andrew J. Downing and his brother Charles had a tree of 'Surprise' in their extensive collection at Newburgh, N.Y. The Downing brothers, however, did not give it a rave review. In fact, the entry for 'Surprise' in the Downings' *The Fruit and Fruit Trees of North America* (1890) was not calculated to encourage widespread planting: "A small, round, whitish yellow apple of little or no value, but admired by some for its singularity, the flesh being stained with red. November to January."

Pink Flesh Impresses the Young While 'Surprise' may not have been a connoisseur-quality dessert fruit, its extraordinary pink flesh tone did make a memorable impression on some. Young people in particular were susceptible to the charms of its "singularity." As a teenager, Liberty Hyde Bailey (1858-1954) grafted it onto a tree in his father's orchard at South Haven, Michigan. The scionwood came from Charles Downing. Bailey, of course, went on to distinguish himself as America's preeminent authority and author on horticulture. He reigned for decades as dean of Cornell University's agricultural college and director of the New York State Experiment Station at Geneva. In his old age, Dr. Bailey still had fond and vivid memories of the pink-fleshed apple that fascinated him as a boy. Writing in *The Garden Lover* (1928), he recounted how Charles Downing had personally sent his family scions of 'Surprise', refusing payment since:

"...there was no charge to those who loved fruits. I set those scions, and for many a year made pilgrimage to the tree and opened the green fruits to be surprised again and again at the pink flesh, 'stained with red' as the original *The Fruit and Fruit Trees of North America* has it....I have not seen this variety in any number of years. If any man grows it, will he not send me a fruit when it is ripe? And I shall not even offer to pay for it."

As it turns out, the last safe haven for 'Surprise' was the old Bailey orchard in Michigan. The orchard had been transformed into the site of a hospital, but a single tree of 'Surprise' was still standing in 1957 when Robert Nitschke of Southmeadow Fruit Gardens managed to obtain scionwood through a local nursery. Whether this tree was the original specimen grafted by the young Bailey or a subsequent replacement remains unclear. At any rate, this 'Surprise' apple—with a lineage traceable to two of America's greatest pomologists—was rescued from oblivion and is now available through the amateur fruit network.

Etter Meets 'Surprise'

Liberty Hyde Bailey was not the only young man enchanted by the pink interior of 'Surprise'. Around 1900, a self-taught fruit breeder named Albert F. Etter (1872-1950) planted out an experimental apple orchard at his wilderness homestead in the King's Range mountains of northwestern California. An ambitious dreamer, Etter had managed to obtain scionwood for 600 different varieties through the University of California. His intention was to conduct a variety trial that would evolve into the genetic foundation for his own breeding program.

The Potential of 'Surprise' The 'Surprise' apple was only one of a myriad of varieties, but it certainly had the capacity to stand out in a crowded field. It may not have been a very good eating apple, but Etter was quick to recognize its potential as the seed parent of a whole new class of pink-fleshed varieties. He was certainly aware of the Downing brothers' unflattering assessment. But as a pioneer Californian, he was inclined to dismiss the pronouncements of the Eastern establishment. His own experience with 'Surprise' convinced him that its poor performance back East was

largely a problem of adaptation. In California, particularly in the salubrious apple climate of his Ettersburg homestead, 'Surprise' redeemed itself by developing better overall quality and more intense flesh color. Etter attributed this improvement to the long growing season characterized by hot, sunny days and cool nights. At Ettersburg, 'Surprise' had found a true home and a patron.

Albert Etter and 'Surprise' turned out to be a fortuitous and fruitful combination. Etter was an eccentric visionary who believed that great new varieties could be created through unlikely crosses involving "primitive" germplasm. Like his more famous colleague, Luther Burbank, he loved horticultural novelties and actively sought out and embraced exotic, bizarre plant material for his breeding experiments. The rose-pink flesh of 'Surprise' captivated his imagination and he envisioned a novel class of apple that combined high quality and distinctive flavor with colorful interiors. Someday, he told his neighbors, these pink-fleshed Ettersburg varieties would grace the menus of San Francisco's most elegant hotel restaurants.

The pink-colored flesh must have had a special resonance with Etter's sensibilities as a fruit breeder. He had already begun to make a name for himself with his new strawberry varieties. And the first and most extraordinary of his *Fragaria* introductions was a large-fruited berry derived from *F. chiloensis*, distinguished by its enticing aroma and rose-pink color. He named this strawberry 'Rose Ettersburg' and went on to utilize it as the foundation of numerous subsequent hybrids. So Etter's fascination with pink novelties was not without precedent.

Etter Publishes Preliminary Report By 1928, Etter had progressed far enough in his apple-breeding program to publish a preliminary report in *Pacific Rural Press*, a popular farm journal that eventually metamorphosed into *California Farmer*. Among the dozens of promising new varieties he described were two pink-fleshed types, both open-pollinated seedlings of 'Surprise'. The first was a large-fruited, late fall apple, light yellow with a red cheek that he dubbed 'Redflesh Winter Banana' because of its exterior resemblance to that well-known variety. Despite the awkward name, this remained one of Etter's personal favorites over the years. The second pink-fleshed variety mentioned in this report ripened in late summer and was characterized by pale, translucent skin that glowed with the rosy pigmentation of the interior. This unnamed seedling might well be the apple that was later patented and introduced to the world as 'Pink Pearl'.

Eventually, Etter claimed to have come up with more than 30 apples of this class—all seedlings of 'Surprise'. Some were the result of chance crosses facilitated by insects. All his selections showed the characteristic anthocyanin pigmentation of flesh inherited from 'Surprise'; pink or red flesh is thought to be controlled by a single dominant gene under the influence of "modifier" genes. The effect of these modifiers could be seen in the wide spectrum of color intensity varying from pale pink through rose pink and even, in a few cases, purplish or "beet" red. Occasionally, the flesh pigmentation would be variegated, mottled or marbled with patches of white interspersed with areas of pink or red.

The 'Surprise' seedlings also exhibited an impressive range of other fruit characteristics, obviously reflecting the genetic diversity of Etter's pollen parents as well as the presumed hybridity of 'Surprise'. Skin colors varied from nearly transparent to nearly solid red and included intermediate specimens with green, yellow, blushed and striped exteriors. Size also progressed from very small to very large. And ripening dates likewise covered a sizable section of the calendar, beginning in late July and finishing up around Thanksgiving.

As might be predicted from a large, preliminary selection of seedlings, quality was inconsistent—including some poor and some excellent specimens, with most in between. Taken as a group, Etter's new pink-fleshed apples had a surprising number that exhibited eating quality far surpassing their seed parent. Moreover, the best selections seemed to share a pronounced aromatic flavor component reminiscent of *Rubus* berries that is apparently linked to the anthocyanin pigmentation of the flesh.

Etter and CNC Collaborate In 1940, Etter canonized his career as an apple breeder by entering into a collaborative arrangement with California Nursery Company (CNC) of Niles District (now part of Fremont). Their goal was to patent and introduce a representative selection of Etter's best and most marketable apple varieties. At that time, CNC was one of the oldest and most respected nurseries in California, and Etter certainly felt honored by the company's interest in his creations. George Roeding, Jr., the owner and son of the founder, journeyed to Ettersburg and brought back fruit samples and scionwood for nearly 40 different Etter apple varieties. At least a fifth of these trial apples were pink-fleshed, including ones that bore such awkward names as "Hoover Redflesh", "Redflesh Spitzenberg", and the aforementioned favorite of Etter, 'Redflesh Winter Banana'. Roeding obviously decided to gamble that the time was ripe to introduce a pink-fleshed apple variety to his nursery customers.

In the end, Roeding gave his imprimatur to test seedling #39, a previously unnamed apple that was not even part of the original group that Etter gave him. Although it was obviously not Etter's first choice, Roeding was apparently impressed by its attractive appearance—translucent, pearlescent skin and distinctive bellflower shape—coupled with an August

ripening date. He christened it 'Pink Pearl' and secured U.S. Plant Patent Number 723 for it on Etter's behalf. It was formally introduced in CNC's colorful illustrated catalog of 1945, along with six other Etter apples selections with non-pigmented flesh. The vivid novelty of 'Pink Pearl' made it the most popular and durable of the Etter/CNC selections. Although CNC has discontinued or lost its other Etter apple varieties, 'Pink Pearl' is still listed in its current abbreviated catalog. Several nurseries, including two large California wholesalers, now propagate and sell it. Thus 'Pink Pearl' remains the best known and most widely distributed representative of Albert Etter's fruit legacy, despite the ironic fact that Etter himself never ranked it among his best selection.

Niels Hansen: Fruit Explorer

About the time that Albert Etter was setting his first 'Surprise' grafts, another pioneering fruit breeder had begun his own program to develop new apple varieties with colorful anthocyanin pigmentation of the flesh. Dr. Niels Hansen (1866-1950) spent most of his long career as director of the South Dakota Experiment Station at Brookings where he earned the reputation as North America's foremost plant explorer specializing in cold-hardy fruit varieties. He was responsible for collecting germplasm from the frigid zones of Europe and Asia and then utilized these acquisitions in his own breeding work, often crossing the exotic material with native American species.

On a botanizing expedition to Russia in 1897, Dr. Hansen encountered an extraordinary apple species that had recently been discovered growing wild in the Tian Shan mountains of Turkestan. This large-fruited crab was exceptional for its intense anthocyanin pigmentation that gave a deep purplish-red color to the skin, seeds, and flesh of fruit as well as the blossoms, foliage, juvenile bark and wood. The likely ancestor of 'Surprise', it made the cultivated variety seem tame and almost ordinary by comparison. This remarkable species was given the name *Malus Niedzwetzkyana* after its discoverer, the Russian botanist, Niedzwetzky; it is also sometimes referred to as the Redvein Crab.

After some initial difficulty, Dr. Hansen succeeded in importing scionwood of *Niedzwetzkyana* and establishing it in his harsh climate. He quickly understood its limitations as a fruit for the table. *Niedzwetzkyana* is quite large for a crab species; in external appearance it resembles a small, very deeply pigmented version of 'Red Delicious'. Unfortunately, its flavor remains "crabby," i.e., astringent and sour. Most of the crop is barely edible and like quince, is best tamed by cooking. *Niedzwetzkyana*, however, was found to cross with common apple varieties and the offspring are usually edible. Because anthocyanin pigmentation is controlled by a single dominant gene subject to modifiers, all the F₁ generation of seedlings will show red or pink flesh.

Hansen's Dual Goals Like his hillbilly counterpart Albert Etter, Hansen had his imagination kindled by the prospect of breeding novelty varieties with unusual pigmentation. He came up with the idea of utilizing the genes of *Niedzwetzkyana* to create two new categories of *Malus*. His first goal was to produce a race of hardy cooking and eating apples through crosses of the far-fetched species with ordinary cold-hardy varieties. A second objective was the creation of a family of red-blossomed ornamental crab apples by crossing *Niedzwetzkyana* with small fruited crabs, both exotic and native. Hansen more or less succeeded in both these goals. He eventually introduced several red-fleshed apples, the best known of which is 'Almata'; and he also created what he called the "Rosy Bloom" family of ornamental crabs featuring purplish red blossoms. 'Hopa' is probably the most familiar and widely planted of this group.

Hansen's satisfaction in creating his many *Niedzwetzkyana* hybrids was slightly diminished when he found out about Albert Etter's new selections derived from 'Surprise'. Isolated from the pomological establishment by geography and background, Etter nevertheless had without knowing it beaten Hansen to the punch regarding reddish-fleshed apples. Hansen graciously conceded Etter's priority, writing to him, "Mr. Etter, you have defeated me in my destiny." In fairness to Hansen, his accomplishment was quite different from and perhaps more difficult than Etter's. Chief among Dr. Hansen's concerns was cold-hardiness, a criterion that Etter in California could conveniently ignore.

Furthermore, Hansen struggled with the very primitive *Niedzwetzkyana* under the harsh growing conditions of Brookings, South Dakota; Etter enjoyed the advantage of utilizing the more refined 'Surprise' in the salubrious apple climate of Ettersburg. And these factors explain the differences in the end results of the two men's respective breeding programs.

A Useful Comparison A comparison of Etter's 'Surprise' seedlings with Hansen's red-fleshed introductions might be instructive at this point. The Hansen apples all appear close to their *Niedzwetzkyana* parentage and exhibit the deep anthocyanin pigmentation in leaf, bark, wood, blossom, seed and fruit flesh. Though less astringent and sour than *Niedzwetzkyana*, they are still a long way from dessert quality; these Hansen introductions are best regarded as tart cooking varieties esteemed for making red apple sauce and outstanding in their cold-hardiness.

Like their seed parent 'Surprise', the Etter pink-fleshed apples show the characteristic anthocyanin pigmentation in blossom and fruit flesh. But neither 'Surprise' nor its offspring display significant red coloring in leaf, bark, wood or seeds. Assuming that 'Surprise' is a direct descendant of *Niedzwetzkyana*, the genetics of this relationship as it bears on

the apparent dilution of anthocyanin pigmentation remains problematic. This limited manifestation of pigment is the most obvious way to distinguish the Ettersburg seedlings from *Niedzwetzkyana* hybrids developed by Hansen and other breeders. Fruit quality, however, is a more important distinction. The best selections of Etter's pink-fleshed apple family have proved themselves to be excellent, high flavored dessert fruit; even the less spectacular varieties in this group are significantly better for eating than the worthiest of Hansen's selections. A sad consequence of all this is that the poor eating quality of *Niedzwetzkyana*-derived varieties has soured some critics on all pink- and red-fleshed apples, including Etter's superior hybrids.

Since its introduction in 1945, 'Pink Pearl' has slowly gained recognition and acceptance for the novelty of its pink flesh. When well-grown, it is a handsome fruit with a robust flavor suitable for desserts, salads, or sauces. Several California orchardists are now growing 'Pink Pearl' as a specialty crop for upscale marketing strategies; Albert Etter's vision is finally being realized as fine restaurants are learning to concoct dishes that exploit the bright pink flesh. 'Pink Pearl' does, however, suffer from some limitations that affect both commercial and home fruit growers. It is fairly susceptible to various fungus diseases including fireblight and apple scab, and may not perform well in regions afflicted with humid summer weather; typical of apples with early ripening schedules, it does not stand up to heat or maintain quality in storage.

Revisiting the Etter Orchard

'Pink Pearl', of course, is only one of a large sisterhood of Ettersburg 'Surprise' seedlings. And in my opinion, it is not even the best of the bunch. In 1973, I settled with my wife and three young children on a parcel of mountain land a few miles from the site of Albert Etter's homestead and experimental orchard. My love of fruit was spliced with an interest in local history and before long, I found myself immersed in a study of Etter and his fruit legacy. Over the years, our family made numerous fruit-exploring expeditions to the ruins of the Etter orchard. Our purpose was to inventory and evaluate the scores of unnamed test varieties still bearing fruit on the decrepit old trees.

The Ettersburg Boot Stomp Wandering from tree to tree, we were soon impressed by the number and diversity of pink-fleshed apple varieties scattered throughout the Etter orchard. Typically, a variety would be represented by a single branch on a tree containing multiple grafts. With over a hundred old standard trees—most of them with several intertwined grafted varieties—exploring the Etter orchard became a family enterprise. Often, the children led the way. For them, the prospect of locating new pink-fleshed apples turned each visit into a treasure hunt. Together, we managed to improvise special techniques for ferreting out varieties with the colorful pink flesh. In the spring we would make note of any branches bearing red or purplish blossoms, returning later in the year to check out the fruit. With autumn, the ground at the Etter orchard was littered with apple windfalls in varying states of decomposition. We would all scour the ground in search of possible pink-fleshed discoveries. Likely contenders would be crushed underfoot in a fruit-exploring maneuver best described as the Ettersburg Boot Stomp. Most of the time the result would be just another ordinary mushy apple. But every so often, the stomping exposed the pink or red flesh of a "new" 'Surprise' seedling. Then our game plan would shift to a search for the tree and branch responsible for the flamboyant fruit. Potential scions were then marked for collecting in the winter.

Over the next decade, our family managed to locate 15 different pink-fleshed apple varieties in the old experimental orchard. We also found a few additional varieties of this class growing in abandoned orchards in the Southern Humboldt/Northern Mendocino County region. Thus, we can account for perhaps half of the 'Surprise' hybrids developed by Etter. The missing remainder were probably lost to the vicissitudes of time, cows, and winter storms. Ironically, the one apple variety we have never come across at Ettersburg is the now prominent 'Pink Pearl'.

In 1983, my wife and I decided to combine our respective horticultural interests and collections (fruit trees and roses) by founding Greenmantle Nursery. Our catalog featured several Albert Etter varieties, including two newly rediscovered pink-fleshed apples that we introduced and named 'Thornberry'® and 'Pink Pearmain'®. Subsequently, we have selected five additional 'Surprise' seedlings that we deem worthy of formal introduction. We regard these seven pink-fleshed Etter varieties—together with their better known sibling 'Pink Pearl'—as comprising a distinct class or family of apple. We now refer to these daughters of 'Surprise' as the Rosetta™ series. While they still display their common genetic heritage in the anthocyanin pigmentation of flesh and blossom, each introduction stands out as a distinct individual with its own defining attributes.

Meet the Daughters of 'Surprise' The following descriptions of our seven Rosetta™ pink-fleshed introductions are organized in approximate ripening order:

1. 'PINK PEARMAIN'®. This was our first Etter pink-fleshed apple "discovery." We had heard rumors of an isolated 'Pink Pearl' tree growing at an abandoned homestead site about five miles southwest of the town of Whitethorn. What we found there was no 'Pink Pearl' but a different pink-fleshed Etter apple with its own distinctive characteristics. When fully ripe (late September), this apple's skin would be striped and splashed a brilliant red over a translucent cream ground.

The interior color was a beautiful rose pink, somewhat deeper than that of 'Pink Pearl'. The flavor tended likewise to be more intense, stronger in both sugar and acid.

Perhaps the most interesting characteristic of this Rosetta™ sister is its unusual shape, which though variable tends to be broader at the base (calyx) than at the stem end. Many specimens are lopsided and display strong pentagonal ribbing. The "upside-down" or obovate shape has historically been associated with the old "pearmain" class of European apples. For this reason, we gave it the name 'Pink Pearmain'®. Some years later we were surprised to find a reference in CNC's variety trial notes that listed a "Fall Pinkflesh Pearmain"; maybe we made a lucky guess.

How did this apple get from Ettersburg to the vicinity of Whitethorn? Interviews with oldtime residents point to a friend of Albert Etter named Onofrio Russo who relocated from Ettersburg to Whitethorn in the Forties. Russo had some horticultural skills and interests, having worked for a time as Etter's hired hand. He was probably responsible for grafting at least five different pink-fleshed varieties on trees in the Whitethorn area. This includes a tree on the Russo property with fruit conforming to the description of 'Surprise'.

The first and earliest ripening of our Rosetta™ introductions, 'Pink Pearmain'® remains one of the best apples of its type for home fruit gardeners. No less an authority than Harry Baker, Fruit Officer (retired) of the Royal Horticultural Society's apple collection, praised its "superb, refreshing flavor." Potential growers should note a tendency of the variety to produce atypical, poorly colored and flavored fruit with the initial crop. This problem is exacerbated in situations where the adaptation is marginal. The characteristic shape may also not develop.

True to their 'Surprise' heritage, all the Rosetta™ apples may be somewhat finicky about climatic adaptation. While Etter obviously took advantage of California's favorable growing conditions, many of his varieties will consequently perform at their best only in the favored areas of the Pacific states. This may represent a loss for Eastern growers but it can certainly afford an opportunity for enterprising California apple producers.

2. 'BLUSH ROSETTE'™. Because of its attractive appearance and refreshing aromatic flavor, this may be the most commercially valuable of the Rosetta™ sisters. Its exterior is a translucent yellow typically blushed with a bright red cheek. Perhaps this variety is the aforementioned "Redflesh Winter Banana," a personal favorite of Etter. A round, medium-sized apple, 'Blush Rosette'™ has "hot pink" flesh similar to 'Pink Pearl'. The texture is firmer and juicier and holds up better to heat and in storage. Compared to 'Pink Pearl', this new introduction seems healthier, with an open, spreading growth habit that produces a strong structural framework. It ripens about a month later (around October 1) and keeps for several months in storage. 'Blush Rosette'™ is our most recent addition to this series and has not been widely distributed. Based on its performance here at Ettersburg, we are enthusiastic about its potential. Several more years, however, will be required before a complete evaluation can be made.

3. 'THORNBERRY'®. We first discovered this apple in an abandoned orchard about a mile outside the town of Whitethorn. It was probably grafted there by Onofrio Russo. A pretty little apple with pale transparent skin, it looks superficially like a more refined, compact version of 'Pink Pearl'; both varieties display a pearly pink glow. The flesh color is raspberry pink and reflects its distinctive berry-like flavor. When picked in mid-October, 'Thornberry'® makes a robust dessert apple, perhaps a bit too sprightly for some palates. Sound specimens keep well in storage, mellowing into a sweeter, tamer apple.

Like 'Pink Pearl', 'Thornberry'® can be troubled by apple scab, particularly when trees are allowed to become congested, resulting in poor air/light circulation. It nevertheless is worth the extra trouble, especially for fruit gardeners seeking a new dimension in apple flavor. Moreover, its lilac-pink blossoms are beautifully ornamental.

4. 'RUBAIYAT'®. Ruby-red inside and out, 'Rubaiyat'® shines as a rare gem in the Rosetta™ series. It is relatively small in size, probably reflecting a pollen parent with crab apple lineage. The unusual genetics nicked well; 'Rubaiyat'® is one of the finest flavored of Etter's numerous apple cultivars—the flavor is memorably intense—very sweet, very tart, and delightfully aromatic. Texture is almost impeccable, simultaneously crisp, melting and juicy. It ripens in late October and keeps quite well; 'Rubaiyat'® has become a family favorite; our children, who became discriminating apple fanciers as the result of so many collecting expeditions, are especially fond of it. 'Rubaiyat'® was one of the last treasures we located at the Etter orchard: a decrepit fragment of a tree growing near the back fence. We were extremely lucky to find it, and luckier still to propagate it successfully. By the following season it was gone, bulldozed over by some pesky cows. Ah, wilderness!

5. 'CHRISTMAS PINK'®. Wintertime here in Ettersburg can be very damp and grey. Our rainy seasons can bring an accumulation of over 120 inches. so the holiday season definitely benefits from the bright rosy colors of the pink-fleshed apples. Among the Etter family, it became a tradition to store away selected varieties in the fall so that they could be

brought out as ornaments and gifts on Christmas Day. Albert's numerous nephews and nieces must have delighted in these colorful Christmas apples with their translucent skin glowing with the pink aura of their sweet-tart flesh.

The apple we named 'Christmas Pink'® was very likely one of the Etter family's holiday treats. When picked in early November, this round, medium-to-large apple is a bit on the brisk side. It needs a few weeks in storage to mellow out to the point that its sugars balance the acidity. By Thanksgiving it has become a pleasant dessert fruit; by Christmas it has become quite sweet. During this period of indoor ripening, 'Christmas Pink'® takes on an increasingly intense color both inside and out. It can get to be watermelon-red inside with pockets of deeper colored "water core" enhancing the sweetness.

'Christmas Pink'® is also a fine apple for culinary uses. The firm flesh holds up remarkably well during cooking and the color of the flesh becomes even more pronounced. It is also excellent when sliced, uncooked, for fruit salads.

6. 'GRENADINE'®. Of all of the Rosetta™ apples, this one has the deepest, darkest flesh color, rivaling *Niedzwetkyana*. Its purplish-red interior is somewhat evocative of a pomegranate and the dull grayish-transparent skin further invites this comparison.

'Grenadine'® requires a very long growing season to develop properly. When picked here in mid-November, it is still a bit too brisk for most taste buds. It needs at least a few weeks in storage to mellow into a very enjoyable dessert apple. It also serves quite well for any cooking purpose, especially where its deep-red color can be appreciated. 'Grenadine'® also makes a vivid and flavorful contribution to cider blends and provides a convincing substitute for cranberry sauce at holiday meals.

7. 'PINK PARFAIT'®. Albert Etter was born on Thanksgiving Day in 1872 and died around his 78th birthday. We like to pay him homage by visiting the old orchard every year at Thanksgiving. There are still chestnuts on the ground and some of his most flavorful apple varieties are finally ready to pick. Of these late-ripening apples, 'Pink Parfait'® stands out for its extraordinary quality. It would rank among Etter's greatest creations even if it did not have bright pink-marbled flesh. But the novelty of its pigmented interior certainly enhances the eating pleasure and the anthocyanins no doubt contribute to the remarkable aromatics that suggest the flavor of cherries.

A large, rugged-looking apple with red stripes covering a greenish ground, the exterior of 'Pink Parfait'® somewhat resembles 'Tompkins King'. The flesh is distinctively two-toned, with patches of brilliant pink swirled with creamy white. The over-all effect can be striking. The flavor is complex, rich, and unforgettable—and the experience is heightened by an amazing crystalline texture. In our opinion, 'Pink Parfait'®, when well-grown, ranks as one of the world's great dessert fruits.

Too bad it will be almost impossible for many growers to produce decent specimens. The main problem is the ridiculously long growing season required; if it ripens in late November in Ettersburg, it will probably not even come close to finishing in less-favored zones. It is also somewhat prone to fungus diseases and will rot on the tree before ripening if the weather is uncooperative. So 'Pink Parfait'® is not a variety that can be recommended without qualification. Fruit gardeners in favorable locations of California and Oregon where 'Pink Parfait'® can have a chance to ripen should consider themselves fortunate for the opportunity to grow this excellent representative of the Rosetta™ group.

The Mysteries of Origins As previously stated, Albert Etter was not the only North American fruit hybridizer to develop pink-and red-fleshed apple varieties. Niels Hansen contributed his own line of *Niedzwetkyana* hybrids as did his Canadian counterpart W. T. Macoun and possibly others. These *Niedzwetkyana*-derived varieties are easily distinguished from the Rosetta™ class by their purplish pigmentation of foliage, bark and wood. In recent years, however, there have been reports of new pink-fleshed apples of the Rosetta™ type being discovered far from Ettersburg. My NAFEX friend Bill Schultz of Philomath, Oregon, has tracked down two such varieties that had been found at abandoned orchard sites in the Willamette Valley. They are now known as 'Aerlie Red Flesh' and 'Bill's Red Flesh'; both have begun to circulate among amateurs as a result of the Home Orchard Society's scionwood exchange. The origin of these two Oregon varieties remains a mystery and may never be determined. They, too, could be open-pollinated seedlings of 'Surprise' or a 'Surprise' offspring such as 'Pink Pearl'; Albert Etter certainly didn't own the franchise on growing out apple seedlings chosen for their novelty hue.

On the other hand, it is not unlikely that one or both of these apples could have originated at Ettersburg. It is known that Etter sent various apple samples and scionwood to Quentin Zielinski, research horticulturist at the Oregon experiment station near Corvallis. Zielinski tested at least three of the patented Etter/CNC varieties ("Etter's Gold", 'Jonwin', and 'Pink Pearl') and perhaps Etter also provided him with wood of some of his 'Surprise' seedlings. At any rate, one of the Oregon pink-fleshed varieties was "discovered" at the abandoned site of the old O.S.U. experiment station; it is certainly not a chance seedling.

The confusion surrounding the origin and identity of the pink-fleshed apples has just been compounded by the recent introduction of 'Hidden Rose' and 'Pink Sparkle' by a prominent Midwest nursery. After some investigation, I have secured the acknowledgment that 'Hidden Rose' is identical to the 'Aerlie Red Flesh'. Moreover, I am fairly convinced from its description that 'Pink Sparkle' is simply our own 'Pink Pearmain' with a new name; a decade ago, I had sent scionwood to this nursery's founder as a personal gift.

A Code of Nomenclature is Needed All this nomenclature confusion is unfortunate and no doubt will lead to many collectors inadvertently duplicating these varieties. For me the situation is particularly ironic since I had gone to great effort to secure the identity and integrity of our Etter introductions by registering their names with the federal Patent and Trademark Office; novelty fruit invites exploitation and I had hoped to retain some control over how these pink-fleshed apples would be handled. Trademark protection, however, can backfire pomologically when it leads to the same variety turning up with multiple names. Once upon a time, nomenclatural problems were monitored by state pomological societies and the American Pomological Society (APS). Founded in 1867, the APS for many years provided a comprehensive Code of Nomenclature that regulated the naming of new fruit and nut varieties. Under the 1946 version of this code "the renaming (for trade purposes) of a variety having an established name is declared unethical and contrary to the objective of the code in establishing a permanent system of nomenclature." Sadly, the entire discipline of pomology has fallen into disrepair and the APS, while still existent, has been reduced to a slim shadow of its once exalted stature. At agricultural colleges throughout America, retiring horticulturists have typically been replaced by experts in microbiology and computer science. As the word "pomology" becomes increasingly archaic, fruit variety nomenclature must degenerate into fertile ground for chaos, mistakes, and misunderstanding. Can this problem be remedied? Not in a hurry, but perhaps amateur pomology groups like CRFG, NAFEX, and HOS should begin a dialogue that could some day evolve into a workable code of nomenclature, implemented by a published registry of variety names. When it comes to fruit, a good name is always worth protecting from error and confusion.

Author's Note: While proofing this article, I received an unsolicited packet of scionwood from an amateur collector in Ohio who specializes in anthocyanin-fleshed apples. Examining the wood, I can conclude that 'Bill's Redflesh' is a *Niedzwetkyana*-type, while 'Aerlie Red Flesh' (aka 'Hidden Rose') is in the less-pigmented 'Surprise' class. Other varieties apparently in the latter category included 'Mott Pink' and 'Webster Pink Meat'. Based on wood pigmentation, 'Winter Red Flesh' and 'Primata' resemble the Hansen types.

ABOUT THE AUTHOR--Ram Fishman is the author of *The Handbook for Fruit Explorers*, a publication of North American Fruit Explorers (NAFEX), of which he is also a past president. Together with his wife Marissa, he operates Greenmantle Nursery, specializing in temperate fruit varieties and classic roses. Catalog is available for \$3.00 ppd: 3010 Ettersburg Road, Garberville, CA 95542.

Editor's Note: Jacky King, at W.S.U., Mount Vernon Research Station reports that they have one red-fleshed apple, 'Mott Pink' (refer to Author's Note above) given to them by Dave Wilson Nursery. It is quite productive yielding small to medium fruit. Thinning, on the same scale as 'Liberty' or 'Spartan', is necessary to produce medium size fruit. When ripe, the skin is yellow with pink undertones; the flesh mottled, from light to dark, pink, and is quite tart. Jacky also said that scionwood will be available by mail order or at the Spring Open House at Mount Vernon.

This article was originally published in the CRFG Fruit Gardener, May/June 1995.



More from the NAFEX Conference: "The world of kiwis was greatly expanded for me after the presentation of Bob Glanzman of Seattle. He has the second most diverse collection of *Actinidia* in North America, after Roger Meyer of California. Bob has at least 64 species and 108 sub-species....An intriguing substitution in the agenda was Kristan Johnson, speaking on edible landscaping in his Port Ludlow, WA garden. His slides showed integrated edibles and ornamentals in a wheelchair-accessible environment. Many raised beds are used in this no-spray, low maintenance setting. among many other plants, Kristan used Fuyu persimmons, quince for the nice, big papery flowers and fragrant fruit, pineapple guavas with their sweet and tasty blossoms, filberts in hedges, clerodendron -not edible but incredibly fragrant. Pawpaws were planted 2 per hole for pollination and were fruiting after 7 years; they were notable for their bright yellow fall color. There were also Golden West raspberries and artichokes with their gorgeous and exotic blossoms." By Glenda Barr DeRemigis, from *The Cider Press* Fall 1995.

Ed. Note: Bob Glanzman and Kristan Johnson are WCFS members who give generously of their knowledge and time.

Several members have asked for information regarding the International Dwarf Fruit Tree Association (IDTFA) Conference. The following is a brief outline of the events, courtesy of Chuck Parkman. Regrettably, space does not allow for greater details or speakers credentials, although Chuck sent the information to me. The 1997 IDTFA Conference is in New York, so if this looks interesting to you, better take advantage of it being practically in your own orchard, oops back yard.

39th ANNUAL IDFTA CONFERENCE FEBRUARY 25-29, 1996 Penticton, British Columbia

Sunday February 25 British Columbia's Tree Fruit Industry

- 7:00 p.m. Fruit Growing in the Okanagan Valley—Climate, Soils, Acreage, Varieties, Rootstocks, Tree Density & Orchard Management Systems--Tim Watson
- 7:25 p.m. Innovative Pest Control Techniques—IPM to Sterile Insect Release--Hugh Phillip
- 7:50 p.m. Marketing B.C.'s Apples at a Profit for Growers—The Task of B.C. Tree Fruits Ltd.--Greg Gauthier.
- 8:15 p.m. Okanagan Valley Tree Fruit Authority—Helping B.C. Orchardists Succeed--Ross Husdon

Monday February 26

- 8:30 a.m. Welcome to the 39th Annual IDTFA Conference--Darrel Oakes
- 8:35 a.m. Program, Orchard Tour and Summer Tour Updates--Dr Bruce Barritt
- 8:40 a.m. Cherry Tree Physiology and Orchard Management Strategies—Now & In the Future--Robert F. Carlson
Distinguished Lecture--Dr Jim Flore
- 9:25 a.m. Challenges of Growing Fuji Apples in Japan--Hiromitsu Komatsu
- 10:05 a.m. Ongoing Evolution of High Density Orchards in B.C.--panel, Mike Sanders, moderator, & Rob Dawson, Stan Swales, David Gartrel
- 11:05 a.m. The Giessen Cherry Rootstocks--Dr Sabine Franken-Bembenek
- 1:30 p.m. Apple Orchard Management Practices in France--J. M. Lespinasse
- 2:15 p.m. Dwarfing Cherry Rootstock Trials in North America--panel, Dr Frank Kappel, moderator, & Dr Greg Lang, Dr Ron Perry
- 3:15 p.m. Apple Rootstock Performance in B.C.--Dr Harve Quamme
- 3:35 p.m. Performance of Cornell-Geneva Apple Rootstock in New York--Dr Terence Robinson
- 4:05 p.m. Innovations in Sweet Cherry Production Systems—Vision for the Future--panel, Dr Greg Lang, moderator, & Bob Harris, Hugh Dendy
- 7:00 p.m. European Orchard Management Techniques—Report of IFDTA European Tree Fruit Study Tour--panel, Geraldine Warner, moderator, & Tom Auvil, Bernie Solymar, Kevin Bowman
- 8:00 p.m. South African Fruit Industry--Tim Smith
- 8:40 p.m. Japanese Fruit Growing--Karen Maib

Tuesday February 27 Orchard Tours--Summerland and Peachland Districts

Wednesday February 28

- 8:30 a.m. Influence of Fruiting Habit on the Pruning and Training of Apple Trees--J. M. Lespinasse
- 9:15 a.m. Apple Orchard System Trials in New York--Dr Terence Robinson
- 9:45 a.m. Production of Sweet Cherries in German--Dr Sabine Franken-Bembenek
- 10:25 a.m. Growing Apples in Nagano, Japan--Takanobu Nakamura
- 10:35 a.m. Managing Tatura Trellis and Other Angled Canopy Tree Training Systems with Apples--panel, Rick Maib, moderator, & Tom Waliser, Eric Swanson, Tom Carnevali, Mike Robinson
- 11:35 a.m. When Does Tree Stress Most Critically Affect Apple Fruit Quality and Yield?--Dr Jim Flore
- 1:30 p.m. Pomology 101—Managing the Orchard Environment--Dr Curt Rom
- 2:10 p.m. Modifying the Orchard Environment for Success with Fuji—Orchard Covers for Shade, Overtree Cooling to Reduce Sunburn, Undertree Reflective Materials and Fruit Bagging to Improve Color--panel, Karen Maib, moderator, & Jim Fleming, Gordon Lowell, Warren Morgan, Tom Waliser, Charlie de la Chapelle
- 3:10 p.m. Latest Developments in Apple Production and Management in Japan--Hiromitsu Komatsu
- 3:55 p.m. Performance of High Density Apple Orchards in Michigan—A Prelude to the 1996 Summer Tour in Michigan--panel, Phil Schwallier, moderator
- 6:00 p.m. Social Hour, Convention Center
- 7:00 p.m. Awards Banquet--Dr Steve Blizzard, Master of Ceremonies

Thursday February 29 Orchard Tours--Kaleden and Oliver Districts

**REGISTRATION • 39TH ANNUAL IDFTA CONFERENCE
FEBRUARY 25-29, 1996 • PENTICTON, BRITISH COLUMBIA**

IDFTA Membership Number _____ Name _____
Address _____
City _____ State/Province _____ Zip _____
Country _____

Names of individuals attending educational sessions:

*(Note: Immediate family members, employees and new members may register at Member Rate. All others at non-member rate below.)**

Number of individuals attending educational sessions: _____ @ \$60.00 (U.S.) each. \$ _____

**Non-IDFTA Member Fee for the Educational Sessions is \$90.00 (U.S.) each.*

Names of individuals attending the Conference but NOT attending the educational sessions:

(Examples: spouse, companion, children. This information is necessary for the preparation of name badges.)

Number of **Banquet Tickets:** _____ @ \$27.00 (U.S.) each. \$ _____

(Note: Banquet seating is limited. Reservations will be honored according to the postmarked date of registration.)

Number of **Tour Tickets:** _____ @ \$60.00 (U.S.) each. \$ _____

Tour tickets include two days of tours, transportation and lunches. *(Note: We'd like to emphasize that the tours are limited to the buses due to space restrictions at the tour sights. No car caravans following the buses, please.)*

Number for **Spouses' Tour:** _____ @ \$30.00 (U.S.) each. \$ _____

Tour tickets include transportation and admission to museum. Lunch is on your own.

NEW MEMBERS ONLY: 1996 Membership Dues

U.S. & Canada: _____ @ \$50.00 (U.S.) each. \$ _____

Foreign: _____ @ \$60.00 (U.S.) each. \$ _____

Penalty for Late Registration: A penalty of \$10.00 (U.S.) per each registrant for the educational sessions will be assessed to ALL registrations postmarked after February 1, 1996. **PLEASE REGISTER EARLY!!!**

Late Registration Fee _____ @ \$10.00 (U.S.) each. \$ _____

TOTAL ENCLOSED (in U.S. Funds) \$ _____

CANCELLATION POLICY: Full refund up to February 1, 1996. After this date, a \$10.00 (U.S.) per person processing fee (for those attending the educational sessions) will be charged. No refunds will be issued after February 20, 1996.

Make check or money order payable to IDFTA in U.S. funds and return white copy to: IDFTA, 14 South Main Street, Middleburg, PA U.S.A. 17842. Bring yellow copy to registration. Please call 717-837-1551 if you have any questions or fax us at 717-837-0090.

ZAIGER GENETICS FIELD TRIP: A LESSON IN CREATION

by Maria Luz Berrones

Rare California Fruit Grower, January/February 1996

Last July, Zaiger Genetics in Modesto, California, was the location for another exciting CRFG field trip. The open house was well attended by members from the Central Coast, Golden Gate, Monterey Bay, Redwood Empire, Sacramento Valley and Santa Clara chapters.

Zaiger Genetics is a family-run business. Floyd Zaiger, the founder, had taken off trout fishing for a couple of days and the open house was capably handled by his three children, Leith (Zaiger) Gardner, Gary Zaiger and Grant Zaiger.

The first event hosted by Leith Gardner was a fruit tasting of various Zaiger-created varieties of stone fruit. Now, if there is one thing CRFG members really like it's a fruit tasting. This was especially exciting because some of the state-of-the-art designer fruit was being sampled by the public for the first time. The stone fruits tasted were primarily nectarines, plums and pluots. The yet unnamed pluots were well received because of their high sugar content and excellent flavor balance. It would be nice to mention the name of these marvelous new pluots but they only had numerical identifications. Leith explained that Zaiger Genetics specializes in designer fruits. For example, they created fruits of different flavors, both acid and subacid, yellow fleshed and white fleshed, as well as having different skin colors, chilling requirements and ripening dates throughout the growing season. They customize not only the fruiting cultivar but also do research with rootstocks and interstems.

INTERSTEM INFLUENCES SIZE Leith displayed a group of cherry trees in a trial planting block with the emphasis on size control via the use of interstem technology. These cherry trees had 'Citation' as a rootstock with an interstem and then the cultivar/variety. Size was controlled by the interstem; a 5" interstem resulted in a 7' tall cherry tree. A 15" long interstem resulted in a 10' tall tree. These cherry trees, now eight years old, will be available in the very near future.

Leith said the majority of their genetic engineering is done via controlled cross-pollination. Also of interest was the fact that genetic dwarf fruit trees have the same life span as standard-size trees. The CRFG group also was shown the fruit-tree breeding stock that are grown in planters made from 55-gallon plastic drums; thus, the trees can be freely moved around to control temperature and humidity and manipulate blossom opening. This is important because you can cross an early-season blooming plant with a late-season blooming plant with greater success. The bloom periods are manipulated via heated greenhouses and probably, although not mentioned, cold storage of potted trees to maintain dormancy.

PRODUCING NEW VARIETIES Zaiger Genetics customizes fruit according to consumer preference in the country of final destination. As an example, the international Asian market prefers white-fleshed, subacid peaches and nectarines, but the problem has been that white-fleshed fruit shows bruising easily and cosmetically doesn't look good after a long shipping journey. Zaiger came up with a solution by creating a sweet fruit that fully ripens and stays firm longer, thus can be picked hard to minimize bruising. Problem solved.

Next came Gary Zaiger who took small groups in his pickup truck out to the "primary seedling block" which consisted of 75 to 85% F₁ hybrids. The primary block consists of a mere 150,000 hybrid seedlings. Zaiger's maintains over 140 acres in its breeding program. "We keep everything on computer; we can go back twenty to thirty years on the parentage of our trees," Gary says. As for the seedlings, he continues, "We never have trees older than three years. We are always tasting fruit, it's like wine tasting; you taste the wine and you spit it out. I couldn't possibly eat all the fruit I taste in a given day." The cull-to-desirable-variety ratio is 10,000 to 1. After the desirable varieties are identified and grafted to the secondary block, the remaining three-year old trees are removed and destroyed and the process is repeated.

Gary said they produce from 12 to 20 new varieties per year. Zaiger varieties are grown throughout the world. A large percentage of orchards in Europe are from Zaiger. They are also in South America, Australia, South Africa and Israel.

Chuck Parkman submitted the above article with this note: This article from California Rare Fruit Grower magazine describes how to grow very dwarfing cherry rootstocks, but Zaiger isn't going to tell us what interstem he used. So am asking Gary Moulton for suggestions and will try several dozen different interstem this spring to discover what works best. Obviously it must be compatible with both sweet cherries and the citation rootstock. An article in The Bee Line could alert members to try some themselves so we can find out what works best and finally have our very dwarfing cherry rootstock.

DORMANT FERTILIZER SPRAYS WORKING

The Great Lakes Fruit Growers News, March 1994

A Texas based crop consultant may have found a way to help apple growers get more calcium to their fruit without causing russetting.

Currently growers can only put up to one pound of calcium on per acre per spray without taking the chance of causing russetting. This often does not supply enough calcium for maximum yield, quality and storage life that growers are looking for, according to Jerry Stoller, owner of Stoller Enterprises, Inc.

Mr. Stoller made his remarks during Total Agri Services' winter meeting on March 15. At the meeting a film from Michigan State University Horticulture Department was viewed, showing, through research done over 40 years ago using radioisotopes, that nutrients can be absorbed and can move through the woody tissue of trees.

Mr. Stoller has found that large amounts of calcium can be cortically applied to the woody tissue during the dormant season. This calcium will then move to the fruit during the growing season.

In conjunction with Mr. Stoller's research, Kropf Orchards and Total Agri Services, both in Lowell, Michigan, have been conducting trials using dormant and summer applied foliar fertilizers.

Crop and soil consultant Wally Gerst, owner of the Grand Rapids based Advanced Agriculture Services has been working as a liaison with Mr. Stoller and has been looking at the research and working on the formulas for the dormant fertilizer treatments. He helped introduce the idea to Kropf and other growers.

Mr. Stoller, Mr. Gerst and Jim Nauta, president and general manager of Total Agri Services, said results have been very promising.

In 1992 and 1993 Kropf applied Nitro-Plus 18, a formulation of 18 percent nitrogen, 5 percent calcium and 1.5 percent magnesium, to ten-year-old EMPIRE trees in early April.

In the summer three foliar sprays of Foli-Zyme, which is a formulation of 10-0-3 plus 3 percent calcium and many other micronutrients, were made to the trees. Foli-Zyme was tank mixed with fungicides and pesticides.

In the 1992 trials the apples on the treated trees had an average pressure of 18.39, while apples from untreated trees had an average pressure of 17.5, Mr. Nauta said. Pressure tests on apples from inside and outside the tree were more even on treated trees. Apples also colored better and were in better condition than fruit from the untreated blocks.

The second year of trials on the same EMPIRE block resulted in yield increases of 18 percent over untreated blocks, Mr. Nauta said.

For the 1994 trial, a dormant application to the woody tissue was made in November on EMPIRE, JONATHAN and RED DELICIOUS trees of Kropf Orchard. "We wanted to see if we could get the same

response as we do with spring-time applications," Mr. Nauta said.

In late November, 25 gallons per acre of Nitro Plus 9, a formulation of 9 percent nitrogen, 7 percent calcium and 1.5 percent magnesium, was applied. This spray will be followed up by three summer applications of Foli-Zyme, Mr. Nauta said.

Trials using dormant foliar fertilizer applications were also done in Canada in 1988, 1989 and 1990 by Mr. Stoller. These trials showed foliar calcium sprays increased storage life of apples by lowering the ethylene content. A lower ethylene content will slow the aging process. In the trials, ethylene content in treated apples was five times lower than untreated apples.

Mr. Stoller has found getting more calcium to the fruit has opened the window to increased nitrogen applications which in turn can increase yields. Apple growers have had to limit nitrogen applications in the past because it encourages shoot growth and takes calcium away from the apples.

Calcium goes to parts of a tree where water evaporates the quickest, which is normally the leaves, Mr. Stoller said. The more shoot growth increases by adding nitrogen, the more calcium goes to shoot leaves. This in turn allows less calcium for the fruit, which is why calcium is sprayed directly on apples in the summer. Increased shoot growth can also take away magnesium from fruit, which can decrease color.

Calcium and magnesium won't move from the leaves to the fruit so both need to be applied to the woody dormant tissue during the dormant season, Mr. Stoller said. Even if growers have high levels of calcium in their soil, it won't move to the fruit as well as if calcium is applied to the woody tissue of the tree.

A trick to keep calcium in the apple is to foliarly apply one pound of Boron per acre each year, Mr. Stoller said. It can be split up between two summer sprays and will seal calcium into the fruit.

Editor's Note: Has anyone tried this method? Would you tell us about your results? We'll report your findings in The Bee Line.

This article and one on page 14 have been split into two columns. How do you like this format? Is it easier reading? Do you like indented paragraphs? (as in the body of the above article). Spaces between paragraphs? (as between the Editor's Note and this paragraph). Write and let us know.

WESTERN CASCADE FRUIT SOCIETY — 1995 FRUIT SHOW INVENTORY

Submitted by Dave Battey

The following list is an inventory of the number of "plates" of a specific variety that were displayed at our 1995 show. An asterisk (*) denotes a variety that was not shown in 1994 (it may very well have been shown in a previous year). The low number of plates of apples (251) and "new" varieties this year (52) speak to a challenging apple growing year in Western Washington.

Remember that our inventory list is skewed toward mid to late ripening varieties. Early apples may not "keep" well enough to appear in our Fall Fruit Show. Note that if apples with four "plates" were counted, Fiesta, Holstein, Keepsake, Kidd's Orange Red, Liberty, and Opalescent would also appear below.

There were 356 varieties (including "sports") shown in 1994 including 125 varieties not shown in 1993. There were 276 varieties shown in 1993 including 80 varieties not shown in 1992. There were 333 varieties shown in 1992 including 140 varieties not shown in 1991. There were 218 varieties in the 1991 show, 47 of which were "new" varieties. There were 94 "new" varieties in 1990 and 75 "new" in 1989.

1995 — Varieties with five plates or more (including "sports"):

Jonagold (11)	Karmijn de	Ashmead's	Freyberg (5)
Elstar (8)	Sonneville (7)	Kernel (5)	Fuji (5)
Bramley (7)	Melrose (7)	Belle de	Idared (5)
Cox's Orange (7)	Spartan (7)	Boskoop (5)	
Gala (7)			

1994 — Varieties with five plates or more (including "sports"):

Jonagold (12)	Northern Spy (8)	Golden	Bramley (5)
Gala (11)	Hudson's Golden	Delicious (6)	Chehalis (5)
Liberty (10)	Gem (7)	Idared (6)	Elstar (5)
Fuji (9)	Karmijn de	Macoun (6)	Golden Russet (5)
Cox's Orange (8)	Sonneville (7)	McIntoch (6)	Keepsake (5)
Melrose (8)	Arlet (6)	Opalescent (6)	Tompkin's King (5)
Mutsu (8)		Spartan (6)	

1993 — Varieties with five plates or more (including "sports"):

Spartan (10)	Belle de	Liberty (6)	Macoun (5)
Cox's Orange (8)	Boskoop (7)	Spigold (6)	Melrose (5)
Jonagold (8)	Gala (7)	Arlet (5)	
	Tomkin's King (7)	Gravenstein (5)	

1992 — Varieties with five plates or more (including "sports") were:

Gala (14)	Elstar (8)	Liberty (6)	Pink Pearl (5)
Jonagold (13)	Tomkin's King (8)	Northern Spy (6)	Spencer (5)
Melrose (12)	Bramley (7)	Opalescent (6)	Summerred (5)
Gravenstein (11)	Fuji (7)	Arlet (5)	Sweet Sixteen (5)
Macoun (10)	Idared (7)	Black Gilliflower (5)	Winter Bannana (5)
Spartan (10)	Akane (6)	Calville Blanc (5)	Wolf River (5)
Ashmead's	Belle de Boskoop (6)	Criterion (5)	
Kernel (9)	Brock (6)	Freyberg (5)	
Hudson's Golden	Cortland (6)	Golden Russet (5)	
Gem (9)	Cox's Orange (6)	Jonamac (5)	
Mutsu (9)	Golden Delicious (6)	New York 429 (5)	

1991 — Varieties with five plates or more (including "sports") were:

Jonagold (10)	Liberty (6)	Estar (5)	Spartan(5)
Tompkin's King (7)	Macoun (6)	Esopus	
Gala (6)	Melrose (6)	Spitzenburg (5)	
Gravenstein (6)	Belle de Boskoop (5)	Northern Spy (5)	

1995 WCFS FRUIT SHOW VARIETY LIST

NUMBER FOLLOWING VARIETY NAME IS NUMBER OF PLATES DISPLAYED

(* = NOT ON 1994 LIST)

APPLES

ACEY MAC 2
 AKANE 3
 AKIN 1
 ALASKA 1
 ALKMENE 2
 ALKMENE (RED) 1
 ALLINGTON PIPPIN 1
 ALMATA 1*
 APPLE BABE 1*
 ARLET 3
 AROMA 3
 ASHMEAD'S KERNEL 5
 BALDWIN 1
 BELLE DE BOSKOOP 4
 BELLE DE BOSKOOP (RED) 1*
 BENI TSUARU 1*
 BIRINGER-101 1*
 BLACK AMISH 1*
 BLACK GILLIFLOWER 2
 BLENHEIM ORANGE 3
 BORGGOLDEN 1*
 BRAEBURN 3
 BRAMLEY SEEDLING 7
 BROCK 3
 BUCKLEY GIANT 1*
 BURGUNDY 1
 CALVILLE BLANC D'HIVER 2
 CANADA RED 1
 CASCADE 1*
 CHEHALIS 2
 CHESAPEAKE 1
 CHESTNUT CRAB 1
 CHISEL JERSEY 1
 CINNAMON SPICE 1*
 CLAYGATE PEARMAIN 1*
 CORNISH GILLIFLOWER 3
 COURT PENDU PLAT 2
 COX, CHERRY 3
 COX'S ORANGE PIPPIN 4
 COX, QUEEN 2
 COX (RED) 1
 CRIMSON GOLD 1*
 DALITER (ELSTAR SPORT) 1
 DALIEST (ELSTAR SPORT) 1
 DAVEY 1
 DAVIES 1*
 DAYTON 1

DELBARD JUBILEE 1
 DELCON 1
 DELISTEIN 1*
 DEMOCRAT 1
 DULCET 2*
 EARLIGOLD 1
 EARLY DAWN 1*
 EARLY HARVEST 1
 EGREMONT RUSSET 1
 ELAN 2
 ELMER 1
 ELSTAR 6
 EMPIRE 3
 ENTERPRISE (COOP30) 1
 ERWIN BAUER 1
 ESOPOS SPITZENBURG 3
 ETTER'S GOLD 1
 FALL PIPPIN 1
 FIELD SPY 1
 FIESTA 4
 FIRESIDE 1
 FLORINA 2
 FRANKLIN 1*
 FREYBERG 5
 FUJI 2
 FUJI (RED) 1
 FUJI (YATAKA) 2
 FUSHAI 1*
 GALA 2
 GALA (FULFORD) 1
 GALA (REGAL) 1
 GALA (ROYAL) 2
 GALA (SCARLET) 1*
 GENEVA EARLY 1*
 GINGER GOLD 2
 GLOSTER 1
 GOLDEN DELICIOUS 1
 GOLDEN MAC 1*
 GOLDEN NOBLE 1
 GOLDEN NUGGET 2
 GOLDEN RUSSET 2
 GOLDEN SUPREME 1
 GORO 1*
 GOUDREINETTE (SEE BELLE
 DE BOSKOOP)
 GRANNY HURST 1
 GRANNY SMITH 1*
 GRAVENSTEIN 2
 GRAVENSTEIN (RED) 2
 GREENSLEEVES 1

GROVE 2
 HARALSON 1
 HARRY MASTER'S JERSEY 1
 HATSUAKI 2
 HAWAII 1
 HENER-20 1
 HOLIDAY 1
 HOLLY 1
 HOLSTEIN 4
 HONEYCRISP 2
 HONEYGOLD 1
 HOOPLE'S ANTIQUE GOLD 1*
 HOWGATE WONDER 1
 HUBBARDSTON NONESUCH 1
 HUDSON'S GOLDEN GEM 3
 IDARED 5
 JAMES GRIEVE 1
 JESTER 1
 JEWETT RED 1
 JONAGOLD 9
 JONAGOLD (DECOSTER) 1
 JONAGOLD (JONAGORED) 1
 JONAMAC 2
 JONATHAN 1
 JONWIN 1
 KARMIJN DE SONNEVILLE 7
 KATJA 1
 KEEPSAKE 4
 KENT 1
 KERR 1
 KESWICK CODLIN 1*
 KIBBE SPY 1*
 KIDD'S ORANGE RED 4
 KING (SEE TOMPKIN'S KING)
 KING DAVID 1
 KING'S ACRE PIPPIN 1*
 KINNAARD'S CHOICE 1*
 KLAMATH RIVER 1
 KNUDSON'S MUTATION 1*
 KOREI 1*
 LADY 1
 LAXTON'S SUPERB 1
 LIBERTY 4
 LODI 1
 MACOUN 4
 MAIDEN BLUSH 1
 MAIGOLD 3
 MANTET 1*
 MARGILL 2*
 MCINTOSH 3

MCSHAY 2
 MEDINA 1
 MELROSE 7
 MERTON DELIGHT 1
 MERTON KNAVE 1
 MERTON PIPPIN 1*
 MERTON PROLIFIC 1
 MERTON RUSSET 2*
 MERTON WORCESTER 1
 MICHINOKU 1
 MONROE 1
 MORDEN-350 1*
 MULTNOMA 1
 MUTSU 2
 NEBUTA 1*
 NEWTON WONDER 1
 NEWTOWN PIPPIN
 (SEE YELLOW
 NEWTOWN)
 NEWTOWN SPITZENBURG 2
 NEW YORK-315 1
 NEW YORK-316 1
 NEW YORK-347 1
 NEW YORK-415 1
 NEW YORK-428 1
 NEW YORK-429 3
 NEW YORK-529 1
 NEW YORK-543 1
 NEW YORK-723 1
 NEW YORK-44408-11 1
 NEW YORK-65707-19 1*
 NEW YORK-75414-1 1*
 NITTANY 1
 NORTHERN SPY 1
 NORTHERN SPY (HALL) 1
 NOVAMAC 1
 OHIO NONPAREIL 2
 OLYMPIC 1*
 ONTARIO 1
 OPALESCENT 4
 OREI 1
 ORENCO 2
 ORIN 2
 ORLEANS REINETTE 2
 PALOUSE 1
 PINK PEARL 2
 PINK PEARMAIN 1*
 PINK SUGAR 1*
 PORTER 2
 PRAIRIE SPY 1*
 PRIMA 1
 PRINCESS 1*
 PRISCILLA 1
 PUMPKIN SWEET 2*
 REDCORT 1

REDFREE 1
 REDMAX 1
 REINE DES POMMES 1
 REINETTE GRISE DU
 CANADA 1
 REINETTE ROUGE
 ETOILEE 1*
 RHODE ISLAND GREENING 1
 RIBSTON PIPPIN 2
 ROXBURY RUSSET 1
 RUBINETTE 1*
 RUBINSTAR 1*
 SANDOW 1
 SAYAKA 1
 SEKAI-ICHI 2
 SHINKO 1
 SHINSEI 1*
 SIERRA BEAUTY 2
 SINTA 2
 SLIPPERY CIDER 1
 SMOKEHOUSE 1
 SNOW (SEE FAMEUSE)
 SPARTAN 7
 SPIGOLD 2
 SPLENDOR (RED) 1
 STEARNS 2
 SUMMERED 2
 SUNRISE 3
 SUNSET 2
 SUNTAN 2
 SUTTON 1*
 SWAAR 1
 SWEET COPPIN 1*
 SWEET SIXTEEN 3
 TOKO 1
 TOMPKIN'S KING 1
 TOMPKIN'S KING (RUSSET) 1*
 TRANSCENDENT CRAB 1
 TSUGARU HOMEI 1
 TSUGARU NATSUKA 1
 TURLEY 1
 TYDEMAN'S LATE ORANGE 1
 TYDEMAN'S RED 1*
 VIKING 2
 VIRGINIA GOLD 2
 WALTANA 1
 WAYNE 1
 WESTFIELD SEEK-NO-
 FURTHER 1
 WICKSON (CRAB) 1
 WILLIAM CRUMP 1*
 WILLIAM'S PRIDE 2
 YELLOW BELLFLOWER 1
 YELLOW NEWTOWN 2
 YELLOW TRANSPARENT 1

YORK IMPERIAL 1
 ZABERGAU REINETTE 1

P E A R S

ABBE FETAL 1
 ALEXANDER LUCAS 1
 ANJOU 2
 A-RI-RANG 2
 AURORA 1*
 BARTLETT 1
 BARTLETT (RED) 2
 BENNETT 2*
 BEURRE LE BRUN 1
 BEURRE SUPERFIN 1*
 BOSC 2
 BOSC BORDEAU 1*
 CASCADE 1
 CHOJURO 2
 CLAPP FAVORITE 1
 COLLETTE 1
 COMICE 4
 COMICE (CRIMSON GEM) 1*
 COMICE (RED) 1*
 CONCORD 1*
 CONFERENCE 3
 DUCHESS D'ANGOULEME 1
 DUMONT 2
 ELDORADO 1
 FLEMISH BEAUTY 2
 FORELLE 1
 GIESER WILDMAN 1
 GORHAM 1*
 HIGHLAND 2
 ICHIBAN-NASHI 1*
 LOUISE BONN DEJERSEY 1*
 MAGNESS 1*
 MERICOURT 1
 MORETTINI 1*
 NEW YORK-182741 1*
 ORCAS 1
 PACKHAM'S TRIUMPH 1
 RESCUE 3
 ROOSEVELT 1
 SANSA 1*
 SECKEL 2*
 SHELDON 1*
 SHINSEIKI 2
 SHINSUI 1
 SIERRA 1*
 SINGO 1
 SIRRINE 2
 STARKRIMSON 2
 TWENTIETH CENTURY 2
 (NIJISSEIKI)

YALI 1
 YOINASHI 1

FIGS
 KADOTA 1*
 LATTARULA 1*
 (SECOND CROP)
 NEVERALLA 1*

GRAPES

CAMPBELL'S EARLY 1
 INTERLAKEN 1
 NIAGARA 2*

KIWI

ABOTT/ALLISON 1*
 ACTINIDIA POLYGAMA
 CHINENSIS 1*
 BLAKE 1*
 ELMWOOD 1*
 GRACIE 1*
 HAYWARD 1
 KORYOKO 1*
 MONTY 1*
 PURPUREA 1*
 SAANICH-12 1*

NUTS

BACELONA FILBERT 1

CASCADE WALNUT 1
 CHEPAKA WALNUT 1
 DAVIDIANA FILBERT 1
 EUROPEAN CHESTNUT 1
 FRANQUETTE WALNUT 1
 SPURGEON WALNUT 1

PERSIMON

FUYU 1

QUINCE

PINEAPPLE 1
 ORANGE 1

HOW MANY YEARS OF APPLE INVENTORY STATISTICS DOES WCFS HAVE AVAILABLE?
 Dave Battey, Swenson Farm, 40404 SE 70th Drive, Snoqualmie WA 98065 — (206) 888-2504

All of the data from our fruit show apple inventories from 1989 through 1995 (seven years) is available on my IBM computer. There are probably earlier years still retrievable from the old Radio Shack Color Computer disks and tapes. Does anyone have a full set of WCFS and WCTFA (our old name was Western Cascade Tree Fruit Association) newsletters? Would you please call me on the above number and let me know how many continuous years of apple inventory we have published?

Entering all of our available yearly inventory data in to a computer database for easy analysis would give us a very significant look at varietal trends within our organization over time — and would be valuable to anyone trying to decide which apple varieties to plant in the Puget Sound Country. Let me know if you think this endeavor is worthwhile.

SEEKING TO COMPLETE BOOK SETS

Over the years, with the help of many WCFS friends, I have successfully collected all of the Fruits of New York series except *The Small Fruits of New York*. This series began in 1905, when S. A. Beach and the New York Agriculture Experiment Station published the two volume set, *The Apples of New York* in regular format. Ulysses Prentiss Hedrick then added to the series with single volumes in large format — *The Grapes of New York* (1908), *The Plums of New York* (1911), *The Cherries of New York* (1915), *The Peaches of New York* (1917), *The Pears of New York* (1921), and *The Small Fruits of New York* (1925). I am currently searching for a copy of *Small Fruits* to complete the set.

My library also contains all but three of the United States Department of Agriculture Yearbooks published since they were first given that name in 1894 — upto the mid-1960's, when pop-culture took over from useful agriculture in the series. I also have some earlier volumes of the precursors to the USDA Yearbooks — *Report of the Secretary of Agriculture* and *Patent Office Report, Agriculture*, beginning in 1849. I am missing just three volumes since 1894 — the years 1899, 1901 and 1905. Any help from members and friends that would allow me to complete this series would be greatly appreciated — Dave Battey.

AN APPLE FOR YOUR WINDOWS DESKTOP

Using the Microsoft Network to search the Internet, I recently entered POMOLOGY into the LYCOS search engine and found pomologist Curt R. Rom's biographical data. Curt was an assistant professor of horticulture at WSU and moved to the University of Arkansas in 1989. At the end of his data is a nice apple logo (Not Red Delicious!) If you click your *right* mouse button on the logo, you have an option to "Set as wallpaper." Choose this option and your windows desktop wallpaper will become a solid background of apples. Thanks Curt! You can return to normal by clicking on Control Panel and then Display and re-choosing your old wallpaper from the list — Dave Battey.

1995 WCFS EXECUTIVE COMMITTEE AND BOARD MEMBERS

EXECUTIVE COMMITTEE

JOE ZEPPA, President	524-8943	7014 58th Ave NE	Seattle	98115
CHUCK HOLLAND, Secretary	523-8350	6831 35th Ave NE	Seattle	98115
EVELYN HOYME, Treasurer	485-3835	18709 24th Ave SE	Bothell	98012
T. K. PANNI	747-4541	4541 130th Ave SE	Bellevue	98006
RON SCHAEVITZ	362-1227	1227 NW 117th St	Seattle	98177
DICK TILBURY	723-9009	4916 52nd Ave S	Seattle	98118

BOARD OF DIRECTORS

1996

LARRY BARELLO	683-8297	50 Willard Dr	Sequim	98382
BILL DAVIS	771-8978	21102 Summit Lane	Edmonds	98026
DICK TILBURY	723-9009	4916 52nd Ave S	Seattle	98118

1997

SALLY MUSSETER	283-7495	2018 Warren N	Seattle	98109
GIL SCHIEBER	783-8262	7016 Jones Ave NW	Seattle	98117
OREL VALLEN	772-2119	P.O. Box 78358	Seattle	98178

1998

CHUCK HOLLAND	523-8350	6831 35th Ave NE	Seattle	98115
STEVE JACKSON	868-8344	2330 229th Ave NE	Redmond	98053
T.K. PANNI	747-4541	4541 130th Ave SE	Bellevue	98006

CHAPTER PRESIDENTS

BILL ROSENBERG, N Olympic	683-8861	P.O. Box 1865	Sequim	98382
PAM BUCK, Peninsula	674-2604	6835 Old Clifton Rd SW	Port Orchard	98366
RON SCHAEVITZ, Piper Orchard	362-1227	1227 NW 117th St	Seattle	98177
MARLENE FALKENBURY, Seattle	522-2273	7547 32nd Ave NE	Seattle	98115
DAVID DANDURAND, S Puget Sound*	288-2722	P.O. Box 23	Amanda Park	98526
SUSAN BARRETT, S Puget Sound*	264-2508	17701 Mima Acres Dr SE	Tenino	98589
LEONARD JESSEN, Tahoma	536-4590	6703 48th Ave E	Tacoma	98443

*Co-Presidents

IMMEDIATE PAST PRESIDENT

Charles Parkman	452-6600	P.O. Box 128	Carlsborg	98324
-----------------	----------	--------------	-----------	-------

NEWSLETTER EDITOR

Evelyn Hoyme	485-3835	18709 24th Ave SE	Bothell	98012
--------------	----------	-------------------	---------	-------

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.

The material herein is the property of the authors and except for other nonprofit organizations with whom we have agreements, may not be copied without permission

On page 33, you'll see what all those colors mean on the due date section of the label. If you don't have a color, nothing to worry about. If it is green, complete the renewal form and send it in a couple of weeks or so. If its yellow, in a few days. If its RED, do it NOW.

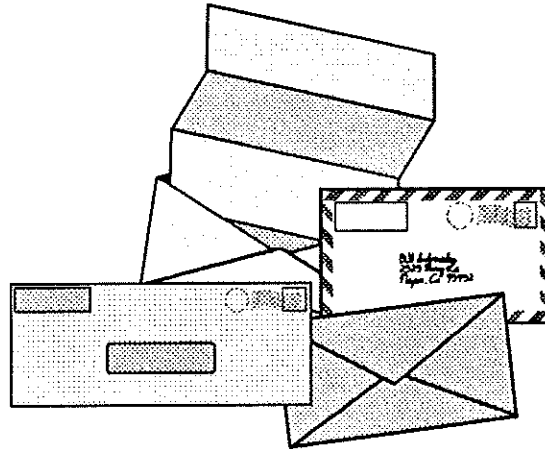
NEXT NEWSLETTER EARLY APRIL

WINTER 1996 PAGE 34

COLOR CODING FOR YOUR DUES REMINDER

If the DUE DATE on your mailing label is highlighted in **green**, your dues are payable before the next newsletter.
If it is highlighted in **yellow**, your membership dues are delinquent.
If it is highlighted in **RED**, this is your last newsletter. **DON'T LET IT HAPPEN TO YOU, WE'LL MISS YOU.**

INCREASED POSTAL RATES HAVE EFFECTED BULK MAILING ALSO. (AND WE PAID AN INCREASE JUST LAST OCTOBER.) IT IS VERY IMPORTANT THAT YOU LET US KNOW OF YOUR CHANGE OF ADDRESS AS THE POST OFFICE CHARGES 50 cents FOR EACH ADDRESS CORRECTION AND **TRASHES THE NEWSLETTER**. IT IS 78 cents TO SEND ANOTHER ONE TO YOUR NEW ADDRESS AND WE DON'T ALWAYS HAVE EXTRA COPIES. **SNOWBIRDS YOUR NEWSLETTER IS TRASHED ALSO**. LET US KNOW IF YOU ARE GOING TO BE AWAY "TEMPORARILY" SO WE CAN HOLD IT, OR GIVE US YOUR TEMPORARY ADDRESS AND WE'LL SEND IT THERE, IF YOU WISH.



WESTERN CASCADE FRUIT SOCIETY MEMBERSHIP INFORMATION

Please indicate standard WCFS membership or affiliation with a chapter. Dues are as noted.

Name(s) _____ () New
() Renewal

Street Address _____

City, State, Zip _____

Phone _____ PLEASE SPECIFY ONE CATEGORY BELOW

Standard \$10.00 () North Olympic \$10.00 () Peninsula-Kitsap \$10.00 ()

Piper Orchard \$10.00 () Seattle Tree Fruit \$18.00 () Tahoma \$10.00 () South Puget Sound \$10.00 ()

ENCLOSED FIND \$5.00 EXTRA FOR WESTERN WASHINGTON FRUIT RESEARCH

HOW CAN YOU HELP THIS YEAR? PLEASE CIRCLE AS MANY AS POSSIBLE

BOARD MEMBER FALL FRUIT SHOW PUBLICITY FIELD TRIPS SPRING MEETING SPEAKER
COMMITTEE CHAIR ARRANGING FOR SPEAKERS OTHER _____

TELL US YOUR FRUIT INTEREST, SO WE CAN PUBLISH ARTICLES OF INTEREST FOR ALL

Apples Pears Peaches Plums Cherries Kiwis Nuts Berries Other: _____

Make checks payable to WESTERN CASCADE FRUIT SOCIETY and mail to:
WCFS Treasurer, 18709 24th Ave S.E., Bothell, WA 98012

YOU'LL FIND IT HERE!

Page 1	AN OFFER YOU CAN'T REFUSE!
Page 2	1996 ANNUAL MEETING SCHEDULE
Page 3	ABOUT THE ANNUAL SPRING MEETING
Page 4	PESTICIDE INFORMATION
Page 5	FRUITING PLANTS AT THE SPRING SALE
Page 6	STEVE JACKSON TELLS ALL!
Page 7	ROOTSTOCK ORDER FORM
Page 8	NORTH OLYMPIC FRUIT CLUB TASTE TEST
Page 9	GRAFTING IN FEBRUARY ON POTTED ROOTSTOCK IN ALASKA
Page 10	CORRECT CALCIUM DISORDERS
Page 11	IMPROVING THE NATIVES
Page 13	AUTUMN FRUIT QUIZ GOLDEN FRUIT QUIZ
Page 15	NAMING A VARIETY A SENSU BY ANY OTHER NAME....
Page 16	RESEARCHER LEAVES WSU, MORE OR LESS
Page 17	THE SASKATOON
Page 19	ALBERT ETTER AND THE PINK-FLESHED DAUGHTERS OF 'SURPRISE'
Page 26	39TH ANNUAL IDTFA CONFERENCE INFORMATION
Page 28	ZAIGER GENETICS
Page 29	DORMANT FERTILIZER SPRAYS WORK
Page 30	1995 FALL FRUIT SHOW INVENTORY
Page 31	1995 FALL FRUIT SHOW VARIETY LIST
Page 33	DAVE BATTEY SAYS...
Page 34	WCFS BOARD OF DIRECTORS
Page 35	MEMBERSHIP RENEWAL FORM

**WESTERN CASCADE FRUIT SOCIETY EDITOR
18709 24th Avenue S.E.
Bothell, WA 98012**

**FORWARDING AND RETURN
POSTAGE GUARANTEED
ADDRESS CORRECTION REQUESTED**

**NON-PROFIT
ORGANIZATION
U.S. POSTAGE PAID
BELLEVUE, WA
PERMIT #369**

DEC96

DICK & MARILYN TILBURY
4916 52ND AVE S
SEATTLE, WA 98118