

The Bee Line

NEWSLETTER OF
WESTERN CASCADE FRUIT SOCIETY

FALL 1994

Apples Pears Figs Grapes Kiwis Passion Nectarines Peaches Plums Blackberries Raspberries Strawberries Blueberries Currants Kumquats Huckleberries Gooseberries Nuts

1994 FALL FRUIT SHOW

Saturday November 5, 10:30 a.m. to 5:00 p.m.
Sunday November 6, 10:00 a.m. to 4:00 p.m.

at

EDMONDS COMMUNITY COLLEGE GYM
200th Street SW and 68th Ave W, Lynnwood, Washington
LOTS OF PARKING!

ADMISSION: Adults \$2.50; Age 16 and under FREE

PROGRAM

SATURDAY

- 11:00 a.m. **Unusual Fruit Varieties from Around the World to Try in Western Washington**, Sam Benowitz, Raintree Nursery
- 1:30 p.m. **Edible Landscaping**, Kristan Johnson, Abundant Landscape Design
- 2:30 p.m. **Disease Free Fruit Varieties for Western Washington**, Dr. Robert A. Norton, WSU Horticulturist Emeritus
- 3:30 p.m. **Fruit Drying**, Deanna DeLong, Fruit Drying Specialist and HP Author

SUNDAY

- 11:00 a.m. **Fruit Drying**, Deanna DeLong, Fruit Drying Specialist and HP Author
- 1:30 p.m. **Best Nut Varieties for Western Washington**, Michael Dolan, Burnt Ridge Nursery and Orchards
- 2:30 p.m. **Growing Stone Fruit in Western Washington**, Gary Moulton, Research Associate, WSU Mount Vernon Research and Extension Unit

AND THROUGHOUT BOTH DAYS

- ✓ Hundreds of varieties of apples, pears, grapes and other fruits grown west of the Cascades
- ✓ Taste varieties of apples and other fruit you too may grow
- ✓ Bring fruit from your no-name apple trees to be identified
- ✓ Bring up to two boxes of your clean apples to press into cider into your containers
- ✓ Purchase apples for cider, eating or cooking
- ✓ Purchase dollar raffle tickets for a Correll Cider Press
- ✓ Purchase snacks, fresh cider and coffee
- ✓ See exhibits of fruit tree care, publications, cider presses, tools and equipment

REVISED INSTRUCTIONS FOR MYSTERY APPLE IDENTIFICATION

Our expert apple identifiers will again be at the Fall Fruit Show to identify your mystery apple. To assist them, please bring four to six specimen (if you don't have that many, bring what you have) of the fruit you want identified, with stems and free from blemishes. The fruit should be typical color, size and shape for the tree. **DO NOT WASH OR POLISH.** Refrigerate the fruit in a plastic bag if it has to be stored for more than one week.

You may be asked: when was the fruit picked?

- is it from a single tree or from a row of trees?
- is it from an old orchard or a new planting?
- when is the fruit ripe and how well does it keep?
- is the tree upright spreading or willowy?
- does it bear on the shoot tips?
- is it damaged by scab or mildew?
- is it good fresh?
- is it good cooked?

SUBMITTING FRUIT FOR DISPLAY

The major feature of our Fall Fruit Show is the displaying of the many varieties of fruit grown by our members. following are instructions for submitting fruit for display:

Bring 5 - 7 specimen (less if that's all you have) of the best looking ones of each fruit variety you wish to display (even if you have only one, bring it-it may be the only one of its kind there!)

For each sample prepare a 3" x 5" card listing the variety name and any other information you wish to share: harvest date, or any other pertinent information

Prepare a larger sign 8 1/2" x 11" (or so) with your name and the geographical growing area Plates, which hold three to five specimen, will be provided. If you have fruit to spare, it would be nice to have some for the tasting display.

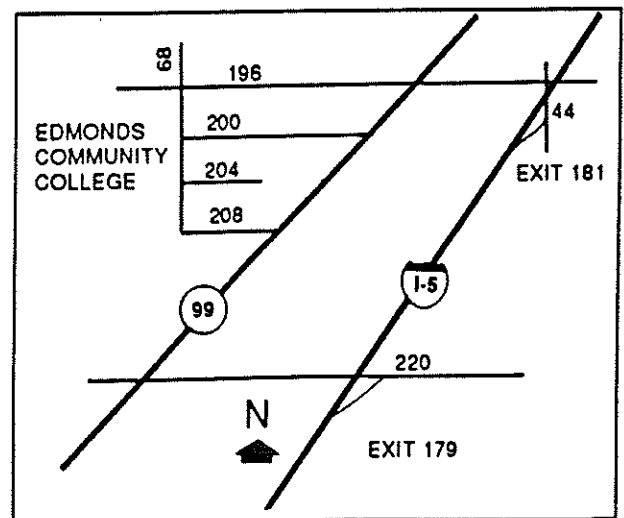
DIRECTIONS TO EDMONDS COMMUNITY COLLEGE

Southbound on I-5:

Take exit 181 (196th St SW). Go west (right) on 196th to 68th Ave W, south (left) on 68th Ave W to 200th. Right into college campus

Northbound on I-5

Take exit 181 (44th Ave W) get in far left lane. Go north (left) on 44th to 196th St SW, west (left) on 196th St SW, south (left) on 68th Ave W to 200th. Right into college campus.



FOLLOW WCFS FALL FRUIT SHOW SIGNS

PRESIDENT'S MESSAGE

Orchard tour season is here. It is time for all members to consider Orchard Tour good manners when others are gracious enough to allow us to tour their orchards. During tours the last several years I have observed some poor manners by some of our members. Please follow the following ground rules and we may be asked to return in future years.

Most importantly, stay with the groups the host tries to tell about the fruit. The orchard owner does not know all of us and does not allow other strangers to rum unattended through the property. It certainly is in bad taste to walk away from the host in mass when he is trying to explain something to the group. If the group appears to be bypassing something interesting that you would like to see, ask the host to look at and discuss it.

If the host wishes to have you sample some of the fruit, you will be informed which fruit to sample.

Plan to arrive at the tour site just after completing a restroom break so it will not be necessary to ask the host to use his facilities.

In conclusion, act like you would like others to act if they toured your orchard.
Chuck Parkman

WCFS BOARD MEETING

The next meeting of the WCFS Board will be on November 19, 1994 at the Swasey Library in Tacoma. The change of date is because Chuck Parkman has been asked to speak to the Home Orchard Society on November 12 about the trip with Dr. Norton to England.

THE TEN BEST WESTERN WASHINGTON APPLES

(ANOTHER LIST?)

BY WCFS MEMBERS 1994

- | | |
|--------------------------|--------------------|
| 1. Gravenstein | 6. Chehalls |
| 2. Jonagold | 7. Spartan |
| 3. Liberty | 8. Janamac |
| 4. Elstar | 9. Gala |
| 5. Karmijn de Sonnaville | 10. Williams Pride |

What do you think? Is this close to your idea of ten best? Did you send in your preference? Bring your list to the Fall Fruit Show (or mail it in to the Editor by November 30, 1994) and we'll publish the results in the January, 1995 newsletter.

PEOPLE WHO MAKE A DIFFERENCE

Orel Vallen, a Seattle Tree Fruit Society chapter member, has been written up in the Valley Daily News. Mike Archbold, the interviewer, describes him as "A lone warrior in a battle with nature that he knows he can never win". Orel has been a one man team in King and Snohomish counties trapping the apple maggot fly. He has spent six days a week since mid-June on the road.

Orel makes traps and sells them for 75 cents, at cost, to anyone who wants to use them.

For more information, you can see Orel's traps and display at the Fall Fruit Show. You won't want to miss it.

NORTH OLYMPIC FRUIT CLUB FALL ORCHARD TOUR

Bill Rosenberg, President of The North Olympic Fruit Club, extends an invitation to all to join them in their Fall orchard tour on Saturday, October 22, 1994 at 10:00 a.m. Everyone will meet at Gardiner Community Center. Bring a brown bag lunch.

- 1st stop: Bandy Farms. In addition to old orchard that has recently been professionally pruned there are acres of new (in the past 5 or 6 years) trellised trees. You will also see the largest collection of trols in the United States.
- 2nd stop: Paul Gautschi Orchard. This family orchard is very diversified. It is not irrigated except by rainfall, yet produces exceptional and large fruit.
- 3rd stop: Mark Sundt Orchard. Trellised fruit, primarily Jonagold. Additional acreage of trellised trees this year, the comparison of old and new will be of interest.

We will meet at the Gardiner Community Center parking lot at 10:00 a.m. If you wish to carpool you may leave vehicles here, however, there is ample parking at each orchard. In addition to lunch you may wish to bring a cooler with pop or whatever you wish to drink. It could be dusty and dry.

DIRECTIONS TO GARDINER COMMUNITY CENTER

On Highway 101 at about mile post 276 (East of Sequim) you will see two large buildings on the right--antique shops--and a two story London bus. About 1/3 mile beyond is Old Gardiner Road--about a 30 degree angle to the right.

The Community Center is about 1/3 mile down Old Gardiner Road on the left side.



OPPORTUNITIES TO HELP OUT (AND GET TO KNOW MEMBERS)

Last issue we mentioned ways you could help at the Fall Fruit Show (at the membership table, selling raffle tickets or selling/taking tickets at the door, at the fruit tasting table setting up or taking down tables --haven't heard from enough of you, you will be getting a call).

Saturday, March 4, 1995 is the annual Spring meeting, rootstock and scion wood sale. Help is needed at the rootstock sale area, the scion wood sale area and in the meeting area at the membership table. MORE INFORMATION ABOUT THE SPRING MEETING IN THE JANUARY NEWSLETTER.

Help is needed to fold and affix mailing labels to the newsletter prior to mailing. In August slave labor was used (editor had two grandchildren visiting from Florida, they had a GOOD time doing it - they thought some of the towns had funny names - and were rewarded with a movie).

If you read an article that you think is interesting, send it to the Editor. Others will probably find it interesting also.

Would you like to get in on the action? Serving on the Board is the perfect place. Officers are elected annually for a one year term. Directors are elected for a three year term. The Board meets about every oth(month.

More OPPORTUNITIES next issue.

NEWS FROM NAFEX

by Dick Tilbury

The annual North American Fruit Explorers (NAFEX) conference was held at the University of Massachusetts (UMass) on August 25-26, 1994. This is a summary of key events.

Bob Purvis of Selah, WA was elected president. Bob was on the board of directors and currently is the NW regional chairman of the NAFEX apple interest group. (The 1993 WCFS Fall Orchard Tour featured Bob's and Harvey Wederspan's orchards plus the variety trials at WSU's Prosser Experiment Station.)

Frank Kirby of Sidney, BC is on the NAFEX Board and is organizing the next conference set for August 21-24, 1995 at Penticton, BC. Frank is planning a lecture program as well as tours of the Agriculture Canada tree fruit research station at Summerland BC, a big packing plant in that area, the facility which raises millions of sterile male codling moths for release as a mating disruption program, and two high density orchards.

The Pacific Northwest will be well represented in 1995 and we should do as much as we can to support Bob and Frank to make this conference a success. This is the closest a NAFEX conference has been to us since the one at Corvallis, Oregon in 1987.

Looking ahead, the 1996 NAFEX conference is set for Auburn University in Alabama. The 1997 conference may be in the Columbus, Ohio area and include a tour of Mitch Lynd's orchard. Mitch is a fourth generation grower with a 500 acre orchard, farm and U-pick operation east of Columbus.

Getting back to this year's conference, William Colt, UMass integrated pest management (IPM) program coordinator, gave a historical review of pest control from use of lead arsenate and nicotine sulfate, to DDT and other synthetics after W.W.II, to the influence of Rachael Carson's Silent Spring, to current biological control initiatives at UMass. He mentioned that Pest Management Supply Inc., 311 River Drive, Hadley, MA 01035 has one of the largest selections of IPM supplies in the country. A catalogue is available.

Dr. Ronald Prokopy, professor of entomology at UMass, spoke to apple IPM. They have been using a level 2 IPM control program for 4 years where Imidan is sprayed twice from April to mid June to control first generation codling moth and plum curculio. Fungicides are applied as determined by the Mills test for apple scab. No sprays are applied from mid June on but sticky traps are deployed for apple maggot, cover crops encourage beneficial insects and mites, and fallen apples are removed weekly to a site over a mile away. A two page summary of his talks is found in the September and October issues of the Seattle Tree fruit Society's newsletter, The Urban Scion Post.

Dr. Daniel Cooley, assistant professor of plant pathology at UMass talked on "Apple Diseases, a Stick in IPM's Spokes." Fungal diseases particularly apple scab, drive most of the spraying. Before IPM they were spraying 10-12 times a season. Even with IPM they are still spraying 9-10 times. Introduction of scab resistant varieties like Liberty has helped but he is afraid the pathogen will eventually develop strains which can overcome this natural resistance.

Dr. Duane Greene, professor of plant science at UMass spoke about growing Galas and its strains. He liked the Royal, Scarlet and Regal strains. Regal ripens earlier and has a slightly different taste. The trees must be staked but the branches don't need spreading. Prune to shorten and stiffen branches, get rid of hanging branches and encourage leaf area around spurs. It's hard to get food sized Galas--thin to 6" between fruit. Use the starch iodine test to judge picking time.

NEWS FROM NAFEX continued

Dr. Greene has over 200 varieties in his test orchard. He looks at taste (good for him!), firmness, weight, color, size, starch rating for maturity, and storability. Each cultivar is rated from 1 to 10; he has yet to find a perfect 10. His provisional ratings on some new varieties are: Sansa, 8.9; Golden Supreme, 7.7; Ginger Gold, 7.6; BC17-30, 7.5; NJ90, 7.4; Golden Glory, 7.1. Fiesta and Alkmene have not done well so far. Enterprise and Goldrush have not borne yet.

UMass is one of the countrywide sites of the NC-140 cooperative rootstock trials. Dr. Wesley Autio, associate professor of pomology at UMass covered five plantings starting with 1980. Some highlights from my notes: EMLA 9 is a nearly perfect rootstock--large fruit, productive, but staking a must. Mark has the best yield efficiency at UMass but it is drought intolerant, stress susceptible, tends to runt out, has basal swelling and also requires staking. Ottawa 3 has a very high yield efficiency but this rootstock is hard to propagate.

Their 1994 trial planting is of the most dwarfing rootstocks, all grafted to Gala. Included are the new CG 65 rootstock from Geneva and VI from the Vineland station in Ontario,

Dr. William Bramlage, professor of postharvest physiology at UMass spoke to postharvest handling of apples. He stated that fruit quality deteriorates 15-20 times faster at 75 degrees than at 32. One day at 75 degrees will cause as much change as 9-20 days at 32 degrees. The take home message for the backyard grower is to pick at the proper ripeness, immediately cool to 32 degrees, store in perforated plastic bags at an even temperature and inspect periodically to remove bad fruit. (Some apples like Bramley's Seedling should be stored warmer, say 38-40 degrees.

At the UMass orchard Karen Hauschild, tree fruit cooperative extension agent, told of peach cultivar trials, 1994 NC-140 peach rootstock trials and peach training trials (central leader, open center and delayed open center). Roger Swain, host of the PBS Victory Garden show and NAFEX member showed us how to get into a lobster at the New England clambake and lobster dinner for attendees.

UMass publishes a nice quarterly titled Fruit Notes. Cost is \$8.00 a year. To subscribe make your check payable to University of Massachusetts and send to Fruit Notes, c/o Wesley Autio, 205 Bowditch Hall, Univ. of Massachusetts, Amherst, MA 01003.



THE BOOK OF APPLES

Twenty five orders were received. The supplier did not have enough books in stock to fill the order on Sept. 20. It will be two or three weeks coming from their publisher. I will put them in the mail as soon as I receive them, which should be about mid October.

FRUIT BERRY AND NUT BOOK

These were ordered on September 20. Will mail them as soon as they get here. Those of you who ordered both books, I'll send them at the same time. This book will be available at the Fall Fruit Show for those of you who forgot to order.

FALL FRUIT SHOW ADVANCE TICKETS

Correll Cider Press raffle tickets (\$1.00 ea) are available now, contact Marlene Falkenbury. Also available now are entrance tickets (\$2.50 each), contact the Treasurer.

DOGS CAN CONTROL DEER DAMAGE

By Richard Yost

as published in Pacific Farmer July 1944

Jack Torrice's orchards may be a continent away, but he has at least one problem in common with Northwest growers. It's the four-hoofed variety that, until two years ago, threatened to literally eat him out of business. Torrice has 120 acres of apples, plums, cherries and peaches bound by forest and wilderness on his farm near Oswego, NY.

"We have been converting our apple orchards from large, standard trees to dwarf stock," he explained. "At the same time we were making this conversion the deer population really exploded. The net result was devastating damage, especially to our new orchards. During the late winter months, when food was scarce, the deer would congregate and literally camp in our orchards, eating the dormant buds on the trees. It wasn't unusual to see 100 white tails at a time. Our newly planted trees were shorter the second year than when we planted them. They were starting to look more like bushes than trees."

Torrice tried everything. Boom guns ... after awhile the deer would barely stir. Soap hung on cords in the trees ... very costly and time consuming and it would only protect the fruit one or two feet from the soap. He even got nuisance permits from the state's department of wildlife allowing him to shoot some of the deer. The only alternative he didn't try was to put up a five-wire, slanted electric deer fence, but that just wasn't economically feasible.

"Then one night, while watching TV, I saw an ad for Invisible Fence and thought maybe we could try something like that on our deer problem," Torrice said. "If we would keep some dogs in the orchards maybe we could keep the deer out."

Invisible Fence is advertised as a way for home owners to keep their dogs in their own yard without the cost and inconvenience of putting up a conventional fence. The system consists of two parts; a buried wire strung along the property boundary and a radio receiver collar worn by the dog. The wire does not carry electricity but rather a harmless radio signal sent out from a transmitter. When the dog approaches the wire the collar picks up the radio signal and begins giving off an audible tone. If the dog continues to approach it is given a mild shock, similar to that of touching a door knob after shuffling your feet across the carpet. A short training course teaches the dog which way to go - back the way it came - to avoid getting a shock.

After getting technical assistance from the manufacturer and assurances from the state's department of wildlife that while allowing dogs to chase deer in the wild is illegal, doing so within a fenced property is not, Torrice proceeded to "fence" his orchards with 16,500 feet of buried wire. He subsequently trained and released two dogs into each of three blocks of trees. Kennels for shelter, food and water were placed centrally in each block.

To find out just how well his plan worked, Torrice contacted the New York Cooperative Extension Service to set up and gather data on his Invisible Fencing trial. The results were what he had hoped for. In the first year, the incidence of trees exhibiting deer browsing in several of the test blocks fell from 100% to 0%. In only one block - the furthest from the dog kennels - did losses remain the same.

After word of his success got out, the New York orchardist was flooded with phone calls about how to set up similar systems. It didn't take him long to realize that besides selling apples, there was money to be made consulting. Torrice subsequently set up his K-9 Crop Protection Company. Potential clients can buy a video about how to install the system and train their dogs. If they're interested, Torrice will confer with them and help design a system to match their particular needs. The client can then order a modified system tailored to the more demanding needs of an orchard-sized property from one of Torrice's cooperating Invisible Fence suppliers.

"The suppliers I am dealing with have agreed to discount the price of the video from the system price," he said. "Everyone asks what kind of dog and how many are needed. Unfortunately there is no set answer. Each situation is different. I chose Huskies because our winters are so hard here. I've often thought a Border collie would work well. Obviously you are going to need something more aggressive if you are dealing with something like elk rather than deer.

"Whatever kind of dog is chosen, *it must be trained properly*. Training isn't very difficult. It only takes two 15 minute sessions a day for two or three days for most dogs to figure out where the boundaries - which are marked with a string or little flags - are. If the dog isn't properly trained, the whole system falls apart and the grower will have wasted a lot of money. The dog has to be trained to understand which way to go when it hears the audible signal the collar makes when it approaches the boundary. If it's not trained properly, it doesn't know which way to go and ends up getting really confused."

DOGS CAN CONTROL DEER DAMAGE continued

Torrice strongly advises against buying one of the cheaper, home-variety systems found in many discount stores.

"Invisible Fence has started becoming a generic name for this type of system," Torrice said. "However, Invisible Fence is a trademark name - it is really the Cadillac of these types of fencing systems. Unfortunately, people will buy a cheaper system at a discount house and then be disgruntled when it doesn't keep the dogs in. With my modified system there is a 60-foot shock zone (3.5 feet on each side of the wire). A running dog is going to get maybe one or two shocks before he's outside. If your dogs are caught chasing a deer outside of your fenced property, you've really got problems."

Oregon and Washington wildlife officials acknowledged they had not been confronted with the question of the legality of using dogs to keep deer away from crops. Steve Dauma, a regulatory program manager for the Washington Department of Fish and Wildlife said that in Washington the only concern is with dogs chasing deer, not having such a fencing system in place.

"If the Invisible Fencing system is as effective in keeping dogs inside the boundary as I've heard, I wouldn't suspect there would be a problem," he said.

"In general, there shouldn't be a problem with such a fencing system," said Tom Thornton, an assistant staff biologist with the Oregon Department of Fish and Wildlife. "If the landowner is suffering crop losses he probably already has - or should have - a damage permit, which allows him to control or harass wildlife destroying his crops."

Both Dauma and Thornton pointed out, however, that while chasing off deer might not be of concern, allowing dogs to run free in productive game bird habitat during certain parts of the year is illegal. Both recommended that anyone thinking about putting in a system first contact their district Department of Fish and Wildlife to avoid any conflicts.

As every alfalfa and vegetable producer also knows, deer aren't just partial to apples. Torrice has already installed systems to contain dogs for discouraging deer from munching on cabbages and other types of tree fruits. He sees potential for using the system to protect Christmas trees, ornamentals, nursery stock and any other crops where dogs can be used to dissuade foraging animals.

Although topography determines how easily the wire can be installed, Torrice said two people using a tractor mounted subsoiler can often install about 1,500 feet of wire an hour. The wire need only be buried a few inches. While he buried all the wire around his orchards to keep it out of the way, it can be laid atop the ground, or tied to an existing fence.

"My costs for wire, hardware, two collars and installation of the system figured out to be about 22 cents a foot," he said. "That's considerably less than the more typical costs of \$1.75 to \$6.00 for standard fencing."

"My system costs 1 cent per acre per day for power. Feed costs run about 40 cents per dog per day. Shots and vet visits run about \$75 per dog per year. Yearly cost for the system with two dogs is \$880.00. Compare that to the \$10,000 to \$15,000 I was suffering from deer damage and I'd say it's a good deal."



The Bee Line (to bee or not to bee)

Please excuse the pun, I thought about it for, oh a minute or less, and did it. As requested last issue, some suggestions for a name for this newsletter were received.

HOME FRUIT NEWS
HOME FRUIT GROWERS (two)
BACK YARD FRUIT GROWERS
THE FRUIT GARDEN NEWSLETTER
THE POLLINATOR

STICKS and STONES
POMES and STONES

What do you think? Any more ideas? You can call (485-3835) if you wish--some of you did. As one person said, the name as it is now sounds like we're a bee keepers group.

NEW WAVES OF APPLE ROOTSTOCKS

James N. Cummins

New York State Agricultural Experiment Station, Cornell University
as published in Compact Fruit Tree Vol 27 1994

Fifty years ago, my Dad and I came home from the War to find that our apple and pear orchards had grown up to 30 feet tall. The experience of getting those big old trees down low enough that we could handle them with a normal 22-ft ladder would have made a great recruitment ad for IDFTA. Certainly a 20 ft. tree was no way to grow apples.

The title "New Wave" suggests that there must have been some old waves. I like to think of the standard apple tree, that grand old tree on seedling roots, the big tree on which our great American apple industry was based, as the First Wave. We've had dwarf trees and dwarfing rootstocks around for a long, long time; there are whole forests of dwarf apple trees on the slopes of the Caucasus Mountains, and it's from that ancestry that we have our dwarfing rootstocks of today. But fifty years ago, our industry was based on the simple old seedling tree. Just think - when my father or my grandfather or his father ordered trees from the nursery, there was no need to make a rootstock decision - he simply had to say, "I want 400 Ben Davis trees next spring," and the rootstock decision was automatic.

We might look on the Second Wave of rootstocks as that mixed-up potage of easily rooted clones selected without much of any basis for selection during the years after our War between the States. There were some good entries in that chaos, including Yellow Metz and the other Paradise and Doucin stocks that had been collected by gardeners and nurserymen over the centuries. During those early years, though, these clonal selections became hopelessly mixed, identities lost.

It remained for Ronald Hatton of East Malling to sort out the mess, to bring order out of chaos, and his work constitutes my Third Wave. Hatton's Type I and Type II, Type VII and Type IX served as reference points to form the basis for a new kind of apple industry in western Europe. Systems for utilizing these clonal rootstocks slowly evolved in England and France, Belgium and Holland, but here in North America we pretty well ignored these developments and stuck with the old seedling tree.

The Fourth Wave I see as the results of the woolly apple aphid (WAA) resistance breeding program commenced at the John Innes Institute at Merton and at the East Malling Research Station in the early 1920s. We all know the good results of these efforts: Merton Immune 793, the Malling-Merton series, and the related spin-offs, M.26 and M.27. There is a shadow wave behind Wave 4, though, you might say the American wave, because while Crane and Tydeman and their colleagues were working in England, here in the eastern USA there were resistance breeders working too - Yerkes and Sudds were looking for WAA-resistant apple rootstocks just as the British were. It's by an odd twist of fate that the only introduction from their program, Spy 227, has been worthless as a rootstock but it's a great virus indicator, so used all over the world!

Bob Carlson rides Wave 5 all by himself. MARK literally exploded on the world apple scene in the late 1970s. MARK is in trouble now, of course, because of this soil line proliferation problem, and propagators everywhere are taking out their stoolbeds. Too soon, I think - MARK is a fantastic rootstock in the right place, and no place is more right for MARK than the North Country where a really hardy stock is required.

The commercial rootstock propagators all have in their trial beds now an assortment of new rootstocks with enough liner production to permit some considerable sales. These new rootstocks make up Wave 6. We find the P-series from the Skiemiewice program in Poland - P.1, P.2, P.16, P.22. From Russia we have Budagovsky 9 and B.118, both selling this year in the hundreds of thousands. Ottawa (O.) 3 is probably not gaining ground here in the US, but it has considerable commercial acceptance in eastern Canada. Of course we also have in Wave 6 the first of the newer selections of Malling 9, with Dutch NAKB 337 perhaps the most prominent.

In Wave 7, I place those new rootstocks that have been introduced to the nursery trade, that have had some respectable testing around North America, and that are going to be available commercially very shortly. Of course I put Geneva 65 and Geneva 11 at the top of Wave 7, along with the new Vineland introductions plus new selections of M.9: Nicolai 29, Pajam 1, and Pajam 2.

Still more new rootstocks are just around the corner, constituting Wave 8, but these have not yet been adequately tested here and it will be a few years before any will be commercially available. During the next 3 years, Geneva will be introducing 2 or 3 more resistant rootstocks, including CG.30 and CG.16. The JTE series from Czechoslovakia, the Morioka series from Japan, more from Budagovsky's old work, Jork 9, P.59 and P.60, Piku-22, and Patul all may be making commercial debuts soon.

NEW WAVES OF APPLE ROOTSTOCKS continued

Programs for breeding and selection of apple rootstocks are still moving. At Geneva, we have perhaps 3000 potential rootstocks under first test, and there will be worthy candidates coming from this lot. We expect that some of these will replace even the best of the current wave. Curt Rom is expanding the rootstock breeding efforts at Arkansas, leaning heavily on *Malus prunifolia*. Tony Webster will be reporting on the status of selections at East Malling. Work is continuing in eastern Germany and in several places in the former Soviet Union. Stuart Tustin will be discussing the New Zealand rootstock work. The Ninth Wave, then, comprises those rootstocks still in the breeders' pockets.

Do we really need all these new rootstocks? Don't we have enough now? Isn't the rootstock picture going to become as confused as the variety situation?

Can any situation get as confusing as a variety picture with 100 different selections of Delicious in it? But, yes, we are heading for confusing times in our rootstocks. Most nurseries now offer perhaps 5 or 6 rootstock selections, and a very few are offering 10 or more already.

Obviously, as a rootstock breeder, I think we do need more rootstocks, for the simple reason that we have not nearly reached the potential for excellence. Then what are we to look for in new rootstocks? I think our targets fit into two broad categories:

- 1) Avoidance of limiting factors; and 2) Improvements in already excellent horticultural attributes.

Let's look first at this matter of limiting factors, using specific rootstocks with specific shortcomings as our examples:

- MM.106: Phytophthora, Tomato Ringspot Virus
- MARK: Soil Line Proliferation, Fire Blight
- M.9: Fire blight, Brittleness
- M.26: Fire Blight, Burrknots
- M.7: Anchorage, Suckers
- Ottawa 3: Propagation, Fire Blight
- Jork 9: Fire Blight, Burrknots
- Geneva introductions: ???

From where will we get still more new rootstocks?

From:

- Breeding Programs;
- Chance sports & chance seedlings;
- Genetic engineering.

BREEDING PROGRAMS

Earlier I've noted continuing work at Geneva and several other stations, and more will be said on this tomorrow.

CHANCE SPORTS AND SEEDLINGS

We have had Yellow Metz-Malling 9 with us now for 115 years, just about as long as we have had Jesse Hyatt's famous Delicious apple with us. How many sports of Delicious have we had? More than a hundred named sports, and undoubtedly many times that many more that have never been of interest to us. So too we see sports of Jonagold and Rome Beauty, Goldens and Fuji and Gala.

Our rootstocks mutate too, just as do the scion varieties. By the time Hatton had begun sorting through the chaos of clonal rootstocks, Yellow Metz had been around for 35 years or more, and in the layer beds of Europe had been cut back many times. It should be of no surprise to us then to be seeing different Malling 9 strains offered on today's market - M.9 EMLA and NAKB 337 and Nicolai 29, Pajam 1 and Pajam 2 and at least 15 other commercial offerings. Some of these may not be genetically different from the original M.9, but some certainly are mutants.

Now from Poland we've two selections of Malling 26, one with fewer spines, one with fewer spines and fewer burrknots. An English selection of MM.106 has almost no spines. We should be expecting to find more sports of our older rootstocks, sports that will give us at least modest improvement.

There is still the possibility of finding new rootstocks in the fence row, the chance seedling, but the odds are very strong against finding a good one. We've tested four or five such at Geneva in recent years, and not one had real promise.

NEW WAVES OF APPLE ROOTSTOCKS continued

GENETIC ENGINEERING

We've had a lot of excitement in the last 10 years about manipulating the DNA in the cell nucleus. So we're now well along with field testing of cotton with the Bt gene giving heritable resistance to cotton bollworm, and we've the flavor-saver tomato ready to market soon. But genetic engineering of rootstocks?

What would be an appropriate rootstock target for genetic engineering? I asked these questions 10 years ago: Might we be able to modify Malling 9 with a gene to stop its brittleness? Or might we modify M.9 and M.26 so they would no longer be so susceptible to fire blight? Now we're getting Yes answers in real life. Yes, rootstocks can be subjected to DNA transformation, and yes, the potential for improvement by genetic engineering is commercially important.

We all know, all too well, that fire blight susceptibility is a major limiting factor for Malling 26. At Geneva, Herb Aldwinkle and his team have now produced a DNA-transformed Malling 26 that is almost as resistant as Liberty to fire blight. No, this was not done by bringing in resistance genes from Robusta 5 or Novole or Geneva 65, but with a proteinase gene from a moth. Yes, it works - at least in the greenhouse. There are still some questions:

- Does the transgenic M.26 (T1) behave like regular M.26 in the stoolbed?
- Is this M.26-T1 still the same rootstock under our varieties in the orchard?
- Does the resistance shown in the greenhouse hold up in the field?

Last spring we set a major test at Geneva to answer these three questions. It will be some years before a fire blight resistant Malling 26 will be ready to market - and by then we may be no longer interested in M.26.

We are really talking a Tenth Wave, then - a Tenth Wave that is almost science fiction. Genetic engineering is enormously expensive; the transformation of Malling 26 was a pilot study, and we would not want to guess its cost. It is estimated that with the technology now in place and the resistance genes ready, the price of new transformations will be about \$50,000 per clone transformed!

In summary then, we have New Wave of Apple Rootstocks on our doorstep now, probably more in hand at the moment than we can do a really good job of evaluating. Some of these new rootstocks will be replacing those we have become accustomed to using; some of them will be winners, some losers. We will have a continuing flow of yet more rootstock introductions, and rootstock decisions at nursery and orchard levels will be increasingly critical and difficult.

LOOK FOR ROOTSTOCK ORDER FORM IN JANUARY'S NEWSLETTER ROOTSTOCK WILL BE SOLD AT ANNUAL SPRING MEETING - MARCH 4, 1995

PLAN NOW FOR NEXT YEAR'S HARVEST Suggests Ed Lewis

- 1) New varieties to acquire: consider Carosel, Corodel, Fiesta, Goldrush and Enterprise.
- 2) Relocate a tree to a better site.
- 3) Discard tree that you don't like.
- 4) If a tree blooms but fails to set fruit, it may need a pollinizer or mason bees.
- 5) Record ripened date. Pick fruit before they start falling; firm fruit stores longer.
- 6) Did you get small apples because you forgot to thin?
- 7) If the new growth on your tree is less than 12 inches, you have a problem:
 - a- lack of fertilizer
 - b- competition from grass and weeds
 - c- stress from drought

FRUIT PATENTS AND TRADEMARKS

As amateur fruit growers, it is important for us to understand the basics concerning the patenting and trade-marking of fruit varieties. After all, most commercial varieties of apples sold in the United States were first recognized as valuable by amateurs. If you breed the perfect replacement for Delicious wouldn't you like to know something about how to protect your work?

Article I, section 8 of the United States Constitution provides for Congress to "promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their writings and discoveries." Beginning in 1930, this law was expanded to include new plant varieties.

The history of the United States Government's interest in furthering agriculture through the patent office began in 1836, with the appointment of one Henry Leavitt Ellsworth as United States Commissioner of Patents. Ellsworth collected and distributed seeds of new plant varieties and encouraged further involvement by the government. Due to his actions, Congress, in 1839, appropriated the first moneys ever budgeted by the United States government for agriculture. This \$1,000 was earmarked to begin the collection of statistics on agriculture and "other agricultural purposes." By 1849, agricultural statistics and information had grown to the point where it was necessary for the Patent Office to publish their report in two parts, one dealing with patents and the other with agriculture. Beginning one-hundred years ago, in 1894, the agricultural information was re-named the *Yearbook of the Department of Agriculture*. Into the late 1930's the USDA Yearbooks provided a major avenue of introduction for historical and variety descriptive information on new and commercially plausible fruit varieties.

But back to patents. The United States patent law on plants provides for the granting of a patent to anyone who has bred (invented), and asexually reproduced (including use of root cuttings, layering, budding, grafting and newer types of propagation from single cells grown in a nutritive medium) any distinct and new variety of plant, other than a tuber-propagated plant.

A plant patent protects the discoverer/breeder of a "new" cultivar with protection for seventeen years from the date the U. S. Patent Office grants the patent. The owner of the patent has the right to license propagation rights but it is illegal for a non-licensed person to propagate the variety. **After seventeen years the plant becomes part of the public domain and can be propagated by anyone.**

Since 1987, the United States Patent and Trademarks Office has required that a plant patent application designate a cultivar name. This name generally becomes the "common" name for the variety and can be used by anyone to describe the fruit without having to get a license from the patent owner in order to use the name in print.

Recently, plant patents have taken an international flavor. Almost all important apple breeding countries have entered into an agreement with the United States concerning patent rights. Under this agreement you have six years after being granted a patent in the country of origin to obtain patents in the other major apple growing countries. Jim Ballard noted in an article in the November 1993 *Good Fruit Grower* that the Japanese cultivar Senshu was patented in Japan in 1980, and protected in Europe within the six year period — but not in the United States. So Senshu is not a protected variety here. Jim notes that several United States patent applications attempted to

circumvent this by attaching a new name to Senshu and entering it as "patent applied for." However, Senshu is well enough known that the end-run was discovered.

Curiously, for those of us interested in stabilizing fruit nomenclature, and hoping for a single name for each individual cultivar replacing the multiple synonyms of the past, the United States allows, if not encourages, the multiple naming of varieties through the use of a marketing label called a trademark.

By United States law, a trademark is any work, name, symbol, or device or any combination thereof which is used by a person to identify and distinguish their goods from those sold or manufactured by others. For plants, a trademark usually refers to a term used to identify a plant variety which distinguishes it as coming from a specific source (nursery) and having associated with the trade mark all of the goodwill and reputation associated with that plant source. The trade mark belongs to the owner of the source (nursery). **When a trademark name becomes the common name for a variety, the owner loses the right to the trade mark.** This type of loss does not often occur in the plant world, but a good non-plant example is the careful legal protection of the trade mark Band-Aid by Johnson and Johnson. All other like devices are referred to generically as "adhesive bandages." A trademark must be registered with the United States Patent and Trademarks Office and a royalty is due to the owner of the trademark plant name by anyone licensed to sell the plant under the trade-marked name.

Trademark names can be used only with the permission of the owner of the trademark. The length of protection of a trade mark is now ten years (it used to be twenty). Trademarks can be distinguished with two markings. If it is just beginning to be used, is filed for registration (but not yet accepted) by the United States, or is registered with a state, then TM is used. Once registered with the United States Patent and Trademarks Office the indication symbol changes to ®.

A variety (cultivar) name cannot be a legal trademark in the United States.

Additional information on trademarks and patents can be obtained free of charge by writing to the National Association of Plant Patent Owners (NAPPO), 1250 I Street NW, Suite 500, Washington DC 20005. Request their pamphlet, "Plant Patents and Federal Trademarks on Plants."

Dave Battey



COMING EVENTS TO NOTE

- | | |
|------------------|---|
| October 22, 1994 | North Olympic Fruit Club Orchard Tour |
| November 5-6 | Fall Fruit Show |
| November 19 | Board meeting at Swasey Library, Tacoma |
| March 4, 1995 | Annual Spring Meeting and Rootstock - Scion Wood Sale |

WORMY APPLES

Do you have the codling moth blues? Are the codling moth larvae keeping you awake at night with their noisy fights over the seeds in your crab apples, apples and pears? Are you sick and tired of paring yucky cores and escape tunnels from your fruit?

FIGHT BACK! NOW!! HERE'S HOW!!!

- 1) Scout your neighborhood. Where are codling moths a problem? Does your next door neighbor have untended trees and wormy apples? If so, ask for permission to treat his trees also. Untended early apples can be a source for 2nd and 3rd generation infestations of late fruit.
- 2) Pick up fallen fruit every day from June drop until the last apple falls. Boil infested fruit or trimmings til soft in a stock pot, then compost. Or keep fruit in a sealed plastic bag and bury once a week so that it is covered by 12" of dirt (not easy unless you own a backhoe--and not advisable if you have apple maggot since they over winter in dirt). Or send fruit in a sealed plastic bag out with the garbage. Or store fruit in boxes in a cool place but place 4"x4" pieces of corrugated cardboard throughout to provide collection sites for larvae. Burn cardboard when fruit is removed. Or borrow a sheep on a leash once a week to eat fallen fruit. Neither codling moth larvae nor apple maggot will survive a trip through a mammal's gut.
- 3) Wrap each affected tree trunk with a burlap collar. (Our thanks to Jacky King, Mt. Vernon research station, for this suggestion). Buy natural burlap yardage (\$1.27/yd at Hancock Fabrics). Whip cut ends. Wash in hot, soapy water. Dry, cleaning dryer lint filter twice. Cut into lengths (it is 40" wide) so that a section will wrap around the tree trunk about 1 1/2 times at 24"-36" from the ground. FOLD burlap in half - width wise - 3 times (ends up about 5"). Place around trunk with folds facing down and secure with one wood clothespin.

Once a week undo burlap and destroy codling moth larvae pupating in their silk cocoons. Inspect tree bark for cocoons too. Remove, dry and store burlap on November 1 or after last fruit is gone. Next year deploy bands about June 1.



- 4) Next April order 2 codling moth pheromone wing traps and buy a min-max thermometer. Mount thermometer in a sheltered place, away from sun, which has same microclimate as your trees. Determine which apple tree blooms first. When blooms are at prepink stage, place traps as high in canopy as possible. Monitor traps daily until 2-3 codling moths are caught. THEN begin counting degree days (50 F base) have accumulated, spray with diazinon or Imidan. Continue monitoring the traps.

If your next door neighbor has a terrible infestation, place the pheromone traps and burlap collars in his trees, with permission.

- 5) Codling moths are subject to parasites, diseases, nuthatches, etc. Minimize all pesticides as much as possible to let their enemies stay healthy. Encourage bats and insect eating birds.

SUMMARY: Codling moths can be reduced to just an annoyance by keeping all fallen fruit picked up and removed from area (including next door), by banding tree trunks and removing larvae, and by use of pheromone traps to trap adult males and time any sprays. But keep at it!

NOTES: today (Sept 21) I caught 4 codling moth larvae in Gravenstein burlap (fruit picked). None in the Jonamac burlap (fruit also picked). 19 larvae and 1 pupal case in Melrose burlap (fruit on tree). The trappings from the Melrose was after 2 weeks undisturbed. I put first burlap on Gravenstein only on Aug 18, caught 6 larvae on Aug 19. When we got back from NAFEX that band had 26 larvae (Aug 30). So I ran down and bought more burlap for three more collars-- from the 4 burlap collars:

Sept 2	4 larvae & pupae		
6	13 " "	life size silk cocoon	*life size pupal case
9	8 " "	tan-grey silk w/larvae inside	dark brown (inside cocoon)
21	24 " "		
	49 + 32 earlier = 81		

They hit the Summerred and Gravenstein for 1st generation and Melrose more than Jonagold for 2nd and 3rd (if any) generation, but they seem to avoid Cox's Orange and its crosses or at least don't hit so hard.

*most larvae won't pupate until next spring just before bloom

Marilyn Tilbury

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