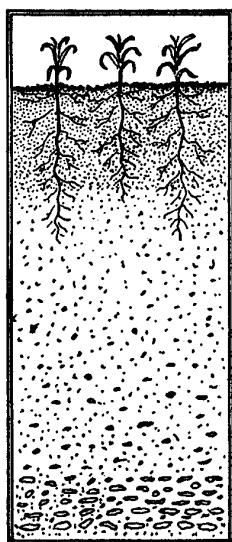


# PLANT & PEST ADVISORY

FRUIT EDITION \$1.50

DECEMBER 12, 2000



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## New Jersey Greensand

*Joseph R. Heckman, Ph.D., Specialist in Soil Fertility*

**G**reensand was the topic of a recent seminar presented at the fall meeting of the New Jersey Association of Professional Soil Scientists. The seminar linked the history of soil science with a unique mineral of great importance to soil resources in New Jersey. Dr. John Tedrow, Professor Emeritus, Soil Science, Rutgers University presented the information. This article will briefly summarize some of the key points in my notes taken from that seminar.

- There is a belt of greensand deposits that stretches across New Jersey from Monmouth to Salem Counties. In 1926, there were about 80 pits where greensand was mined in New Jersey. A few of these pits are still operating today.

- In the late 1800's railways transported millions of tons of greensand to be spread over soils around the state. For this reason, greensand may today occur in many soils where it was not originally present. The presence of this greensand may still be benefiting crops by improving the soils ability to hold water and store nutrients.

- Greensand is not always green. Depending on how it weathers, it may be red, yellow, gray or green. If it becomes impregnated with iron, it appears red. This may account for the names of some New Jersey landmarks: Red Bank, Red Hill and Red Valley.

- Greensand is sometimes used in agriculture as a natural source of potassium. Although greensand does contain a relatively high content of potassium, very little of this potassium is plant available.

- Greensand contains a clay mineral called glauconite. The mineral is unusual because unlike most clays which are very fine, glauconite often exists as sand-sized pellets. Glauconite does not act like sand. It is sand size, but acts like a ball of clay.

- The glauconite in greensand has desirable physical and chemical properties. The mineral has micropore spaces which enables soils containing greensand to have good water-holding capacity. Glauconite also has a high cation exchange capacity. The presence of greensand in soil therefore increases its ability to store nutrients such as calcium, magnesium, potassium, and certain micronutrients.

- Some greensands are rich in calcium carbonate, magnesium carbonate, and phosphorus.

- Some greensands contain sulfur-bearing minerals, giving rise to extremely acid conditions. These sulfur-bearing marls are also referred to as poison marls or black marls. □

# Semi-Dwarfing Apple Rootstocks and the NC-140 Trials

*Win Cowgill, Agricultural Agent and Jeremy Compton, North Jersey Tree Fruit Technician*

In the November issue of the Plant & Pest Advisory, we provided an update on new dwarfing apple rootstock clones that have been commercially introduced in the US in recent years. This month, we would like to focus on some of the newer semi-dwarfing clones (M26 size – MM 111 size) that are entering the marketplace. Some of these newer plant materials that have made their way to the marketplace have not been adequately tested in replicated trials such as NC-140. While breeding programs and nurseries throughout the world are committed to identifying new and better stocks, the NC-140 Regional Rootstock Project is the only multi-state research based team that scientifically evaluates new rootstocks across 28 states and Canadian provinces.

We just returned from Ohio State University where this year's NC-140 technical committee met to review our progress. Each year the cooperators meet to compare research findings and plan future work. The NC-140 project hosts a web site with more detailed information about specific research plantings and lists detailed information on where to find rootstock information <http://www.NC140.org>.

We would like to examine what is known about these new stocks, and how they stand up to the standards. Table number 9.1 of the *2000 New Jersey Commercial Tree Fruit Production Guide* provides useful information on the performance of many commercially available stocks.

M26- Has been the industry standard for many years with growers seeking a moderately dwarfing 12'-15' tree. With good early management, trees with M-26 rootstock are early and heavy bearing. M-26 is susceptible to fire blight and woolly aphids, and is only moderately tolerant to collar and root rot. Trees on M-26 are not drought-tolerant. M-26 acclimates slowly, and like MM106, is susceptible to low, early winter temperatures, but is very hardy during mid- and late winter. M-26 rootstock is recommended only with fireblight-tolerant varieties. It has been the best, most widely planted semi-dwarfing stock in Northern New Jersey. Plant it in deep, well drained heavier soils only. It is not recommended for light, coarse textured soils. Central leader support beginning at planting is a must.

The next two stocks discussed are possible alternatives for M26 to M7 size trees.

CG 30- A recent introduction from the Cornell-

Geneva breeding program, is a cross between Robusta 5 and M9. This rootstock is similar in size to M7, although in two Rutgers Snyder Farm trials it is slightly smaller than M26. CG 30 is highly resistant to fireblight. In the 1994 NC-140 trial at Snyder Farm, CG 30 has a significantly higher 4 year cumulative yield efficiency than M26 with slightly smaller fruit size. Although CG 30 is proving to be productive in field trials, it is showing some sensitivity to phytophthora. CG 30 forms a brittle graft union with many scion cultivars, and tree support is required. CG 30 is *not* recommended for use with Gala scions due to a known graft incompatibility.

Supporter 4 (Pi 80 select) – The Supporter series rootstocks are a new series of stocks out of the Pillnitz breeding program in Germany. Out of the stocks in this series, Supporter 4 has been the one touted by US nurseries as the replacement for M26. It is a cross between M9 and M4. Nurserymen like this stock because it is extremely easy to propagate. Information and research trials on this stock's performance in the US are very limited. It has not been tested in NC-140 and has not been observed in New Jersey. Any plantings at this time should only be on a very limited trial basis only. Supporter 4 is also reported to be as hypersensitive to fireblight as M26, so growers should avoid using it with sensitive scion varieties.

M7 – The two clones of M7 propagated today are the virus reduced M7a and the virus free M7 EMLA clones. M-7A is reasonably vigorous, but is one of the least precocious semi-dwarf rootstocks tested in the NC-140 rootstock trials. M-7A is sensitive to some soil conditions and responds very differently with scion varieties. M7 clones are tolerant to fireblight. M-7A is moderately tolerant of crown and root rot, but susceptible to woolly aphids. It should not be planted on the heavier soils of Northern New Jersey. M-7A is recommended to growers with light-textured soil willing to provide supplemental soil moisture and tree support for training.

The Budagovsky breeding program out of Russia has been actively pursuing new rootstocks that have a high tolerance to minimum winter cold temperatures. Many of their selections have found their way onto the marketplace in Russia and Europe, and are now entering North American markets. The following two selections are being propagated by North American nurseries as alternatives to M 7 – M 111 size trees.

Budagovsky 490 (Bud. 490 or B. 490) – Although select nurseries are propagating this stock as an precocious alternative to MM 106 size trees, very limited information is known about this Russian stock, and growers should proceed with caution. B. 490 is thought to be somewhat susceptible to fireblight and root rots, but further testing is neces-

*SEE TRIALS ON PAGE 4*

# Mid-Atlantic Fruit Convention

*William H. Tietjen, Agricultural Agent*

Make plans now to attend the 2001 Mid-Atlantic Fruit Convention in Hershey, PA on January 30 to February 1, 2001. Growers need the latest information on growing techniques, pest control, nutrition, marketing and business management to remain in business.

Nearly 1600 growers from throughout Pennsylvania, Maryland, New Jersey and other states are expected to gather at the Hershey Lodge and Convention Center for the Convention. The event is jointly sponsored by Cooperative Extension of Pennsylvania, Maryland and Rutgers Cooperative Extension and by the State Horticultural Association of Pennsylvania, the Maryland State Horticultural Society and the New Jersey State Horticulture Society. This year the fruit growers will be joined by peach growers from across the nation, as the National Peach Council will hold their annual meeting at the Convention as well.

The Great American Hall at the Hershey Lodge and Convention Center will host the Trade Show with over 130 exhibitors. The Trade Show is again expected to be completely sold out.

The George Goodling Memorial Lecturer on Tuesday morning will be given by Dr. David Feree of the Ohio Agriculture Research and Development Center, Wooster, OH. Dr. Feree's topic "Light Relations within the Tree", will be a timely topic for growers attempting to maximize light in the tree canopy. Next Dr. Robert Crassweller of Penn State University will review apple varieties in the NE-183 trials and into the future. Closing the morning session is a grower panel discussing the use of bin haulers in the orchard.

Dr. Nathan Reed, Penn State will lead off the Tuesday afternoon session discussing post harvest problems facing the fruit industry. First year grower results with Apogee will be summarized by Dr. George Greene, Penn State. Dr. Larry Gut, Michigan State University, will discuss Michigan's experience with mating disruption. New Oriental fruit moth management tactics will be presented by Dr. Larry Hull of Penn State.

On Wednesday concurrent tree fruit and National Peach Council sessions will be presented. High-lights of the tree fruit session will include presentations by Dr. Richard Bill, USDA-ARS on new pear cultivars and rootstocks. In addition Dr. Gut will share experiences with area wide mating disruption programs in Michigan. Dr. Feree will discuss methods to improve fruit size in the Wednesday Tree Fruit afternoon session. Improving replant sites will be discussed by Dr. John Halbrendt, Penn State University.

The National Peach Council session on Wednesday morning will be devoted Plum Pox Virus updates

and orchard surveys in Pennsylvania and other states. The morning session will conclude with a discussion of peach training systems presented by Dr. Luca Corelli-Grappadelli, University of Bologna, Italy.

Wednesday afternoon session of the National Peach Council includes Dr. Greg Krawczyk, Penn State entomologist on surveys of aphids in Plum Pox Virus infected areas. Rutgers Cooperative Extension tree fruit entomologist, Dr. Peter Shearer will discuss reducing peach insecticide use to satisfy FQPA. Concluding the afternoon session will be a presentation on peach scab control by Dr. Norman Lalancette, Rutgers Cooperative Extension.

Thursday morning presentations will include a presentation by Gloucester County Agricultural Agent, Jerry Frecon on current peach and nectarine cultivar evaluations. Harvesting, handling and shipping peaches will be discussed by Dr. Corelli-Grappadelli. The morning session will conclude with a presentation by John Nye on fertigation and irrigation set-up in the orchard.

On Thursday afternoon, an Insect Trapping and Insect Identification Workshop will be available at no cost but will require pre-registration. The workshop will run from 1-3 pm.

Concurrently on Thursday morning, Marketing Program session will include topics on E-Commerce and 3<sup>rd</sup> Party Certification. The session will conclude with a grower panel discussing their experiences with entertainment farming.

For more information on the fruit program and registration contact: Bill Tietjen, 908-475-6505 or Jerry Frecon, 856-307-6450. □

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## Calendar of Events

January 16, 17 & 18, 2001 - NJ Vegetable Meeting and Trade Show at the Trump Taj Mahal Casino/Hotel Resort, Atlantic City, NJ. Contact your county agricultural agent for a complete program and registration information.

January 30 - February 1, 2001 - 2001 Mid-Atlantic Fruit Convention in Hershey, PA. Contact Bill Tietjen, RCE of Warren County at 908-475-6505 or Jerry Frecon, RCE of Gloucester County at 856-307-6450.

February 22 - 24, 2001 - The Mid-Atlantic Direct Marketing Association Annual Meeting at the Cavalier Hotel in Virginia Beach, VA., preceded by a Franklin/Covey Management Seminar, February 19 - 21. Contact Catherine T. Belcher, Virginia Department of Agriculture and Consumer Services, 1100 Bank Street, Room 1021, Richmond, VA 23219.

March 10, 2001 - A Viticultural and Enological Symposium. Forsgate Country Club, Jamesburg, NJ. Contact Dr. Joseph A. Fiola, Cream Ridge Research Center at 609-758-7311, X10, fax 609-758-7085 or e-mail: creamridge@aesop.rutgers.edu.

## Management Skills Topics at Mid-Atlantic Direct Marketing Conference

Risk management, merchandising, planning; these are three concepts important to farmers doing business by direct marketing. The Mid-Atlantic Direct Marketing Association will feature these topics at its annual meeting held February 22 through 24 at the Cavalier Hotel in Virginia Beach, VA. The conference will be preceded by a Franklin/Covey Management Seminar held Monday, February 19, through Wednesday, February 21. This program will give participants lessons in what is considered the top management philosophy, Steven Covey's "The Seven Habits of Highly Effective People," helping direct marketers learn and practice the life skills that Covey describes. "They will have the opportunity to apply these skills to improve their own direct marketing operations based on examples that will be discussed," said Charles Coale, Virginia Cooperative Extension agricultural economist at Virginia Tech. To register for the Franklin/Covey Seminar and Mid-Atlantic Direct Marketing Conference contact Catherine T. Belcher, Virginia Department of Agriculture and Consumer Services, 1100 Bank Street, Room 1021, Richmond, VA 23219. Cost for general registration is \$52 and for the Franklin/Covey Seminar, \$725. The other fees are: Farmers Market Workshop \$35; Gift Basket Workshop \$35; Virginia Banquet \$35 for adults, \$15 for children; and tour \$30.

"At the Franklin/Covey Seminar, participants will learn how to define themselves from within to be more influential leaders and managers. They also will learn to boost performance by implementing proven principles of effectiveness and replace burnout with high levels of satisfaction through cooperation," Coale said. "They will develop and clearly communicate a strategy, mission, values, and vision for their organizations; increase trust and teamwork; meet client needs more effectively through a clearer understanding of the clients; balance all aspects of their lives; and increase their productivity and quality of work," Coale said. "Direct marketers who register for the Franklin/Covey Seminar in conjunction with the conference will have the advantage of an exceptional value," Coale said. "And they will be participating in the seminar with others who are involved in direct marketing, too."

The direct marketing conference itself will start with two pre-conference workshops: "Farmers Markets: Steady As You Grow" and "Gifting: Baskets and Much More" in addition to the Franklin/Covey one. Joel Salatin of Polyface Farm, Swoope,

will be the keynote speaker at 10:30 a.m. on Thursday, Feb. 22, after a welcome by J. Carlton Courter, Virginia Commissioner of Agriculture, and Gerald L. Jubb, director of the Agricultural Experiment Station at Virginia Tech.

The concurrent sessions on risk management, merchandising and planning will be held Thursday, Feb. 22, and Friday, Feb. 23.

A general session on developing an Agri-Tourism Package will be followed by several individuals sharing their own direct marketing success stories.

"As a special treat, there will be a virtual direct marketing tour, Saturday, February 24," said Coale. "Since February is not the most production-oriented time of the year to visit our farms, the leaders have arranged for conference participants to take a virtual tour that will show the farms at their peak of scenic beauty and activity," Coale said. Participants can then board buses and visit direct-marketing farms including Gum Tree Farms and Bergey's Farm Dairy, both at Chesapeake, the Farmers Market, Stoney's Produce, and the Heritage Store, at Virginia Beach.

*Submitted by Jerome Frecon, Agricultural Agent. □*

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### TRIALS FROM PAGE 2

sary. Little is known about this stock's sensitivity to viruses. B. 490 may be a replacement for MM 106 and MM 111 in the future, but extensive national testing will be necessary to determine its place in the industry. Nurseries prefer this stock over MM 106 due to its ease of propagation in the stoolbed.

Budagovsky 118 (Bud. 118 or B. 118) – B. 118 is another new clone out of the Russian breeding program that nurseries are excited about due to its ease of propagation in the stoolbed. B. 118 produces a tree between MM 111 and seedling in size, and reports out of Washington State indicate it is slightly more precocious than MM 106. B. 118 is reported to be extremely cold hardy and may have a niche on sites that are subject to extreme midwinter low temperatures. Testing on this stock in North America has been very limited and growers are urged to evaluate on a trial basis. Virus indexing on both B. 490 and B. 118 has not been performed and virus sensitivity of these two stocks is currently unknown.

Although this is not a fully comprehensive list of semi-dwarfing apple rootstocks available to growers today, it outlines some highlights of rootstocks that are available in US nurseries today. For more information on these rootstocks, as well as other dwarfing possibilities, contact your area fruit extension agent, or visit the New Jersey Fruit Focus Website at <http://www.virtualorchard.net/rce/>. □

# Highlights from the Great Lakes Extension and Research Fruit Worker's School 2000

Jon Clements, Ph.D., Extension Fruit Specialist, University of Massachusetts

Reprinted from *Healthy Fruit*, Vol. 8 No. 28

I had the good fortune of attending the 'Great Lakes Fruit Worker's In-service' meeting in Ithaca, NY during the last week of November. I have summarized many of the presentations by fruit workers from Cornell, Michigan State, and Ontario. Here are the highlights.

## Economics and Marketing

The New York apple harvest situation in 2000 was outlined by Alison DeMaree, Cornell Cooperative Extension Educator. Her points on what's needed to retain an apple industry in New York include:

- U.S. per capita consumption of apples needs to increase
- every grower needs to remove every variety they cannot sell
- every grower needs to think about removing 25% of their lowest value production (not acreage)
- growers need to replant consumer demanded varieties of apples at densities that allow high early production (2nd, 3rd, 4th leaf) and high quality

She quotes a New York processing apple grower: "If apple orchards are not removed this winter - it means that apple prices are not low enough!"

An Adjusted Gross Revenue (AGR) Insurance Pilot Program was explained by Charles Koines of USDA's Risk Management Agency. The bottom line is that growers should look at this type of insurance which guarantees an income for crop loss or reduction beyond the grower's control - i.e., hail, frost, wind, low market prices, etc. For 2001, AGR premiums will be partially paid by the government in 'under-served' areas — including all of New England — making it an "extremely affordable tool for managing risk on diverse horticultural farms where traditional crop insurance is either unavailable or incomplete." If you need more information, contact your local Farm Services Agency (FSA) office or independent crop insurance agent, or look at the RMA's web site (<http://www.rma.usda.gov/pilots/2001pilot.html>).

## Fruit Quality and Post harvest

Phil Schwallier, Michigan State University District Extension Agent talked about the results of his work with Apogee for vegetative growth control in apples. He saw increased fruit set and (sometimes) decreased fruit size; a good response across the board on all varieties in terms of shoot growth reduction, ranging from 50 to 70% reduction in growth compared to untreated control; and Empire cracking observed in some orchards treated with Apogee.

According to Chris Watkins, a major Honeycrisp post harvest issue is high incidence of bitter pit and soft scald. Research is looking at regional and orchard effects; harvest delay and DPA treatment; ReTain and ethrel application; and calcium issues. He also noted Honeycrisp does not act

like a 'normal' apple in terms of climacteric/ethylene concentration during the harvest period.

Jim Schupp, Cornell researcher at the Hudson Valley Lab is evaluating the use of ReTain and ethrel combinations on Honeycrisp to reduce pre-harvest drop while promoting color development. The goal is to have fewer harvest dates for Honeycrisp with minimal drop and good color. So far his results indicate a ReTain application is effective at preventing drop and evening out maturity, and a follow-up ethrel treatment may aid color development.

Randy Beaudry, Michigan State University post harvest physiologist, presented results of his current research on preventing 'soft' or 'ribbon' scald development in Honeycrisp. This type of scald is a low temperature disorder, not related to the more common 'superficial' scald common on Delicious and McIntosh. In particular, low temperature storage (below 36°F) and advanced maturity significantly increases susceptibility of Honeycrisp fruit to soft scald development in storage. Therefore, Beaudry suggests harvesting at correct maturity (in sync with the first McIntosh harvest, perhaps as early as 'Marshall' McIntosh) for fruit destined for long-term storage; DPA dips can help; and store Honeycrisp no lower than 36-38°F for the first few weeks to reduce the incidence of soft scald. Beaudry also noted a high incidence of bitter pit and rots during storage of Honeycrisp, which may be reduced with good fungicide and calcium programs during the growing season.

David Rosenberger, Cornell/Hudson Valley Lab plant pathologist gave an overview of post harvest decays: a contributor to lost sales. His results of surveys of 17-20 supermarkets in the Hudson Valley found a 10 to 40% incidence of decay in bagged Empire and McIntosh apples. He surmises factors contributing to the high incidence of rot include:

- there are predominant strains of *Penicillium expansum* that are resistant to post harvest benzimidazole/DPA combination treatments
- inoculum levels in the field and packinghouse have risen gradually since the early 1990's
- contaminated field bins are the primary source of recycling delay causing organisms
- *P. Expansum* can invade Empire via stems during long-term CA storage
- airborne inoculum in packing-houses carries spores to apples being packed
- improved sanitation is essential for managing decay problems

## Organic Fruit Production

Art Agnello, Cornell University entomologist presented an overview of his evaluations of organic pest management tactics in apples including mating disruption; Surround application, (a kaolin clay product), and complete exclusion using various net-like fabrics. His evaluations are ongoing, so stay tuned for updates. In collaboration with Agnello, David Combs evaluated the organic tools of Surround, Orchex (an oil), and Aza-Direct (a neem derivative). Surround did a good job of controlling some insect pests (such as plum curculio) but failed at others (San Jose scale). But Surround issues include cost; frequent applications; harvest residues; and higher damage levels that

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would need to be accepted by consumers. The other organic insecticides failed to give acceptable control of most direct fruit feeding insects.

Gary Thornton, Michigan State University Extension District Agent talked about an organic disease and insect control program for pears using lime sulfur for pear scab; Surround and Ecozin (a neem product) for pear psylla; and mating disruption for codling moth. The organic program did keep pest numbers below economic injury levels, however, weed control, fireblight, secondary pest issues, and fruit thinning are still concerns.

Organic apple thinning studies have been carried out by Cornell researchers Jim Schupp and Terence Robinson using NC99 (a calcium/magnesium brine solution) and fish oil + lime sulfur (an extremely smelly solution!). Both were applied during bloom as blossom thinners. A reduction in fruit set and yield (compared to the control) was achieved with only the fish oil + lime sulfur combination. Fruit size was increased with both fish oil + lime sulfur and NC99. But the organic thinners did cause some petal browning and mild leaf spotting.

Michael Celetti, a plant pathologist with the Ontario Ministry of Agriculture and Rural Affairs (OMAFRA) discussed his results of a nematode suppressing cover crop trial. Cover crops included Canadian Forage Pearl Millet 101; Canadian Hybrid Forage Sorghum; Marigold cv. 'Crackerjack'; and a fallow control. Cover crops were planted in large blocks using grower equipment. At first it appeared the crops were ineffective at reducing lesion nematodes (with the possible exception of Pearl Millet), however, when cover crop stand density and weed exclusion were looked at too, the cover crops Pearl millet and marigolds did indeed suppress lesion nematodes. His conclusion was that in using these two cover crops, a dense stand that excludes weeds needs to happen for nematode suppression and Sorghum in fact may be a nematode host.

Michigan State University fruit worker David Waldstein gave an overview of the Michigan Apple IPM Implementation Project. Reduction in organophosphate (OP) use is the primary objective of the project, and mating disruption is the primary tool being evaluated. Hand applied dispensers, the MSU pressurized pheromone injector, and sprayable pheromones were deployed in numerous commercial orchards for control of the common lepidopteran pests codling moth, oriental fruit moth, and the leaf rollers. Although OP's were still needed in conjunction with the pheromones to keep insect injury at acceptable levels, reductions in OP use of up to 40% were common in many of the Project's 3,000 acres of commercial orchards in 2000.

### Varieties/Rootstocks and Systems

With a peach variety update were Cornell scientist Robert Anderson, Michigan State University Extension Agent Bill Shane, and OMAFRA's Ken Slingerland. First, Shane and Slingerland introduced a new IQF (Individually Quick Frozen) cling peach slice and a Nabisco developed mixed stone fruit spread in Michigan and Ontario respectively. Ontario has an active stone fruit breeding program formerly under the auspices of the recently retired Neil Miles and Slingerland highlighted some of their new

promising peach and nectarine cultivars, both named and numbered. Then Shane overviewed some of the peaches coming out of several breeding programs that have performed well in southwest Michigan, including: PF-1, PF-12B (formerly PF-14), PF20-007 (formerly PF-18A), PF-23, PF17, and PF27A, all from peach breeder Paul Friday; and RisingStar, RedStar (FA52), BlazingStar, CoralStar, the soon to be named FA100, AllStar, and GlowingStar, all from the Fruit Acres breeders. Anderson discussed the 'Labor Day gap,' and says there are Fruit Acres varieties such as FA42, FA65, FA68, FA71, and FA32, as well as Paul Friday's PF25 that may help fill the gap.

A panel discussion on sweet cherry varieties and systems lead by Bob Anderson included Jim Nugent of Michigan State University and Steve Hoying, Cornell Cooperative Extension. It was first noted there is tremendous variability among sweet cherry varieties in quality and fruit set depending on where they are grown. Thus, pomologists throughout the world are actively networking and developing resources (often web based) on these differences to help growers make better decisions on what to plant in their growing area. 'Attica' and 'Regina' are new sweet cherry varieties that are hot in Europe in terms of fruit quality, however, Attica appears particularly frost susceptible, and Regina is largely untested in North America. Hoying suggested berming as a technique to improve sweet cherry establishment in the heavier soils of the Northeast. He also discussed the challenge of getting young sweet cherries to branch: techniques include heading, Promalin application, notching, and bud removal (during swell, two out of every three buds removed). The best distribution of branches along young tree leaders was achieved with bud removal, however, this technique may not be the best for varieties susceptible to bacterial canker. Nugent noted the vigorous 1st and 2nd leaf growth of young sweet cherries on the dwarfing Gisela rootstocks, however, followed by heavy fruiting which must be managed so the tree does not shut down growth completely.

In Ontario, Ken Slingerland and OMAFRA colleagues are actively researching fireblight resistant pear varieties and rootstocks for high density production systems with outstanding fruit quality (dubbed 'CanAdapt'). Slingerland recently attended a pear production symposium in Italy where pear growing and marketing has reached a state of perfection. Pear varieties being planted in large-scale commercial demonstrations include Harrow Gold, Harrow Crisp, and a couple of numbered selections from the Ontario breeding program. Borrowed from apples are planting and training techniques to promote early production in these pear plantings, including staking, minimal pruning, and branch spreading.

Cornell University small fruit researcher Marvin Pritts showed a video on greenhouse raspberry production, a technique he has been promoting to bring a high value crop to market during the winter season. Raspberries are a cool season crop that adapt perfectly to fruiting in pots in underutilized greenhouses during the winter, although canes are initially planted and grown outside during the previous growing season. Tulameen is the variety of choice to be grown in greenhouses, and yields have been 8-1/2 to 11 pints per plant and the economics are comparable to

bedding plant production. In fact, growers are getting up to \$4 per half pint for their fruit. Fruit quality is extremely high as disease and insect pest problems are minimal, however, bees do need to be brought into the greenhouse for pollination.

John Cline, OMAFRA scientist discussed the characteristics of the Ontario bred Vineland series of rootstocks including V.1 and V.3. V.1 produces an M.26 size tree with cumulative yields that have been superior to M. 26, as well as M.9, Budagovsky 9, and Ottawa 3. V.3 is comparable to or slightly smaller than M.9 (depending on the M.9 clone) with very high yield efficiency. Both V.1 and V.3 are cold tolerant and fireblight resistant. Ontario is introducing these high performance rootstocks to the industry, with tree availability expected in 2003.

### Food Safety

A session on food safety introduced a new Cornell University 'Good Agricultural Practices Program' designed to help educate farmers and their employees on ways to "reduce microbial risks to assure food safety." Presenters urged growers to: learn about the risks; develop a 'Food Safety Plan;' strengthen 'Good Agricultural Practices;' and document your food safety activities. An excellent publication, *Food Safety Begins on the Farm: A Grower's Guide* is available from the Cornell Good Agricultural Practices Program at (607) 254-5383 or e-mail eab38@cornell.edu. I recommend every fruit grower get a copy of this publication.

### Disease Control

Dr. David Rosenberger of Cornell's Hudson Valley Lab presented some efficacy data on Flint and Sovran fungicides during the rather wet 2000 growing season. In a nutshell, both new fungicides performed very well, particularly for scab. But Rosenberger's advice to growers contemplating using them for 2001 include: careful sprayer calibration; keep trees open via good pruning; and that no single timing strategy is suitable for all growers.

Michigan State University Extension District Fruit Agent Mark Longstroth described a devastating fireblight (FB) epidemic in southwest Michigan during the 2000 growing season. A prolonged bloom with high humidity and rain, FB susceptible varieties (like Gala) of dwarf plantings, a trauma hail event in mid May, and streptomycin resistant FB bacteria combined to result in a devastating loss of orchards from 3-6 years in age. Longstroth explained 1,500 acres of apple trees (mostly young) were seriously affected with an economic loss to the industry expected to be \$42 million over the course of the next few years due to tree death and loss of production.

Pre-plant incorporation of gypsum (calcium sulfate at six tons per acre) is effective at reducing the incidence of phytophthora in raspberries and dramatically improving yields on marginally wet raspberry sites according to Marvin Pritts, Cornell University small fruit researcher.

### Entomology

MSU Extension District Fruit Agent Gary Thornton presented results of his plum curculio (PC) control efficacy trials on sweet cherries using the newer insecticides Actara and Calypso, as well as Provado compared to the industry standard Guthion. Only Guthion and Actara

resulted in significantly fewer live PC larvae in cherry fruit than the untreated control and the Provado and Calypso treatments. Actara, Provado, Calypso, and Guthion also provided good control of cherry fruit fly, although the 'softer' pesticide Spintor resulted in some infestation. All these products are potential replacements for the OP's Guthion and Imidan, should we lose these to FQPA.

Pheromone disruption of oriental fruit moth (OFM) is being studied in New York peaches by Cornell University entomologist Art Agnello. Isomate M-100 twist-ties (CBC); Micro encapsulated (MEC) sprayable pheromone (3M); and Confuse-OFM paraffin base liquid (Gowan) treatments suppressed OFM trap catches (an indication of efficacy) compared to non-disrupted, unsprayed orchards. Shoot and fruit damage from OFM were negligible in most disrupted plots, however, tarnished plant bug and plum curculio damage to harvested fruit remained significant.

Borers were a topic of importance considering the large amount of burrknot forming rootstocks (Mark, M.9, M.26) that have been planted in the East in recent years (estimated to be 70% of new orchards). As there is a positive correlation with extent of burr knot formation, David Kain, Cornell University entomologist has been studying the incidence and control of both American plum borer and dogwood borer, a pest of all eastern orchards. His recommendations to avoid dogwood borer problems in apples include:

- keep graft union within 2" or less of the ground level; i.e. plant as deep as you can without running the risk of scion rooting
- plant a more burrknot-resistant rootstock, such as G.16
- mounding of soil around the rootstock/graft union down the row may help but is labor intensive and may promote scion rooting
- paint trunks, burrknots, and exposed rootstock with white trunk paint
- manage weeds and avoid mouse guards if possible—shade and humidity encourage burrknot formation
- prebloom trunk sprays (at pink) with Lorsban 50WP may still be worthwhile and have season long efficacy against borers

### Croplod and Physiology

The subject of Honeycrisp fruit thinning was addressed by Cornell University/Hudson Valley Lab pomologist Jim Schupp. After two years of experimenting with thinning Honeycrisp using various rates of NAA, Sevin, and Accel (including combinations) his conclusions are: Honeycrisp are easy to thin—low rates of NAA (< 5 ppm) or NAA (2.5 ppm) plus Sevin (1 pt. per 100 gallons) are sufficient to achieve some thinning; 5 ppm NAA plus Sevin and Accel plus Sevin considerably over-thinned Honeycrisp; and, the challenge will be achieving return bloom— he said mid-season applications of ethrel may need to be looked at. In conclusion, Schupp said that "growing quality Honeycrisp presents many challenges, but thinning is not one of them!"

Submitted by Win Cowgill, Agricultural Agent. □

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