Cornell University Cooperative Extension

Eastern NY Commercial Horticulture Program

Tree Fruit News

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Pest and Weather Data

Degree Day Accumulations
(03/01 through 08/06/2014, via NEWA)

Location	Base 43 F	Base 50 F
Peru	2268.3	1520.8
Watermill	2224.7	1418.2
Clifton Park	2390.7	1624.5
Marlboro	2542.5	1725.5
Hudson	2619.4	1809.0
Highland	2624.4	1793.6

In this issue of Tree Fruit News:

Latest Pest Events

- Oriental Fruit Moth 3rd flight is beginning in Highland
- Brown Marmorated Stink Bug 2nd generation adults emerging in Highland
- Spotted Wing Drosophila sustained trap catches in the following ENYCHP counties: Orange, Ulster, Dutchess, Columbia, Rensselaer, Albany, Saratoga, Washington, Clinton

Insect Trap Catches (Number/Trap/Day)
(Highland, NY)

Pest Species	Count 7/28	Count 8/4
Lesser Apple Worm (LAW)	0.8	0.0
Oblique Banded Leaf Roller (OBLR)	2.1	0.0
Tufted Apple Budmoth	0.1	0.0
Oriental Fruit Moth (OFM)	2.6	1.6
Red Banded Leaf Roller (RBLR)	2.1	0.0
Spotted Tentiform Leaf Miner (STLM)	26.9	52.5
Codling Moth (CM)	10.4	5.6
Sparganothis Fruitworm	0.0	0.0
Variegated Leaf Roller	0.4	0.1
Apple Maggot (AM)	0.5	0.0

Upcoming Pest Events	DD Range (43F)
American Plum Borer 2nd flight peak	2005-2575
Codling Moth 2nd flight peak	1943-2727
Oriental Fruit Moth 2nd flight subsides	2062-2556
Oriental Fruit Moth 3rd flight begins	2281-2849
San Jose Scale 2nd flight peak	2135-2499
Obliquebanded Leaf Roller 2nd flight begins	2256-2648
Apple Maggot flight peak	2115-2665
Redbanded Leafroller 2nd flight subsides	2182-2742
Comstock Mealybug 2nd gen. crawlers emerging	2234-2624
Spotted Tentiform Leafminer 3rd flight begins	2261-2651

Insect Trap Catches and Upcoming Pest Events courtesy of Scaffolds and Art Agnello

Projected Harvest Dates for the Hudson and Champlain Valleys

By Dan Donahue, CCE ENYCHP

After much discussion, Terence Robinson is projecting McIntosh harvest dates as follows:

- Hudson Valley (Highland): Harvest for CA storage 09/5 - 15/2014, regular storage after that
- Champlain Valley (Peru): Harvest for CA storage 09/15 - 25/2014, regular storage after that

Gala harvest in the Hudson Valley is predicted to start on September 1st.

Specific harvest management spray recommendations for Gala, Honeycrisp, McIntosh and later varieties can be found in the article *Recommendations for Fruit Drop Control in ENY in 2014 (see below)*.

Consider the following when using these predicted harvest dates:

- Adjust slightly if your orchard sites are cooler or warmer than Highland or Peru.
- Factor in color development, starch, pressure, and brix test results on your own farm.
- Consider our ENYCHP regional data reports on starch, pressure, brix & ethylene.
- The specific requirements of your harvest labor, storage, & marketing plan.

July weather data from the Hudson Valley Lab indicated that degree day accumulation (base 50) was almost 16% less for the same period year. The reality may be an additional slight delay in maturity if the weather remains cool in August. Money is left on the table when major varieties are harvested too early. Fruit size, color, and storability can be adversely affected, reducing packouts. Excellent eating quality is what brings the industry repeat customers, and higher apple consumption.

Recommendations for Fruit Drop Control in ENY in 2014

By Terence L. Robinson, Cornell Univ. Dept. of Horticulture, and Dan Donahue and Anna Wallis, CCE ENYCHP

In 2014, there are 3 materials which are registered for control of pre-harvest drop in apples. NAA, Retain and Harvista. NAA provides modest drop control but has the negative effect of stimulating ethylene production and fruit ripening. Retain is a plant growth regulator which reduces ethylene production and reduces pre-harvest drop. It also reduces fruit cracking and fruit greasiness but it delays the development of fruit red color about 1 week. Its performance is improved when combined with NAA since the two products work synergistically to reduce fruit drop while the Retain suppresses the production of ethylene by NAA. Harvista is a new class of drop control chemical, which inhibits the action of ethylene in the fruit and reduces fruit drop. Each chemical has a different mode of action and thus different timing of application for optimal performance.

Since NAA stimulates ripening and often gives limited drop control when applied alone, we do not recommend the use of NAA alone.

Retain should be applied 2-4 weeks before anticipated normal harvest. We suggest applying Retain at 3 weeks before harvest in cool years and at 4 weeks before harvest in hot years. Our suggested timing for **McIntosh** in the Hudson Valley in 2014 (a cool year) is Aug 15 (based on the expected Mac harvest beginning on Sept. 5 which is 10 days before the estimated CA cutoff date of Sept. 15).

Our suggested timing in the Champlain Valley in 2014 (a cool year) is Aug 25 (based on the expected Mac harvest beginning on Sept. 15 which is 10 days before the estimated CA cutoff date of Sept. 25).

In both locations, a full rate of Retain (1 pouch per acre) will give the best drop control but will delay color development by 7-10 days. A ½ rate of Retain will also work and has a less negative effect on fruit color but the control of fruit drop will wear off sooner (often before the end of September). Our research in the last few years has shown the best combination of drop control with the least negative effect on fruit color is achieved by splitting a full rate of Retain into 2 sprays of ½ rate of Retain each time and including 10ppm NAA in both sprays. In 2014 we recommend the application of the first 1/2 pouch of Retain per acre + 10 ppm NAA (4oz/100 gal) at 3 weeks before normal harvest (August 15 in the Hudson Valley and Aug. 25 in the Champlain Valley) and 1/2 pouch of Retain per

continued on next page

Recommendations-Fruit Drop Control, continued from previous page

acre + 10 ppm NAA 1 weeks before normal harvest (Aug. 29 in the Hudson Valley and Sept. 8 in the Champlain Valley). It is critical to include an organosilicone surfactant with Retain especially when combined with NAA. The organosilicone surfactant improves the uptake of Retain better than other surfactants thus ensuring that sufficient Retain is absorbed by the leaf to suppress the stimulatory effect of NAA on ethylene production.

With **Gala** we recommend the application of a ½ pouch of Retain per acre applied 2-3 weeks before expected first harvest. In 2014 we estimate Gala harvest will begin on Sept 1 in the Hudson Valley thus the suggested date to apply Retain is August 18-August 23. Few Galas are grown in the Champlain Valley but if needed apply Retain about Sept. 1 in the Champlain Valley. The full rate of Retain is never recommended since Retain at the full rate has a very strong negative effect on Gala color development. The 1/2 pouch of Retain per acre will permit Gala fruit to remain on the tree an additional 7-14 days resulting in improved fruit size, good color development and less stem end cracking. Retain delays maturity but results in a more even maturity on the tree. Multiple picks on Gala can be reduced to 2 or even 1 picking in some cases. By delaying harvest date, fruit size increases by 1% each day harvest is delayed. Retain also reduces fruit stem end cracking and greasiness that are problems as Gala fruits mature in the second and third picks.

Honeycrisp is a low ethylene producing variety that has very uneven ripening but can have significant pre-harvest drop in some years. We recommend a 1/3 rate of Retain applied 3 weeks before expected harvest in blocks which have had a drop problem in the past. In 2014 our suggested application date is August 18 for the Hudson Valley and Aug. 25 for the Champlain Valley.

For late September and October varieties the negative effect of Retain on fruit color development is much less than in early September varieties, thus we suggest the use of the full rate of Retain to provide a consistent reduction of drop and greasiness. For late September and October varieties which are harvested under cooler conditions, application timing should be 3 weeks before normal harvest date. Treating **Empire, Delicious and Jonagold** provides some flexibility in harvest date since those three varieties need to be harvested at about the same time. **Cortland and Jonagold** both suffer from greasiness problems as the fruit mature and Retain applied 3 weeks before normal harvest can be a very effective control strategy. **Idared and Rome** both suffer from internal flesh pigmentation (bleeding), which can result in rejection of the fruit at the processing plant. Our recent research indicates this problem can be controlled effectively with ½ rate of Retain applied in mid September.

Two final reminders about the use of Retain:
(1) Remember that the earlier Retain is applied the greater the negative effect it has on fruit color but waiting too long will result in some ethylene production and some fruit drop before Retain suppresses ethylene production, and
(2) Remember to use an organosilicone surfactant such as Silwet (12 oz/100 gallon) with Retain.

Harvista, which is an alternative to Retain or NAA, should be applied later than Retain (about 1 week before anticipated harvest but before significant drop occurs). It has a much more rapid action in the plant and can prevent fruit drop even when applied close to harvest and has a long lasting effect. Harvista is difficult to apply and must be applied by the manufacturer (Agro Fresh) to ensure an effective application process. If it is applied with or near Captan it can increase the uptake of Captan, which causes phytotoxicity. We recommend that growers use other fungicides beginning 2 weeks before an application of Harvista. We do not recommend applying both Retain and then Harvista except in hot years where some fruit drop of McIntosh can occur before Harvista is applied.

Eastern NY Commercial Horticulture Website

For online class registrations, announcements, older issues of our newsletters and more, please visit the Eastern NY Commercial Horticulture Team's website at http://enych.cce.cornell.edu/. We hope you bookmark it on your computer and begin using it as your 'go to' website for production and marketing information.

Email or call any of the educators with questions or comments on the website – we want to make it work for YOU!

Harvista Use Recommendations from the Agrofresh, Inc

By Dan Donahue, CCE ENYCHP

Harvista received it's New York State label on September 20th, 2013. As such, this is the first season in New York where it has the potential for widespread commercial use. Due to the unique characteristics and application requirements of this harvest management product, I thought it best to present as much information as possible to our ENYCHP members. The following information is drawn for the most part from Agrofresh, Inc. literature.

Harvista is a field sprayable formulation of 1-MCP, a popular post-harvest storage treatment, marketed as SmartFresh. The field application of Harvista requires the use of specialized application equipment, and can only be applied by specially trained Agrofresh, Inc. technicians utilizing proprietary spray equipment. As such, growers who are considering use of the product this season must first contact Agrofresh, and arrange a consultation and application date.

Agrofresh lists the following benefits of Harvista Technology:

- Pre-Harvest Fruit Drop Control.
- Safe delay of harvest for additional color and fruit size development.
- Maintenance of fruit firmness before and/or after harvest (storage benefits are short term).
- Slowed starch conversion.
- Delayed and reduced incidence of watercore.
- Greater consistency in maturity for improved storage performance.
- Fewer pick dates required for multiple-pick varieties

Agrofresh lists the following considerations when using the Harvista Technology:

- Read the label. You can find it at http://128.253.223.36/ppds/532773.pdf as AF-2005.
- Orchards under stress may show reduced benefits, discuss these issues with a company horticulturalist prior to application.
- Expression of Harvista's effects do not become visible until several days after application.
- Combination effects and interactions between Harvista and products containing NAA or Ethephon (Ethrel) have not been completely evaluated. (*be cautious, DJD)*
- Harvista as a 3 day PHI for apples, and a 12 hour REI. Read the label for more details.

For additional information and/or to schedule an application of Harvista, please contact the New York/Pennsylvania Agrofresh representative, Ken Culver at 585-738-2189 or kculver@agrofresh.com.

Agrofresh Starch Test Guidelines for Application Timing

Apple Variety	Recommended Starch Index at Application	Application Timing (Days Pre-Harvest)
Gingergold	**1.0 - 2.0**	3 - 14 Days
Gala	**2.0 - 3.5**	3 - 14 Days
McIntosh	**3.0 - 4.0**	3 - 14 Days
Honeycrisp	**4.0 - 5.0**	3 - 14 Days
Empire	**2.5 - 3.5**	3 - 14 Days
Jonagold	**5.5 - 7.0**	3 - 14 Days
Red Delicious	**1.5 - 2.5**	3 - 14 Days
Golden Delicious	**3.0 - 5.0**	3 - 14 Days
Idared	**2.5 - 4.5**	3 - 14 Days
Fuji	**2.5 - 4.5**	3 - 14 Days

Starch Index scale of 1 to 8 (Generic Starch-Iodine Index Chart for Apples, Cornell Cooperative Extension Info Bull 221). Considerable block-to-block variability in maturity indexes is normal. Therefore, the best application timing may be based upon average readings of similar blocks in your region. Consult local harvest date recommendations. Optimum maturity levels may vary based upon desired outcome.

Special Notes: Oil is used in the carrier formulation of Harvista. Understanding that spray oil and captan residues are not compatible, and can result in phytotoxicity, make certain at least two weeks has passed since the last captan application. Agrofresh does not consider Harvista to be a substitute for SmartFresh post-harvest storage applications.

Special thanks to Ken Silsby, Agrofresh, Inc. for some of the information presented in this article.

Lake Ontario Fruit Team Tour Report

By Anna Wallis and Dan Donahue, ENYCHP Tree Fruit

The Lake Ontario Fruit Team (LOFT) held their annual summer tour on July 24th, in and around Orleans and Niagara counties, west of Rochester. This tour alternates with Wayne county (East of Rochester), and the NYS Experiment Station at Geneva, in a three year rotation. The weather was perfect, and the organization and presentations, impeccable. The Lake Ontario Regional Fruit Extension Program has been in place for some three decades, and is a primary reason for Western New York becoming a powerhouse in the production and marketing of fresh fruit. Our Eastern New York Commercial Horticulture is a 1.5 years young regional extension program, modeled on the successful Western New York Program. Our goal, with the support and cooperation of our ENYCHP members across the seventeen Eastern New York counties, is to equal the success of the WNY LOFT program. Here are a few take home messages from this year's tour:

Snapdragon (NY-1) and Rubyfrost (NY-2)

The exact management protocol for these cultivars is still under development. Here are a few strategies presented by Terrence Robinson and Mario Miranda Sazo for new and established plantings:

NY-1

- Low vigor of these trees should be balanced by a more vigorous rootstock such as M.9 clones (Pajam 2, Nic 29). The G.41 and G.935 rootstocks from the Geneva breeding program, are both excellent choices with the benefit of fire blight resistance.
- Depth of planting is important. Planting trees to a depth of 3", from the graft union to the (settled) soil, but no less, will increase vigor.
- In established plantings, disking has been successfully used to mound soil up towards the graft union, thus increasing vigor. Don't mound too high or you will risk scion rooting.
- Low vigor also means these trees struggle to reach the top wire, especially in colder areas. In young plantings, lateral limbs competing with the weak central leader should be removed.

NY-2

- This is a more vigorous and productive tree, suitable for highly dwarfing rootstocks such as B.9.
- Later harvest of this variety makes it risky for northern areas of the state with shorter growing seasons.

Precision thinning and nutrient management

Ongoing research is being conducted on precision thinning and nutrient management by Terence and Mario at the Geneva research station. They have provided a well-outlined protocol for precision thinning, available through either Anna or Dan. Growers throughout the ENYCHP region have been giving this program a try, and seeing success. More cooperators are welcome, please contact Anna or Dan for more information on results or to get involved.

Mechanization

More and more orchardists in New York are investing in labor intensive, high density tall-spindle planting systems. Mechanically-imaginative growers, along with orchard equipment suppliers, have been developing mechanized platforms in an effort to improve labor efficiency.

Platforms made in Italy:

- N-Blosi platforms (Distributed by RE & HJ McQueen of Wolcott, NY)

  http://www.nblosi.com/en/index.php
  N-Blosi Manufacturer website link

  http://mcqueensinc.com/index.php
  RE & HJ McQueen website link

- Orsi platforms (Distributed by N. M. Bartlett, Inc. of Beamsville, Ontario)

  http://www.provideag.ca/index.html
  N. M. Bartlett, Inc. website link

Platform manufacturers in the U.S.A.:

- LaGasse Works of Lyons, NY
  http://lagasseworks.com/
  LaGasse Works website link

- Phil Brown Welding of Conklin, MI
  http://www.philbrownwelding.com/
  Phil Brown Welding website link

- BlueLine Manufacturing of Yakima, WA
  http://www.bluelinemfg.com/
  Blueline Manufacturing website link

Disease Management *Presented by Kerik Cox*

Fire blight: This was one of the worst years all regions of New York has seen for fire blight in a long time.

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Lake Ontario Fruit Team Tour Report, continued from previous page

Young plantings require special attention. Here are a couple of tips Kerik Cox gave at the meeting:

- Young trees bloom at different times, often later, than established plantings. Make sure you are aware of bloom time and keep flowers protected until **100% petal fall.**
- Pruning well into last year's wood is vital to saving a tree. But in young plantings, it may be more efficient to just replace the tree.
- Copper can be used more where a good crop is not important. However it is not systemic, so it is not effective once there are symptoms of fire blight.
- Vigor. Lower Nitrogen applications and applications of Apogee retard vigor in young trees which can significantly reduce or prevent spread of infection. Of course, this is counter-productive when attempting to fill in available canopy space as soon as possible. Save this one for last.

Apple Scab and Powdery Mildew: New SDHI (Succinate Dehydrogenase Inhibitor) Fungicides

Kerik Cox puts out more good information per minute (IPM?) than almost anyone out there. Summarizing down to brief take-home points is a challenge, but here goes:

- SDHI's are a new development of the earlier boscalid fungicides, they are efficacious, systemic, with post-infection activity. Products include Merivon (a pre-mix), Luna Tranquility (a pre-mix), Luna Sensation (a pre-mix), and Fontellis (formulated as a stand-alone).
- 2013 & 2014 Geneva Trial Results: Merivon and Luna Sensation are the best of the group when Qol and DMI resistant populations of apple scab are present. Luna Tranquility performs great against powdery mildew and apple scab post-bloom, and really stands out during a cold, wet spring.
- Resistance Management: Qualitative resistance to SDHI's has been observed in Botrytis and Alternaria populations in strawberries and stone fruit outside of New York. With this in mind, baseline susceptible populations of the apple scab fungus are being cultured and preserved in order to assist in monitoring for SDHI resistance development.
- Basic Recommendations for SDHI Use: Half-inch green to tight cluster consider Luna Tranquility and/or Fontellis. Remember, keep captan and Fontellis far away from each other. Bloom to 3rd cover, consider Merivon or Luna Sensation. Pre-harvest consider Merivon or even Inspire Super (a non-SFHI) for summer disease control.

Finally, this is just a brief summary, consult the product labels and the Cornell Fruit Pest Management Guide for more details.

Recent Research in Geneva on Tank Mixes and Phytotoxicity in Apples

Presented by Kerik Cox and Debbie Breth

More will be heard about on this topic in the future, but in summary:

- Captan/Fontellis tank mix resulted in considerable damage to the leaves, but not fruit, during slow drying conditions.
- Captan + LI-700 or captan + Regulaid caused considerable damage to fruit, approaching half of the damage caused by that no-no combination of captan + oil.
- The applications were generally made under the worst possible, slow-drying conditions, in order to maximize the chances of phytotoxicity being expressed. More responsible application timings might reduce damage to an acceptable level. *Dan's comment: Your margin for error in a commercial situation appears very slim to me. Proceed with caution.*

Black Stem Borer

Art Agnello and Debbie Breth reported that western NY is experiencing a new pest. The black stem borer (BSB), introduced from Asia in the 30's, was detected in 6 sites in the Lake Ontario region last year. It is a tiny (2-3mm) stem-boring beetle that is found boring into the trunk of trees up to 5' above ground level. While feeding by the beetle is insignificant, the fungus it carries causes catastrophic damage to the vascular tissue of the tree. A pattern has yet to emerge on tree preference (young or established, cultivar, healthy or compromised), the LOF team is conducting extensive monitoring this year.

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Lake Ontario Fruit Team Tour Report, continued from previous page

The insect is difficult to find. It may be detected by oozing sap from small entry holes or 'toothpick' frass pushed out of the holes. The insect may still be present in the burrows which extend perpendicularly into the trunk, about ½".

The BSB suspected of being present in the general environment, but has not yet been observed attacking apples in the ENYCHP region. Earlier this week, Anna and Dan observed an possible infestation in a Long Island apple orchard. A sample was taken, and the beetles will be reared out and identified by the Cornell IPM program. Limited trapping is being conducted in our region. The beetle is understood to be attracted to a host tree that is under stress, either wet feet or drought, although additional factors may contribute. It is better to be aware that the insect is on the horizon in case it does come our way. We will continue to monitor the WNY situation as well as our ENY traps, and provide additional information to you over the winter.

Perennial weed management project

Debbie Breth also presented preliminary information on perennial weed management being conducted in the Lake Ontario region. Treatments included fall application of several herbicides, a valuable strategy that will save time in the spring when priorities are on pre-bloom pesticide applications. Preliminary results indicate that effective weed management is most critical during the May through July period, avoiding a potential loss of up to $600/A in fruit value when compared to weedy control plots. Work on perennial weed management will be extended next year to the ENYCHP region, including demonstration plots in the Hudson and Champlain valley's , as well as a long-term research plot at the Hudson Valley Lab.

Comments on the Future of Eastern New York Regional Fruit Extension

The value of an effective regional extension team had to be the most significant take-away point of this tour. As the Eastern New York Commercial Horticulture Program develops and matures, Eastern New York producers will benefit as much as the WNY producers have over the years. The regional team approach offers the opportunity for extension educators to specialize in compatible subject areas, and opens up the potential for increased support in subjects like marketing, food safety, and production economics. Many of our growers are mixed fruit and vegetable farms, the synergy of the cross-commodity team approach is providing these producers with a higher level of service from their extension program than what they have had in the past. Stay tuned as we create workshops and educational materials, update the ENYCHP website, and continue to send out information through E-Alerts and the Tree Fruit News!

Brown Marmorated Stink Bug Update

By Peter Jentsch, Cornell University Dept. of Entomology

The brown marmorated stink bug population has been slower to develop and lower in number then we've seen in the past two years. That said, we have seen more nymphs in the orchard this season then in the past. Treatment of nymphs should be conducted if there are infested trees in apple and pear blocks as nymphs will cause significant injury. This insect is beginning a second generation with population increasing over the month of August. Scouting for BMSB should be intensified through harvest. For updated trapping:

http://blogs.cornell.edu/jentsch/2014/07/31/brown-marmorated-stink-bug-july-30th-trap-site-data-update/

GAPS Help?

Remember to call the Orange CCE office if you want help with writing your GAPs plan or need to get ready for your first inspection. We have a staff person that is prepared to help you take the next steps needed to get that inspection and to be GAPs certified. This Fall, we plan on having more 2-day classes across the region for those who have yet to get started with their plans or investigating "what it takes." Please call Maire Ullrich 845-344-1234 with questions or to make an appointment with our GAPs specialist.

A Tale of Two Trees: Apple Decline Associated With Trunk Borers on Long Island

By Peter Jentsch, Cornell University Dept. of Entomology, posted to online blog August 7, 2014: http://blogs.cornell.edu/jentsch/

The Macoun apple, a cross between McIntosh and Jersey Black, was named after Canadian fruit grower W.T. Macoun. It was developed in 1923 at the New York State Agricultural Experiment Station in Geneva, by R. Wellington. Over the past 10 years we have seen this variety in decline throughout the Hudson Valley with high numbers of trees dying from what appears to be a variety of stress inducing conditions. There have been observations of 'winter injury' which include trunk cankers, trunk and scaffold scaling of the bark, dogwood borer in burr knot rooting initials, graft union necrosis from any number of unknown causes and Phytophthora rot, a genus of plant-damaging Oomycetes fungal pathogens. Dr. Rosenberger has suggested that in some cases, the use of Round-up (Glyphosate) may be at least in part, causing herbicide injury to trunks to induce stress. "Additional desiccation from herbicide exposure combined with normal water stress during hot dry periods may predispose the trunks to invasion by *Botryosphaeria dothidea*, a canker pathogen that is incapable of killing the cambium in healthy functioning trees, but which becomes very pathogenic in drought-stressed trees". As far as we can tell, the tree decline observed in Macoun, can be directly associated with some form of stress, arising from environmental (abiotic), insect or disease (biotic) or chemically induced factors.

Dogwood borer injury on M-9 rootstock causing tree decline.

During a recent tour of orchards in eastern and central Long Island, we found apple trees in full leaf, with developing fruit, which were turning yellow, drying out above and below the graft union and slowly dying. One site had experienced two hurricanes over the past three years, with standing salt water for 24 hours, and some level of what appeared to be winter injury. The yellowing tree on this first site was Honeycrisp on M-9 rootstock. It was dug and assessed with signs of cambian browning and dead wood below the bark layer. The M-9 rootstock, used widely in high density plantings, will produce many root initials or burr knots (seen in the image to the left), creating site very attractive to the complex of tree borers, especially the dogwood. This tree was one of hundreds of apples in this planting that had a significant number of live dogwood borers along the graft union, causing a constriction of water and nutrient movement to the tree canopy. As water requirements increased with demand for fruit production, the tree was unable to maintain needed supply of moisture to the canopy and began to yellow under stress.

Tunneling of apple trunk by black stem trunk borer *Xylosandrus germanus* (Blandford)

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Apple Decline-Trunk Borers on L.I., continued from previous page

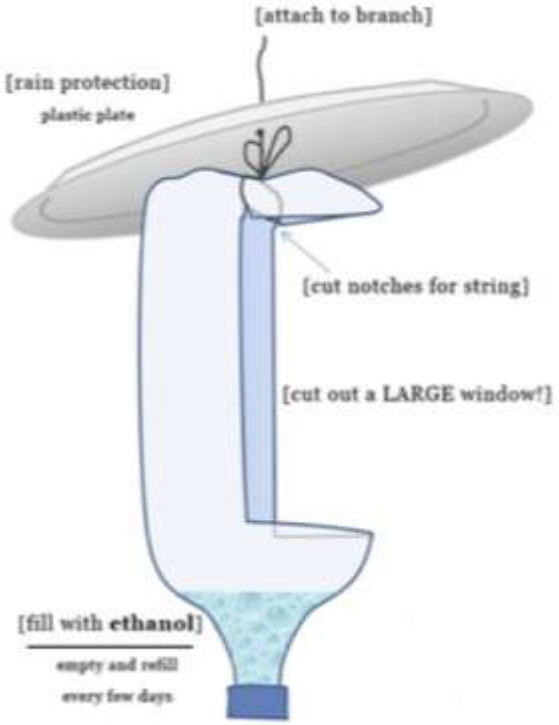
The tree, a Macoun on M-26 rootstock on the second site appeared to be on well drained soil, planted on a slope with good air drainage. There was no sign of herbicide injury such as cankered, flaking or scaling bark or winter injury. Yet the tree was completely yellowed with browning fruit. The tree had completely shut down. The orchard had also experienced two hurricanes over the past three years, with standing water. Research in Ohio and North Carolina have shown that trees growing in saturated soils (water stress) tend to produce ethyl alcohol as the root zone goes anaerobic during wet periods. The ethyl alcohol acts as a host find mechanism to an insect complex known as Ambrosia Beetle. Trees undergoing this stress can become hosts for the black stem borer, *Xylosandrus germanus*, which was found infesting this lone Macoun tree in the middle of a block of what appeared to be healthy trees. The Long Island area is the site where *Xylosandrus germanus* is thought to have been first introduced into the US in 1932. (Gill et al. 1998). The black stem borer is a concern as it attacks apparently healthy plants that have undergone this form of 'root zone anaerobic stress'. Entrance holes are round, approximately 1 mm in diameter, often having long toothpick-like strings of frass or compacted boring dust emerging from these holes.

Bucket trapping for newly emerged adults should begin at green tip using ethanol solution

A recent article on Black Stem Borer can be found in Scaffolds, providing a western NY perspective on biology and management of this insect pest.

Trunk Bark Girdling by the Black Stem Borer

Entry site on apple trunk of the black stem borer, *Xylosandrus germanus* (Blandford).



Black Stem Borer Ethanol Trap

Dorsal view; black stem borer, *Xylosandrus germanus*.

Side view; black stem borer, *Xylosandrus germanus*.

Eastern NY Educator Wins National Extension Award

Crystal Stewart, Cornell Cooperative Extension Regional Agriculture Specialist with the Eastern NY Commercial Horticulture Program, was awarded an Achievement Award at the Annual Meeting of the National Association of County Agricultural Agents (NACAA) held in Mobile, Alabama on July 22nd, 2014.

The Achievement Award is presented to those agricultural agents that have been working in their field for less than 10 years but in that short time have made significant contributions to their profession.

Crystal was supported in her nomination by the Garlic Seed Foundation for her work on behalf of garlic growers in this state and nationwide. She played a key role in the recent work on garlic bloat nematode and has initiated additional garlic research studying weed control, post-harvest handling and plant fertility. Crystal is including the results of this work into a new garlic chapter that will be incorporated in the 2015 Cornell Guidelines for Vegetable Crops.

Crystal was also supported by the Cornell Small Farms Program, specifically for her efforts on the Beginning Farmer Online Course leadership team. She has been instrumental in leading that effort and has taught and/or assisted on 4 different courses. Crystal continues to be the point person for beginning farmers in the eastern region.

Crystal has not confined her extension program delivery to just technology driven methods. One of her finest achievements lies in the success she has had with the Amish and Mennonite communities in the Mohawk Valley. These growers have come to rely on Crystal's expertise and energy as they improve their skills producing high value crops.

Crystal was recognized by co-workers and farmers alike as having 'the rare combination of content knowledge, teaching skills, passion, wit, and humility' that make her such a valuable resource to Eastern NY farmers. Please congratulate Crystal when you see her!

Managing Post-Harvest Diseases

By Dave Rosenberger, Cornell Univ. Dept. of Entomology

As noted in last week's article on storage sanitation, managing post-harvest diseases on apples requires action in at least three different arenas: pre-harvest disease control in the field, sanitation of bins and storages, and application of post-harvest treatments. This article will focus on managing diseases in the field during late summer, with particular emphasis on the last spray that is applied before fruit are harvested.

Post-harvest diseases that must be controlled via field sprays include apple scab (which can appear as pinpoint scab after harvest), sooty blotch and flyspeck (SBFS), and fruit rots caused by Botryosphaeria species (black rot, white rot) and Colletotrichum species (bitter rot). Pinpoint scab can develop during storage if the orchard has a high incidence of leaf scab, fungicide residues are depleted before harvest, and fruit remain wet for more than 24 hours after the fungicide residues are depleted. Although 24-hr pre-harvest wetting periods can result in a low incidence of pinpoint scab, severe outbreaks are usually limited to fruit exposed to a 48-hr wetting period shortly before harvest and after fungicide residues were depleted. Fungicide residues are generally depleted after fruit have been exposed to two inches of accumulated rainfall following the application. Fruit infections that occur shortly before harvest will not yet be evident when fruit are harvested, but they will develop into pinpoint scab while fruit are held in cold storage. Late-season infections by the fungi causing SBFS may also be invisible at harvest and develop during storage if fruit are cooled slowly. Unlike the apple scab fungus which can grow slowly at temperatures below 35 °F., the fungi causing SBFS will not grow after fruit are cooled to below 40 or 45 °F. However, if rooms with limited refrigeration capacity are filled quickly, then it may take 7 to 10 days or more for fruit in the center of stacks to cool to below 40°F. If fruit in a partially filled room cool down at night and then the temperature rises again the next day as additional fruit are added to the room, the colder fruit may "sweat", thereby providing ideal growing conditions for incubating SBFS infections that needed just a few more hours of wetting to develop visible symptoms. Effective fungicide coverage during July and August is essential for preventing development of summer fruit rots. If bitter rot becomes established in some fruit, then spores from the infected fruit may spread to other fruit and cause incipient infections that will not be visible at harvest. Those incipient infections can develop into fruit decays during

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storage. Like the fungi causing SBFS, most of the summer rot fungi stop growing when fruit are cooled to below 40 ° F, but the rots can develop rapidly if stored fruit are cooled slowly. Fungicide options for controlling SBFS and summer fruit rots were discussed in earlier articles (see Scaffolds Fruit Journal for 24 June and 30 June, 2014). A few additional points are relevant for the late-summer sprays. To the best of my knowledge, none of the diseases mentioned above can be reliably eradicated by fungicides applied after harvest. Thus, if fruit are left unprotected during critical infection periods in late summer and become infected with SBFS, scab, or summer rot fungi, those errors of omission during summer cannot be corrected by applying a postharvest fungicide. Research at the Hudson Valley Lab over the past 10 years clearly demonstrated that Pristine provided the longest residual control of SBFS, and a combination of Pristine plus Captan has therefore been recommended for the last spray of the season for apple cultivars that will be harvested in October. Because that combination was also very effective for controlling bitter rot, it was also recommended for high-value cultivars, such as Honeycrisp and SweeTango, which can sometimes develop summer fruit rots. However, Pristine may be in short supply this year. Fortunately, results from a trial that we conducted a the Hudson Valley Lab in 2013 indicate that Merivon should perform just as well as Pristine for controlling SBFS and summer fruit rots (Rosenberger et al., 2014). When fruit from the 2013 trial were held in cold storage after harvest, the incidence of decay that developed in stored fruit was also similar for the Pristine and Merivon plots (data not yet published), thereby providing evidence that Pristine's ability to suppress storage decays will be matched by the activity of Merivon. Luna Sensation may also perform well in late summer sprays, but it was not included in our 2013 trial, it is not currently labeled in New York, and it has a 14-day pre-harvest interval whereas Pristine and Merivon both have 0-day PHIs. Merivon probably should NOT be substituted for Pristine in situations where a fungicide is being applied shortly before or after applications of Harvista (the sprayable form of 1-MCP). Harvista applications require the use of spray oil, and the Merivon label specifically notes that Merivon should NOT be used with oils or other products formulated as emulsifiable concentrates. We don't yet know what degree of separation may be required between applications of Merivon and Harvista, but caution is advised. Whereas the potential for damaging fruit via sequential applications of Merivon and Harvista is largely unknown, problems everyone should realize by now are that Captan and oil are not compatible, and they should not be applied within 10–14 days (or perhaps even longer) of one another. Normally, we would recommend that Captan should be included in all summer sprays on apples regardless of what other fungicides might be included in the tank mix. However, it appears that an exception may be required in blocks where Harvista will be applied in the next 10 to 14 days (again, we don't know the exact limits). Where Harvista will be applied, the safest bet will be to apply either Pristine or Flint as the sole fungicide in applications prior to or shortly after Harvista has been applied. However, remember that Flint has a 14-day pre-harvest interval, that Flint must be used at the rate of 3 oz/A for bitter rot suppression, and that the Flint label specifies only four applications per year with a maximum of 11 oz/A/year. An alternative where Harvista will be used might be to apply a combination of Flint-plus-Ziram or Pristine-plus-Ziram, thus substituting Ziram for Captan. However, Ziram can leave a lot of visible residues, and it will match the activity of Captan only if it is applied at nearly full label rates. In various trials conducted over the years, including the 2014 trial mentioned above, I have found that although pre-harvest applications of Pristine can help to suppress storage decays, the pre-harvest sprays never match the effectiveness of postharvest drenching for controlling blue mold caused by *Penicillium expansum*. The level of storage rot control provided by Pristine when it is applied in pre-harvest sprays is presumably affected both by the quality of spray coverage and by the amount of rain that occurs between the last application and harvest. Thus, sprays applied one day before harvest should be more effective for suppressing storage decays caused by *P. expansum* than are sprays applied three weeks before harvest. However, even if sprays are applied one day before harvest, complete coverage of the fruit surface will be almost impossible on trees that carry a full crop.

By comparison, postharvest drenching ensures complete coverage and postharvest fungicides that are "fogged" into storage rooms may also provide more complete coverage than can be achieved with pre-harvest sprays. Despite the fact that pre-harvest sprays cannot match the efficacy of some post-harvest treatments, the slight edge that is provided by pre-harvest sprays Sovran during the season would appear to limit apple growers to a maximum of four sprays per year for any and all products that include a QoI fungicide. Limiting total QoI usage to four sprays per year may help to delay resistance development, but options for using five or six sprays per year (e.g., three or four for early-season scab, plus one or two pre-harvest) could be helpful in some situations and would be feasible if the Sovran and Flint labels were updated to include the same wording currently used for Pristine, Merivon, and Luna Sensation.

Literature cited: *Rosenberger, D.A., Meyer, F.W., Rugh, A.L., Feldman, P.M., and Kostina, J. 2014. Post-infection efficacy of fungicides for controlling summer diseases on apples, 2013. Plant Disease Management Reports 8:PF013. Online publication. DOI:10.1094/PDMR08.*

Hudson Valley Lab Pest Info Blogs

To better serve the fruit industry in the Hudson Valley, both Dave Rosenberger and Peter Jentsch have recently established websites where they are posting information on diseases, pests, and pest management that is relevant to fruit growers in the Hudson Valley. Both the plant pathology and entomology websites for the Hudson Valley Lab contain blogs where they post time-sensitive observations and pest alerts.

Fruit growers interested in receiving alerts via e-mail when they make new posts in these blogs can subscribe by entering their e-mail address in the "subscribe" box on the relevant website. The bottom of each e-mail alert from the blogs will contain an "unsubscribe" link so that alerts can be discontinued at any time.

The URL for the Hudson Valley Entomology website and blog is http://blogs.cornell.edu/jentsch/, and the URL for the Hudson Valley Plant Pathology website/blog is http://blogs.cornell.edu/plantpathhvl/. Both websites are still in the early stages of development, but then websites documenting the current state of knowledge are never really complete.

Counterfeit Money at Farmer's Markets

Counterfeit Money sightings are on the upswing. An increase in counterfeit dollars at Farmers Markets is on the rise. Be in the lookout. $10's and $20's are most common.

Invest in some of the pens that highlight based on special money paper and see this article: https://docs.google.com/file/d/0BzEMJRQuHZM1aE5hcGUwMTNBZlE1dGdMWmhhSXp2bzE3cGdR/edit?pli=1

Upcoming Meetings

Sept. 3, 2014 Cornell Fruit Pest Control Field Day

The Geneva Fruit Pest Control Field Day will take place during Labor Day week on Sept. 3 this year. Activities will commence with registration, coffee, etc., in the lobby of Barton Lab at the Geneva Experiment Station at 8:30 am.

The tour will proceed to the orchards to view plots and preliminary data from field trials involving new fungicides, bactericides, miticides, and insecticides on tree fruits and grapes. It is anticipated that the tour of field plots will be completed by noon. No pre-registration is required for the Geneva tour.

Because of the recent retirements and personnel changes at the Hudson Valley Lab, there will be no corresponding Highland component this year. However, cooperators desiring one-on-one tours of their individual research plots can contact Peter Jentsch at 845-691-7151 or email pjj5@cornell.edu to make arrangements.

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