Cornell University Cooperative Extension

Eastern NY Commercial Horticulture Program

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Tree Fruit News

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Regional Updates*:

North Country—Clinton, Essex, northern Warren and Washington counties

Tree phenology: Apple=1/4" to 1/2" green

Current growing degree days 1/1/13 to 4/29/13	Base 43°F*	Base 50°F*
Chazy	170.8	62.8
Peru	146.1	59.6
South Hero, VT	152.4	53.2
Burlington, VT	183.1	69.8
Shoreham, VT	182.5	73.5

Pest focus—Apple: scab, fire blight, mites and scale

Capital District—Albany, Fulton, Montgomery, Rensselaer, Saratoga, Schenectady, Schoharie, southern Warren and Washington counties

Tree phenology: Apple=1/2" green to early tight cluster; pears in bud burst; plums=beginning bloom; cherries=bud burst; peaches=swollen bud to 1/2" green

Current growing degree days 1/1/13 to 4/29/13	Base 43°F*	Base 50°F*
Granville	158.2	59.1
North Easton	213.5	84.1
Clifton Park	174.4	64.8
Guilderland	190.5	70.1

Pest focus—Apples: scab, rust, fire blight, mites and scale; Stone fruit: brown rot; Pears: pear psylla

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Mid-Hudson Valley—Columbia, Dutchess, Greene, Orange, Sullivan and Ulster counties

Tree phenology: Apple=late tight cluster to pink; pear=green cluster-white bud (bloom on Asian pear); peach, plum, cherry=white bud to bloom; apricot=bloom to petal fall

Current growing degree days 1/1/13 to 4/29/13	Base 43°F*	Base 50°F*
Hudson	199.7	80.0
Highland	280.7	120.3
Marlboro	256.9	104.9
Montgomery	268.9	117.8

Pest focus—Apples: scab, rust, mildew, mites, scale, tarnished plant bug, rosy apple aphid, overwintering obliquebanded leafroller; Stone fruit: brown rot and tarnished plant bug; Pears: Fabraea leaf spot, mites and pear psylla

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Coming Events

Coming Events: Range (normal ± std deviation)	Base 43°F*	Base 50°F*
McIntosh tight cluster	211-259	91-127
McIntosh pink	274-316	125-159
McIntosh bloom	348-420	171-219
Obliquebanded leafroller larvae active	158-314	64-160
Rosy apple aphids nymphs present	134-244	56-116

**All degree day data presented are BE (Baskerviile-Emin) calculations.*

Serving the educational and research needs of the commercial small fruit, vegetable and tree fruit industries in Albany, Clinton, Columbia, Dutchess, Essex, Fulton, Greene, Montgomery, Orange, Rensselaer, Saratoga, Schoharie, Schenectady, Sullivan, Ulster, Warren and Washington Counties

Apple Proliferation Phytoplasma Detected in Nova Scotia

By Kevin Iungerman, ENYCH

The U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) was notified by the Canadian Food Inspection Agency (CFIA) on April 2, 2013 that apple proliferation phytoplasma (APP) had been detected in 'Pacific Gala' apple in an orchard near Kentville, Nova Scotia. The affected orchard has been placed under quarantine. This is the first detection of APP in North America.

The affected trees were imported into Canada from the U.S. in 2008. It is important to note that no symptoms of APP have been observed in the source nurseries or reported in the U.S. at large, and the source of infestation is unknown at this time. APHIS is currently conducting testing at the source nurseries. CFIA has not imposed new restrictions on importation of apple trees from the U.S.

APP, or Candidatus Phytoplasma mali is a virus-like plant pest of apple trees that affects fruit quality (reduced fruit size and sweetness) and the overall tree growth and viability. It has been reported in other economically important species such as oaks, hazelnuts, hawthorns, plums, magnolias, dahlias, roses, and European and Asian pears.

APP is considered to be a quarantine pest in both Canada and the U.S. It is considered to be one of the most critical diseases of apple trees in Europe where it causes economic losses of 10-80%. APP has been reported in Albania, Austria, Belgium, Belgium, Bosnia-Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic,

Figure 1. Leaf rosettes on apple tree infected with '*Ca.* P. mali.' Courtesy USDA Animal and Plant Health Inspection Service

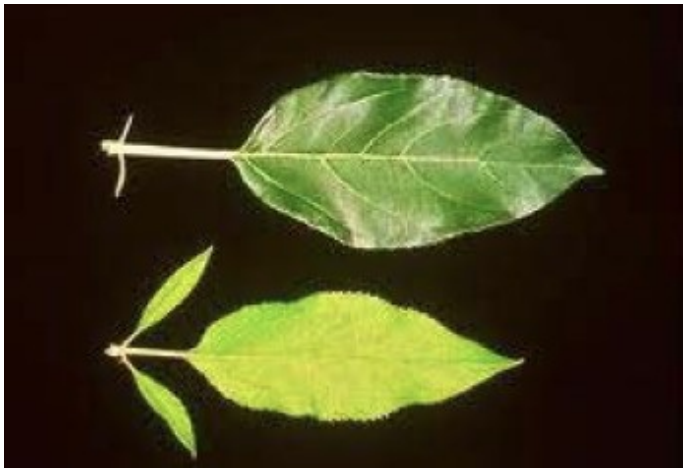

Figure 2. Leaf (bottom) with enlarged stipules and shortened petiole from a tree infected with 'Ca. P. mali', compared to a healthy leaf (top) (eppo.int).

Denmark, France, Germany, Greece, Hungary, Italy, Moldova, Netherlands, Norway, Poland, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Switzerland, Ukraine, southern Russia, as well as in Turkey and Syria.

In infected plants, APP is found in the phloem (food-conducting tissue in vascular plants). In nature, it can be transmitted between plants by insects, and through natural root grafting of adjacent plants. In commerce, APP is spread through propagation practices with infected material including budding and grafting. Long-distance dispersal of APP occurs through the trade of infected rootstock, scionwood, or budwood. Specific insect vectors include certain psyllids, froghoppers and leafhoppers. APP is not spread through seed, fruit or pruning.

APP redistributes itself seasonally within an infected tree. During winter, the phytoplasma survives in tree roots and recolonizes tree shoots and stems in the spring. Actual symptoms may vary; some branches may appear normal, and produce normal fruit, while other branches may show symptoms. Additionally, symptoms may disappear for one or more years, and reappear after heavy pruning or grafting.

Symptoms of APP infection include: impairment of axillary bud development, so that the ends of affected branches produce a broom-like multiplicity of shoots; leaf clusters can develop abnormally; a rosette of terminal

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leaves may develop late in the season at the end of shoots in place of normal terminal buds, or shoot tips may die back; leaf stipules, especially those on the witches' brooms and leaf rosettes, often have enlarged leaf stipules and shortened leaf petioles. Sometimes leaves may roll downwards and become brittle; have fine and irregular edge serrations; or may be smaller and appear more yellow than healthy leaves during the summer. Excessive suckering may occur near the base of a plant.

No current treatment is available for APP. Once a plant is infected it will remain infected for its life. Removal of infected trees and the control of insect vectors may limit APP spread where it is present. Different apple varieties and rootstocks may vary in their sensitivity to APP and in the severity of symptoms. In Europe, APP-resistant rootstocks are commonly used.

Questions for APHIS? Should growers wish additional information, or observe symptoms of APP as described above, they should contact Craig Southwick at APHIS at the following address: Craig.Southwick@aphis.usda.gov or by phone at 970-494-7578.

Figure 3. Witches' broom symptoms on apple trees infected with '*Candidatus* Phytoplasma mali'.

Compiled from "Information_for_Apple_Stake holders_APP_April_2_2013_EN.pdf" Canadian Food Inspection Agency (CFIA), forwarded by Drs. Vincent Philion, Quebec and Dr. Juliet Evelyn Carroll; and "US APHIS – PPQ Stakeholder notice April 2, 2013", via Margaret Kelly, NYSDAM, Division of Plant Industry, and Dr. Carroll.

All Things Considered – And Brown Marmorated Stink Bug Too

Ahh. Spring …warmth and …yikes… brown marmorated stink bugs (BMSB)! Well maybe not quite yet, but soon enough they will be coming out of overwintering shelter structures and locations in adjacent woodlands and hedgerows. Check out the new video entitled "Tracking the Brown Marmorated Stink Bug," which provides a quick visual refresher on identifying BMSB, and why this pest is so threatening to agriculture. The video can be found at http://www.stopbmsb.org/more-resources/video-series/

Also view Dr. Tracy Leskey's talk about stink bugs and efforts to stop them, which was aired on National Public Radio's "All Things Considered", Saturday, April 6; the program also covered Mike Raup's prediction for a huge wave of cicadas this year. These can be accessed at the NPR site at: http://www.npr.org/2013/04/06/176446679/spring-blooms-and-so-do-the-creepy-crawlies.

Source: "New Video Series Tracks the Brown Marmorated Stink Bug", Northeastern IPM Center, Tue, 9 Apr 2013, northeastipm@cornell.edu.

Brown marmorated stink bug eggs and instars on underside of leaf.
Photo credits: Sudeep Matthew, University of Maryland

Dry Springs Still Require Scab Vigilance

By Kevin Iungerman, ENYCH. Source: Dave Rosenberger

Early-blooming apple cultivars had reached the tight cluster bud stage in southern portions of the region by Thursday April 25 and warm weather in the week of April 29 will likely push us toward pink and perhaps beyond soon after. A combination of insufficient daylight wetting durations and suboptimal temperatures for scab development prevented most locations from experience a scab infection period as of Sunday April 28 on the basis of NEWA data from Marlboro north through Chazy. (Note the Marboro NEWA example below). Typically, had only been borderline conditions of possible infection, and many locations, especially in the north, were not even at green tip during marginal windows.

1. Massive spore releases can occur after long dry periods. Spore load in over-wintering leaves does not disappear during dry weather! While earthworm and saprophytic action does reduce leaf litter on the orchard floor, these agents of decomposition are slowed by dry weather. As long as there is sufficient moisture to keep fallen leaves pliable though - even mere dampness - ascospore maturation does continue, meaning massive spore release can result when rain finally materializes. The later this occurs the greater will be the amount of available leaf area to receive released spores; just visualize the difference in surface say between tight cluster and bloom and spur leaf expansion.

NEWA Apple Disease Models

Select a disease: Select disease

Weather Station: Select station

Date of Interest: 4/28/2013

Calculate

Map | Results | More info

Apple Scab Summary for Marlboro

	Past	Past	Current	5-Day Forecast				Forecast Details
	Apr 26	Apr 27	Apr 28	Apr 29	Apr 30	May 1	May 2	May 3
Ascospore Maturity	15%	15%	15%	18%	22%	26%	31%	36%
Infection Events	No	No	No					
Days to Symptoms	NA	NA	NA					

While a prevailing dry weather period during the pre-bloom stage is very welcome, it should not catch folks napping as risks, nevertheless, are proceeding. (As of April 28, NEWA data indicated scab ascospore maturity levels continuing to rise as we might expect: 15% at Marlboro; 9% North Easton; 5% Clifton Park, Granville; 4% Chazy; 2% Peru). Of course the dry pattern may abruptly cease; indeed, forecasts for early in the week of April 29 show varying chances of showers (40% in the lower Hudson, 20% to the north), but no large weather pattern is indicated, and for the greater part of the week following Tuesday and into the following week; a dry pattern looks to dominate. These drier conditions favor mildew so be prepared (see April 17 issue) and also sets the stage for a far more serious scab problem perhaps than one might expect; consider the following basic dynamics in play in a dryer spring and take heed.

2. Extended spray intervals during dry weather result in reduced fungicide residues. In normative years (i.e. "days of yore") fungicides would be applied over a springtime pattern of moderate and intermittent rainfall thereby maintaining cover on new growth. Even though some fungicide residue washed off and/or degraded with each rain event, some fungicide residue would persist week to week, particularly if rainfall in any given week was less than an inch, and protectant fungicides such as mancozeb were applied at roughly 7-day intervals. Under such circumstances, the total accumulated residues in the trees could exceed what might be expected from a single spray applied just ahead of a rain event that occurs after a long dry period.

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Figure 1. Fungicides applied at pink are more likely to reach stems, sepals, and the flower hypanthium (arrow) than are fungicides applied at bloom.

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3. Fungicide redistribution does not occur in the absence of rains. Heavy rains (greater than 1.5 to 2 inches) remove all fungicide residues from sprayed trees. In contrast, Light rains may actually improve fungicide effectiveness by redistributing contact fungicides (mancozeb, captan) to new growth and/or to small areas missed by the sprayer. This redistribution role in scab control is often under-estimated. Analogous spatter tests with die-color water solutions and droplet impacts on and near stain susceptible surfaces suggests how falling rain redistributes fungicide residues on a wet leaf over a surprisingly large area and even to shoot tips higher than the last leaf with spray residue. In warm dry weather, fungicides stay where deposited by the sprayer while surface areas of susceptible tissue continue to increase rapidly.

4. Open flowers create a massive increase in plant tissue surface area that can complicate fungicide coverage. Fungicides applied at the pink bud stage are more likely to reach flower stems, sepals, and petals than are fungicides applied at full bloom (Fig. 1). Furthermore, the hypanthium at the base of the flower is the part that ultimately develops into the apple fruit. On a fully opened flower, the hypanthium is somewhat protected from spray droplets by the umbrella of petals just above it whereas airborne spores can still find their way to the hypanthium and/or the flower sepals. Scab infections on flower sepals become calyx-end infections on apple fruit.

Taken together, these four factors underscore the importance of an effective pink spray for keeping on top of scab in a dry year. Full rates of fungicides and thorough spray coverage (no alternate row spraying) are especially important if several prebloom sprays were omitted prior to the pink spray. Attempting to catch up with scab control after the flowers open is likely to be a losing strategy in a dry year unless no rains occur during bloom.

Note: Looking back to a similarly early dry spring in 2008 I came across Dr. Dave Rosenberger's article "Controlling Apple Scab When It Doesn't Rain" (and photos Figure 1) Scaffolds V17 N5, April 21, 2008, which I adapted for this May 1 newsletter. I also consulted NYS IPM NEWA ENY Station data 4/28/13 and related 7-10 day forecasts. Readers and find updates at http://newa.cornell.edu/index.php?page=apple-diseases.

Affordable Health Care Act Prompts Health Insurance Questions

Many agricultural producers have been asking about how the Affordable Healthcare Act will impact their employees, themselves, and their businesses in 2014. Questions are being asked about what an agricultural employer needs to do to be in compliance with the new legislation and what fines might be imposed for non-compliance?

Answers to these and other questions and further information about the Act's provisions and coverage and links to the Department of Labor, the Internal Revenue Service, and other agencies involved, is available at: http://www.sba.gov/healthcare/.

Reminder - Start Using the New I-9 Form May 7

By A. De Marree, CCE Lake Ontario Fruit Program. Adapted by Kevin Iungerman, ENYCH.

Growers are reminded that the federal government will be requiring use of the new I-9 forms on May 7, 2013, when the older forms will no longer be accepted. A completed I-9 form, together with proper identification documents, has been required of all new employees, citizen or non-citizen, prior to starting work in the United States, since November of 1986. The new I-9 form is 9 pages long – 6 pages of instructions and 3 pages of actual form. Please read the instructions for completing the form carefully **before** using it for the first time. The new form and related information can be found at www.uscis.gov/files/form/i-9.pdf, the Homeland Security website.

Orchard and Vineyard Sprayers Deposition Efficacy Twilight Field Meetings

Dr. Andrew Landers, Cornell University Department Entomology Barton Lab

Locations	Dates	Times
Hid-in-Pines Vineyard & Winery 456 Soper Street, Morrisonville, Clinton County, NY 12962	**Monday** June 10	**4:00 - 6:00 PM**
Hart Orchards 425 Arthur Road, Peru, Clinton County, NY 12972	**Monday** June 10	**7:30 - 10:30 PM**
Victoryview Vineyard 11975 State Route 40, Schatigcoke, Washington County, NY 12154 (Note: Old designation 24 Church Lane, North Easton)	**Tuesday** June 11	**7:30 - 10:30 PM**

Proper utilization of protectant materials depends upon timing and on the optimal placement of the protectants on the plant surfaces. How does your sprayer perform in this regard? Plan on attending one of these workshops to visually evaluate the performance of several kinds of sprayers.

Dr. Andrew Landers will go over the principles of spraying and his work to increase spray efficacy using proper calibration, nozzles, pressures, and tractor speed, and how these factors impacts the efficacy of disease/insect control measures.

At each location, we will review the performance of several sprayers that are typically used for the respective fruit operations (i.e. orchard or vineyard) and provide comment and consultation as to calibration and/or effectiveness overall for the several grape planting systems and/or high and lower density orchard plantings.

At Hart Orchards and Victoryview Vineyard, Andrew will lead us in an exercise to evaluate actual spray deposition on representative plant canopy. We will add a tracer dye to a water solution in each sprayer type and have this applied per direction. We will then use UV light to evaluate the extent and pattern of coverage realized. (Thus the reason for the two late evening sessions: the dye is sun-sensitive and we must have dark to see the black light illuminate the deposition patterns.)

All EVENING attendees will receive a take-home kit with which they can assess circumstances on their own plantings. The kit will include two bags of DYE, an inexpensive UV light, MSDS sheets, and instructions relevant to orchard or vineyard operations. Attendees at the Hid-in-Pines meeting are encouraged to stop-in for both the demonstration and kits at the Hart meeting of the same day.

REGISTRATION. There is no cost to these meetings but prior registration is requested if we are to anticipate attendance size, have sufficient kits on hand, and if need be, to be able to contact you should bad weather cause cancellation. (A passing shower should not prevent the programs.)

To Register, please email Ms. Nancy Kiuber at nak5@cornell.edu or Kevin Iungerman at kai3@cornell.edu. Simply say whom you are, that you plan to attend, and provide a cell number.