

Cornell University Cooperative Extension

Eastern NY Commercial Horticulture Program

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Tree Fruit News

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Pest and Weather Data

Degree Day Accumulations (03/01 through 08/20/2014, via NEWA)					
Location	Base 43 F	Base 50 F			
Peru	2583.8	1738.3			
Watermill	2588.2	1683.7			
Clifton Park	2710.2	1846.0			
Marlboro	2885.6	1970.6			
Hudson	2962.1	2053.7			
Highland	2978.3	2049.5			

Latest Pest Events

- **Spotted Tentiform Leafminer** 3rd flight is underway in Highland.
- Brown Marmorated Stink Bug adults and nymphs observed feeding on apples, peaches, and peppers in Milton (Ulster County) and Highland (Ulster County).
- Spotted Wing Drosophila sustained trap catches in the following ENYCHP counties: Orange, Ulster, Dutchess, Columbia, Rensselaer, Albany, Saratoga, Washington, Clinton.

In this issue of Tree Fruit News:

- Apple Harvest Maturity Testing Program for 2014
- Some Near-Harvest Phytopathology Observations
- Mite Management Using Reduced Risk Pest Management Programs and Biological Control
- Help with GAPs
- Envidor Miticide Labeled in NYS
- Online resources for growers-pest info. and more
- Upcoming Meetings:
 - Pest Control Field Day
 - Small Acreage Organic Orchard Success

Insect Trap Catches (Number/Trap/Day) (Highland, NY)					
Pest Species	Count 08/11	Count 08/18			
Lesser Apple Worm (LAW)	0.3	2.4			
Oblique Banded Leaf Roller (OBLR)	0.6	0.6			
Tufted Apple Budmoth	0.3	0.8			
Oriental Fruit Moth (OFM)	2.2	2.1			
Red Banded Leaf Roller (RBLR)	0.9	0.7			
Spotted Tentiform Leaf Miner (STLM)	50.2	39.2			
Codling Moth (CM)	2.2	2.4			
Sparganothis Fruitworm	0.0	0.0			
Variegated Leaf Roller	0.6	0.6			
Apple Maggot (AM)	0.1	0.1			

Upcoming Pest Events	DD Range (43F)
American Plum Borer 2 nd flight peak	2005-2575
Codling Moth 2 nd flight peak	1943-2727
Lesser Appleworm 2 nd flight peak	2131-3105
Oriental Fruit Moth 3 rd flight peak	2643-3221
San Jose Scale 2 nd gen crawlers emerging	2746-2852
Obliquebanded Leaf Roller 2 nd flight peak	2593-3011
Peachtree Borer flight subsides	2478-3126
Apple Maggot flight peak	2115-2665
Redbanded Leafroller 3 rd flight peak	2717-3207
Comstock Mealybug 2 nd gen crawlers subside	2735-2771
Spotted Tentiform Leafminer 3 rd flight peak	2568-3022

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

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, Ulster, Warren and Washington Counties

Apple Harvest Maturity Testing Program for 2014

By Anna Wallis and Dan Donahue, CCE ENYCHP

This season's program kicked off this week in modest fashion with a look at Ginger Gold across the entire ENYCHP region, and McIntosh at the Hudson Valley Lab. This year, for the first time, the entire ENY region will be included in the sampling and ethylene testing protocol. Testing will be done on Tuesdays and Wednesdays, followed by a packer/shipper/crop advisor conference call on Thursday morning, then an E-Harvest Alert emailed before noon. The purpose of the effort is to provide the ENY apple industry with a general picture of harvest maturity development and progress of the harvest across the region. Geography, testing equipment availability, desire to produce timely data, and our modest

2014 Apple Sampling Schedule for the Hudson Valley

Week of	Variety
08/18/14	Ginger Gold
08/25/14	Ginger Gold, Gala, Honeycrisp, McIntosh (excluding Marshal Macs)
09/01/14	Gala, Honeycrisp, McIntosh,
09/08/14	Gala, Honeycrisp,, McIntosh, NY1 (Snapdragon)
09/15/14	Honeycrisp, McIntosh, NY1 (Snapdragon), Spartan (Aceymac), Empire, Red Delicious
09/22/14	NY1 (Snapdragon), Empire, Red Delicious, Golden Delicious, NY2 (Ruby Frost)
09/29/14	Empire, Red Delicious, Golden Delicious, NY2 (Ruby Frost), Jonagold, Fuji
10/06/14	Empire, Red Delicious, Golden Delicious, NY2 (Ruby Frost), Jonagold, Fuji
10/13/14	Golden Delicious, Fuji, Rome
10/20/14	Fuji, Rome

resources limit the number of varieties and sampling sites available to the program.

A Reminder about Harvest Maturity Evaluation:

The goal of the effort is to produce objective, sciencebased data on the status of the crop's physiological maturity at a certain point in time. This information forms a sort of general baseline on the progress of apple maturity across the region. Since harvest maturity in any specific variety block is influenced by site, strain, rootstock, fertility status, pruning strategies, growth regulator use, etc., it remains important to also conduct maturity tests on your own farms to assist in making your picking, storage, and marketing decisions. The maturity evaluations reported by this program reflect estimates for the specific blocks sampled. Market destination, the weather forecast, demands from the sales desk, keeping the picking crew busy are all factors that an individual grower must consider when choosing a harvest date.

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2014 Apple Sampling Schedule for the Champlain Valley and Capital District				
Week of	Variety			
08/18/14	Ginger Gold			
08/25/14	Ginger Gold, Gala, Sweet Tango			
09/01/14	Ginger Gold, Honeycrisp, McIntosh, Sweet Tango			
09/08/14	Cortland, Honeycrisp, McIntosh, Sweet Tango			
09/15/14	Cortland, Honeycrisp,, McIntosh, NY1 (Snapdragon)			
09/22/14	Cortland, Honeycrisp, McIntosh, NY1 (Snapdragon)			
09/29/14	NY1 (Snapdragon), NY2 (Ruby Frost)			
10/06/14	NY2 (Ruby Frost)			
10/13/14	NY2 (Ruby Frost)			

Some Near-Harvest Phytopathology Observations from Dave Rosenberger

Late Season Captan and Liquid Calcium: Be cautious when tank mixing captan with "high uptake" liquid formulations of foliar calcium. There have been anecdotal observations of apple lenticel injury in controlled atmosphere storage apples perhaps caused by this tank mix applied under slow-drying conditions. Injury is always more likely if sprays are applied under slow drying conditions.

Merivon as a Substitute for Pristine: While Pristine has been an excellent material to use late season for the control of Flyspeck, Sooty Blotch, Black Rot, and Bitter Rot in apples and pears, and for controlling the expression of these diseases during the storage period, supplies of Pristine have been tight this season. Merivon offers similar efficacy when applied at the mid to high label rate. Excellent spray coverage is a necessity for these late season applications. Merivon has a 0 day PHI, and a 12 hour REI. The label states that up to four applications per season may be applied, with a single season limit of 22 oz./A. Always read and follow the label.

Apple Harvest Maturity Testing, continued from previous page

Apple Harvest Maturity Data Published this Week in the E-Harvest Alert

Please refer to Table 1 below.

Discussion Points for Ginger Gold as of 08/20/14:

- The decision on when to harvest any particular variety is based on more than just an assessment of physiological maturity. Market destination, the weather forecast, demands from the sales desk, keeping the picking crew busy are all factors that play into the harvest decision.
- Looking at this week's data for Ginger Gold, it appears that these Hudson Valley blocks are just about ready for harvest with long-term storage in mind. Actual eating quality for fall sales will be improved by allowing more time on the tree, if possible.

- Growers have started picking Ginger Gold in the Hudson Valley this week, but if you haven't started in the Hudson Valley, you are not running behind. I think customers at retail farm outlets would appreciate a little higher eating quality. Ground color changing through cream to yellow along with eating quality are the best indicators of Ginger Gold maturity.
- The block in Saratoga county needs more time on the tree, and the Clinton county block could use another week and a half.

Discussion Points for McIntosh as of 08/20/14

- Full scale testing of McIntosh will start next week, and will include ethylene measurement. The takeaway message from this weeks limited mac data is that these two blocks of Lindamac and Rubymac have hardly started the run-up to harvest. These two blocks are on track to start CA picking around the 5-7th of September, in line with Terence Robinson's earlier harvest estimates. We will have a better picture of the region next week.

County	Block	Variety	Strain	Ave. Starch Index	Average Pressure (lbs.)	Average Soluble Solids (brix)	Ethylene Gas (ppm)	Notes
Ulster	1	Ginger Gold	-	2.5	17.5	12.1%	-	yellow/green
Columbia	South	Ginger Gold	-	2.5	16.6	12.2%	-	yellow/green
Columbia	North	Ginger Gold	-	2.0	17.2	11.9%	-	yellow/green
Saratoga	1	Ginger Gold	-	1.8	18.6	12.1%	-	green/yellow
Clinton	1	Ginger Gold	-	1.1	19.0	10.9%	-	green
Ulster	1	McIntosh	Lindamac	2.7	17.8	11.5%	-	
Ulster	2	McIntosh	Rubymac	2.9	17.4	12.1%	-	

Table 1. Ginger Gold and McIntosh Maturity Evaluations

Ginger Gold Sampled On: 8-19-2014

McIntosh Sampled On: 8-20-2014

There is no substitute for sampling your own blocks, the results above represents an estimate of these particular orchards, and give a general picture of the ENYCHP region. "Your mileage may vary".

Backpack Sprayer Videos

Learn to use sprayers more efficiently, learn how to better use modified backpack sprayers to save time and money, and improve safety, by watching the 7 videos created by Rutgers Research Farm. This may be a helpful resource for small, organic and urban farmers, both beginning and experienced. To watch the videos, visit <u>http://snyderfarm.rutgers.edu/snyder-backpack-sprayers.html</u>. *Source: Cornell Small Farms Program*.



Mite Management Using Reduced Risk Pest Management Programs and Biological Control

In some blocks we have begun to see very mite populations in apple and stone fruit as dry conditions set in. Rust mite that are present are also causing 'silvering' of the leaves, yet the mite are beneficial in small numbers as a food source for predatory mite *T. pyri (Galendromus =Typhlodromus pyri), Amblyseius fallacis* and *Zetzellia mali.* These are our three primary mite predators found in Hudson Valley orchards. In years where temperatures exceed 80°F, mite



Phytoseid mites (*T.pyri*) feeding on ERM



Z. Mali feeding on ERM egg.

populations, especially European red mite (ERM), can build very quickly. In these situations the time it takes for a mite egg to hatch and mature to the adult stage can occur in about one weeks time (see Chart 1). Thus shortened interval of development, relative to higher average temperature, typically leads to multiple generations and high mite populations that can require season long management. With a greater number of generations during a season, comes the likelihood of increased resistance potential to the miticide management programs you use.

To maintain the usefulness of new reduced risk materials, managing the build-up of resistance in arthropod populations to insecticides and miticides is essential. Reducing the pressure on a population that selects for the survival of resistant individuals is cited as the primary cause of insecticide resistance. This is often the result of employing a single mode of action pesticide for multiple generations over many seasons. The generally accepted method of reducing selection pressure is to treat each generation of a pest with pesticides of different classes of chemistry. Additionally, the use of oil and non-chemical control strategies such as biological control will contribute to reducing the resistance potential in pest populations. The recent shift limiting the use of the organophosphate class of insecticides (OP's) in pome fruit production through legislation, GAP certified market constraints and public perception has prompted fruit producers to use reduced risk pest management tools to control the arthropod pest complex. These include the neonicotinoids such as Actara, Assail, Calypso and Provado; the insect growth regulators (IGR's) Intrepid and Esteem; the Oxadiazine Avaunt and the spinosyn Delegate. With the advent of reduced risk (RR) pest management programs come insecticides with generally lower levels of toxicity to predacious insects and mite. However, we have observed mite response (flare-ups) through the use of some RR insecticides, and consistently with the use of imidacloprid (Imidacloprid 2F & 4F; Provado, no longer regestered), and Delegate.

In previous studies it has been demonstrated that the phytoseiid mite, *G. (=Typhlodromus) pyri*, can be introduced and conserved to achieve biological mite control. The use of RR programs provide a more favorable environment to use biological control organisms to obtain phytophagous mite management while reducing the selection pressure placed on miticides alone. Many of the

Average Daily Temp. (°F)	Egg Stage (Days)	Hatch to Adult (Days)	Total Time (Days)	# Generations / Season June 1 - September 30 (122 days)
55.4	19	19	40	3.1
59.9	16	14	30	4.1
64.4	11	10	21	5.8
69.8	8	7	15	8.1
75.2	6	4	10	12.2
80.6	4	3	7	17.4

Chart 1. Environmental Effect on Mite Populations

Temperature effects on generational development time of ERM.

RR miticides are compatible with the preservation of biological control agents. From my perspective, the weak link in the biological control of mites is not solely the use of disruptive

the use of disruptive insecticides. The fungicide mancozeb (Manzate), belonging to the EBDC group, used to manage apple scab (AS) *Venturia inaequalis*. Each application

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Mite Management, continued from previous page

of Manzate made prior to bloom reduces T. pyri populations by roughly 30%, with post bloom applications imposing significantly greater reductions in numbers of phytoseiid predators. Given the importance of achieving AS control, the resistance of AS to sterile inhibitors in the Northeast, rising costs of new fungicides and reduced efficacy of Captan alone compared to Manzate (mancozeb) / Captan combinations, it is unlikely that most producers can avoid using mancozeb strictly to maintain biological control agents. Thus the requirement of AS management in scab susceptible apple varieties will limit optimum biological control measures in tree fruit if mancozeb is employed. However, in blocks of low AS susceptible varieties such as the use of scab resistant varieties developed by PRI, would reduce the need for mancozeb, reducing the negative impact on the phytoseiids.

In reviewing the many options for mite management one should be aware of the stage of development that is present in the field. If eggs are high in number, the use of materials with ovicidal efficacy should be selected (Esteem, Zeal, Apollo, Savey/Onager and to some extent Acramite); applications against newly emerging mite larvae (Savey, Zeal) or against motile mites (Envidor, Nexter, and AgriMek) should be made at lower than economic threshold levels when recommended by the label. Considering the impact insecticides and miticides can have on the phytoseiid populations may provide increased levels of phytoseiid presence and enhanced biological mite control. In the table below are pest management tools grouped according to their toxicity against the phytoseiid *Amblyseius fallacis*.

Below is a list of miticides with a brief description of their use, relative to their class or mode of action. At the bottom of the page is included an efficacy chart based on mite species. Keep in mind when choosing a miticide that many of the newer materials are contact materials requiring complete coverage to be effective. A number of agrichemical companies have added to their miticide label a minimum use rate of 100 gallons per acre to aid in improving coverage. For legal (and efficacious) applications to be made this requirement must be met.

Classes of Reduced Risk Miticides

Class 6: AgriMek

Proclaim (Emamectin benzoate) is similar to Agri-Mek (abamectin), with activity against the Lepidopteran complex, primarily the obliquebanded leafroller leafminer and mite. Residual activity is shorter than AgriMek with motile mite being the primary target stage. The use of a penetrant is required for mite management and complete coverage is required for mite control with higher sprayer volume recommended. Do not use sticker/binder type adjuvants as they may reduce translaminar movement of the active ingredient into the plant.

Class 10: Apollo, Savey/Onager

Zeal (extoxazole) – derived from diphenyloxazoline, this miticide acts as an ovicide and has molt inhibiting activity against immature mite. Zeal is a contact miticide with translaminar movement, performs much like Acramite against twospotted spider mites, but is more effective on European red mite. It acts slowly with results in mortality taking several days. Labeling requires a minimum gallonage of 100 GPA. Zeal is considered by the EPA to be a reduced risk miticide.

Class 20:

Kanemite (acequinocyl) in the quinoline class of insecticides, is as a mitochondrial electron transport inhibitor (METI), blocking cellular respiration. It should also be limited to one application/year. Kanemite provides quick knockdown and long residual control. labeling requires minimum gallonage of 100 GPA. Kanemite is considered by the EPA to be a reduced risk miticide.

Portal (fenpyroximate) a phenoxypyrazole class of insecticide, is as a mitochondrial electron transport inhibitor (METI), blocking cellular respiration. It should also be limited to one application/year. Portal acts as a contact miticide, requiring complete coverage. Labels state that the miticide rapidly stops feeding and egg laying with 3-7 day mortality observed in the field. Portal is considered by the EPA to be a reduced risk miticide.

Class 21:

Nexter (formerly known as Pyramite) (pyridaben) belongs to the pyridazinone class of miticides. Nexter's mode of action as a mitochondrial electron transport inhibitor (METI) blocks cellular respiration. Conservative resistance management would recommend the use of METI miticides (Nexter, Portal or Kanemite) to be limited to one application/year. Nexter is an effective miticide against European red mites with less activity against the two-spotted spider mite. Nexter is also effective against the apple rust mites. Boron prevents water-soluble bags (WSB) from dissolving. Care must be taken not to add soluble bag packets of Nexter to tank mixes with Boron and also to rinse tanks thoroughly after Boron applications prior to using WSB. Labeling requires a minimum gallonage of 100 GPA.

Class 23:

*Envidor (spirodiclofen) is from a tetronic acid which disrupts the endocrine system, affecting energy production. Envidor is an IGR- insecticide with slow activity compared to quick knock down activity, requiring early intervention. Envidor is not acutely toxic to adults

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and may affect some insect pests as well as mites. Envidor should not be used with oil. Labeling requires a minimum gallonage of 100 GPA.

Class 25:

Acramite (bifenazate)- is a hydrazine compound derived from carboxylic acid ester. Its mode of action is a GABA (gamma-aminobutryric acid) agonist in insects. Acramite has quick knockdown, is primarily used against the motile stages of mite, and has some ovicidal activity. Acramite is a specific, selective miticide, with good activity against spider mites but little to no rust mite activity. Labeling requires a minimum gallonage of 50 GPA. Acramite is considered by the EPA to be a reduced risk miticides.

	Slightly	Moderately	Highly
Non-Toxic	Toxic	Toxic	Toxic
Dipel (other l	Bts) Diazinon	Lorsban	Asana
Cyd-X	Guthion	Supracide	Baythroid
Virosoft	Imidan	Actara	Danitol
	Assail	Calypso	Decis
	Centaur	Clutch	Permethrin
	Confirm	Provado	Proaxis
	Esteem	Avaunt	Warrior
	Intrepid	Surround	Carzol
	Neem	Agri-Mek	Lannate
	Rimon	Envidor	Sevin
	Spintor/Entrust	FujiMite	Vydate
	Endosulfan	Zeal	(Kelthane
Late	Acramite		Nexter
Season -	Apollo		
Rescue	Kanemite		
	Savey		
	Vendex		
	Portal		
214 St 22 St			

Toxicity of Insecticides and Miticides to the Phytoseiid A. fallacis

Toxicity of Insecticides and Miticides to Predatory Phytoseiid Mite

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.

Envidor Miticide Labeled in NYS

The NYS DEC has announced that they have approved a FIFRA 24(c) Special Local Need label for Envidor 2SC miticide (Bayer CropScience, EPA Reg. No. 264-831) for use against mites, including European red mite and Twospotted spider mite, on pome fruit. A maximum of 1 application per season is allowed at a rate of 16–18 fl. oz./A, with a PHI of 7 days; this product is not for sale, distribution or use in Nassau and Suffolk Counties. As we are past the normal time during the season when rescue miticide applications should normally be required, since mite populations are normally subsiding now with decreasing foliar quality, it is not expected that this material will actually be needed at this time unless mites have been uncontrolled all season and have built up to numbers that are still damaging the trees. The normal recommended threshold in August is 15 motile forms per leaf.

Source: Scaffolds Fruit Journal, Volume 23 No. 22 August 18, 2014

Stay connected and up to date with our online resources

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.

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Fruit growers interested in receiving alerts via e-mail when they make new posts in these blogs can subscribe by entering their email 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 <u>http://blogs.cornell.edu/jentsch/</u>, and the URL for the Hudson Valley Plant Pathology website/blog is <u>http://blogs.cornell.edu/</u> <u>plantpathhvl/</u>. Both websites are still in the early stages of development, but then websites documenting the current state of knowledge are never really complete.

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 <u>http://enych.cce.cornell.edu/</u>. 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!



Cornell Fruit Pest Control Field Day - Sept. 3, 2014 in Geneva

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 <u>pjj5@cornell.edu</u> to make arrangements.

Small Acreage Organic Orchard Success

September 17, 2014 from 4-7 pm Hudson Valley Lab, 3357 US Hwy 9W, Highland, NY 12528

Join Cornell entomologist Peter Jentsch and Cornell Cooperative Extension educators to learn the basics of establishing a successful high density organic orchard cropping system. We will tour the demonstration orchard to learn about how to lay out and install an intensive organic planting system and see (and maybe try!) some of the new cultivars bred for intensive organic production, hardiness, disease resistance, cider production and fresh eating flavor. The discussion will also cover how to integrate a small orchard into your current farm to diversify your market or CSA mix; organic apple pest and disease challenges and controls; and cover some of the different challenges involved in transitioning an established orchard from conventional to organic management. There will be time at the end of the session for your organic orchard questions!

This event is FREE, but please register with Donna Clark at 845-691-7151 or dic16@cornell.edu.

For more information contact Emily Cook at 845-943-9810 or ekc68@cornell.edu.

This program is sponsored by NOFA-NY through the NYSDAM, Risk Management and Crop Insurance Education Targeted States Program





Every effort has been made to provide correct, complete and up-to-date pesticide recommendations. Nevertheless, changes in pesticide regulations occur constantly, and human errors are possible. These recommendations are not a substitute for pesticide labelling. Please read the label before applying any pesticide. This material is based upon work supported by Smith Lever funds from the Cooperative State Research, Education, and Extension.

Diversity and Inclusion are a part of Cornell University's heritage. We are a recognized employer and educator valuing AA/EEO, Protected Veterans, and Individuals with Disabilities.