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Update on Pest Management
and Crop Development

F R U I T J O U R N A L

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BUGS EYED

COUNTING THE DAYS

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❖❖ Many orchards have now progressed to the stage where some insecticidal protection is typically needed, and this week's warmer-than-normal predictions could very well complete the transformation from a slow start to a healthy trot. Once again, we would point out the opportunity for testing out the predictive accuracy of our historical records combined with the best biological projections we can offer, by checking out the NEWA Apple Insect Models website.

During the last several years, we have been working to improve this web-based, "Real-Time" Apple IPM Decision Support System, which can deliver relevant, current information on weather data and pest populations to facilitate grower pest management decisions throughout the growing season. This system tracks seasonal development of fruit bud stage, key insect pests, and diseases using Degree Day and Infection Risk models. The models indicate pest status, pest management advice and sampling options, and are linked to an interactive system that helps growers choose appropriate materials when pesticide use is recommended. (So far, the apple phenology predictions have been pretty accurate.)

Insect pest developmental stages are calculated from Degree Day (DD) accumulations at IPM's NEWA and National Weather Service

airport weather stations throughout the state, as well as a large number of sites in MA, VT, and NJ, plus several in CT, RI, PA, and DE. The insect pests addressed by this website are: apple maggot, oriental fruit moth, codling moth, plum curculio, obliquebanded leafroller, and spotted tentiform leafminer. Disease predictions are available for apple scab and fire blight, and summer diseases (sooty blotch and flyspeck).

Access to the Apple Insects (and Diseases) models is through the "Pest Forecasts" list or the "Apples" link on the NEWA homepage (<http://newa.cornell.edu>). From the Apples homepage, clicking on the link that says "Apple Insect Phenology Models and IPM Forecasts" brings up a state map showing the available weather stations, plus pull-down menus on one side. After the user selects a weather

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station, pest of interest, and the desired end date for weather data accumulation, pest DD models and historical records are used to calculate: Tree Phenological Stage, Pest Stage(s), Pest Status, and Pest Management Information, all of which appears on a "Results" page. The phenological stage can be adjusted according to field observations by selecting from a pull-down menu; this will generally change some of text provided in the advice boxes. Hyperlinks on this page can take the user to various other online resources, such as color photos of the bud development stages, NYS IPM Fact Sheets of the pests in question, and when appropriate, sampling charts for use in conducting field samples of specific pest life stages (e.g., eggs, larvae, mines). When a pesticide spray is recommended, a "Pesticide Information" link in the "Pest Mangement" box takes the user to the Pest Management Education Program's (PMEP) Tree Fruit IPM home page, where a pesticide decision filter helps users pick an appropriate material to use, based on anticipated pest severity and program type. We are also working with a colleague at Penn State to incorporate a least-cost calculator function, to provide users with an estimate of how much they'll have to pay for given pesticide choice.

A pesticide search returns a series of profiles of all the NY-registered products fitting the specified pest species and efficacy rating. The profile gives the common and trade names, labeled use rate, re-entry and pre-harvest intervals, and EPA registration number of each product. Also included are some general remarks on the range of product efficacy, and any known effects on beneficial species. A "Details" link in each profile takes the user to a more extensive list of information, including notes on the active ingredient (including its mode of action classification), an overview of recommended use periods, and a link to a scanned copy of the NYS DEC-approved product label, which can be read or printed out.

All of the information presented is already available online at various other Cornell fruit sites, but this website brings these resources together in

one place that is more convenient and efficient to access. Predictions provided by the website can be refined and adjusted to reflect current insect activity by user-entered events obtained through field monitoring (such as pest biofix; i.e., the first sustained flight of a pest species). The pesticide selection filter uses Cornell University product efficacy ratings and the type of management program selected by the user (i.e., conventional, reduced-risk, non-organophosphate, organic).

The website uses DD information based on either historical records or user-entered biofix data, and includes: the start, peak, or progress of the oviposition or egg hatch period (for CM, OBLR, OFM, and STLM); the start, peak or end of the pest's 1st, 2nd, etc., flight (for AM, CM, OBLR, OFM, and STLM); the first occurrence of adult or larval feeding, foliar or fruit damage, or mines (for OBLR and STLM).

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We are continuing our efforts to refine and improve the accuracy of the website's pest predictions, and expand the range of sites from which weather data is able to be collected. During this process, we encourage everyone in the apple industry to check this website for themselves throughout the growing season, to see how well it forecasts pest events in specific areas of the state. We appreciate hearing of any anomalies or irregular predictions generated by using the local data to chart pest or disease development in your growing area, and hope to end up with a pest management tool that is useful and accurate for advising apple growers about what's going on in their orchards in Real-Time.



NEW BMSB SURVEY

❖❖ Got stink bugs? We need your help! We're surveying growers to assess the impact of BMSB on crops and gather information that will help us defeat this pest. Receive a free Guide to Stink Bugs* if you complete the 10-minute BMSB survey (https://cornell.qualtrics.com/SE/?SID=SV_5ssnjXLN-hvp6v1H). Your participation will help us to help you Stop BMSB! The survey will be available until June 30th.

—The Outreach Team for "StopBMSB," a project focused on the biology, ecology, and management of the brown marmorated stink bug. For more info: <http://www.stopbmsb.org>

[* see it at https://pubs.ext.vt.edu/444/444-356/444-356_pdf.pdf]



WHAT'S
UP,
DOC?

CONFUSION CONTROL
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[Ed. Note: We are reprinting some excerpted advice on mating disruption of internal-feeding Lepidoptera contributed a couple of years ago by our Pennsylvania colleagues, with a few updates, to help in your preparations for managing these pests, which are already beginning to show up.]

❖❖ For growers planning to use mating disruption as part of their annual codling moth (CM) management program, you should have already purchased (if not already placed) your products for this year. There are a number of products on the market that affect both codling moth and the oriental fruit moth (OFM) simultaneously, in addition to a number of products that affect just a single species. Briefly, if your target is both CM and OFM, there are a number of products that affect both pests – CheckMate CM/OFM Duel, CheckMate CM/OFM Puffer, and Isomate CM/OFM TT. Please follow the label for each product for dispenser density and placement within the tree (i.e., for CM, place the dispensers in the top 20 percent of the tree canopy). Even though OFM has already started to fly, the above products should be in place before CM biofix.

For those growers who have used a mating disruption product for CM in previous years, it is likely that you will need some supplemental insecticides, especially for the first generation (see below for a listing of product choices). In addition, it is very important that you place pheromone traps in trees to monitor the success of your mating disruption program. We have conducted a number of studies

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with a newer lure from Trécé Inc. to monitor CM in mating disruption blocks, called a CM-DA Combo. It contains both the sex pheromone – which is released by the females to attract the males – and a kairomone (i.e., a plant-derived chemical volatile [i.e., pear ester]) that attracts both male and female moths. We recommend at least one trap per 5 acres with no less than one trap per 10 acres to determine the success of your mating disruption program. There are also powerful 10X lures available for monitoring CM male adults in mating disruption blocks. These products are available from either Suterra LLC, Trécé Inc, or other distributors.

If your plan is to use just conventional insecticides for CM control this year, your choice of products is quite varied, depending on the stage of CM you wish to target. Products that possess ovicidal activity (i.e., affecting the eggs) should be applied as follows: Intrepid – apply within 150–175 DD after biofix and repeat 14 days later. Insecticides that target the hatching larvae (i.e., 230–250 DD after biofix) are as follows: diamides (e.g., Altacor, Belt, Voliam Flexi), organophosphate (Imidan), various neonicotinoids (e.g., Assail, Calypso), Avaunt, and Delegate. Please refer to the Tree Fruit Guidelines for rates on these products. It is important to implement good resistance management practices for all of the above products; that is, use only one of the above active ingredients within the same generation of CM; do not use the same active ingredients across two consecutive generations).

Another option that growers can consider for CM control is a codling moth granulosis virus (CpGV) (e.g., Carpovirusine, Cyd-X). We have used these products very successfully over the past few years in combination with mating disruption to reduce the severity of this pest. CpGV products must be ingested by the hatching larvae. The larvae will continue to feed for a couple of days before the virus kills them. CpGV products are fairly short residual (i.e., 5–7 days); thus, they need to be reapplied more often than conventional insecticides. Growers will likely need 4–5 applications per generation depending the length of the

egg hatch period, the severity of the populations, and weather conditions. [Note: Madex HP, the new Certis product containing a CpGV that is active on both CM and OFM, is not yet labeled in NYS.]

Even if you are just using insecticides or CpGV for CM control this year, don't forget to use pheromone traps to monitor adult populations in your orchards. Monitoring traps in insecticide-only treated orchards require the use of a 1X lure. The traps are very important for setting biofix, determining the seasonality of adult flight, and they can estimate the relative adult population density in the immediate area. We don't yet have any reliable moth capture thresholds for determining whether to spray or not spray in insecticide-only treated orchards. [Note: However, we have recognized the utility in relying on the provisional "ballpark" values of 5 CM/trap and 10 OFM/trap - AMA.] ❖❖

PEST FOCUS

Geneva: **Oriental fruit moth** 1st catch 5/7. **Spotted tentiform leafminer** 1st catch 5/8.

Highland:
Lesser appleworm and **brown marmorated stinkbug** 1st catch today, 5/12.

PHENOLOGIES

Geneva:	<u>5/19, predicted</u>
Apple (McIntosh): bloom	petal fall
Apple (Red Delicious, Empire): pink	bloom (Red Del.), petal fall (Empire)
Sweet cherry (early): 75% petal fall	fruit set
Sweet cherry (late): bloom	
Peach: bloom	fruit set
Plum (early): 10% petal fall	fruit set
Plum (late): bloom	
Highland:	
Apple(McIntosh, Red Delicious , Ginger Gold, Golden Delicious): bloom	
Pear (Bartlett, Bosc): bloom	
Apricot (early): fruit set, shucks off	
Apricot (late): fruit set, shucks on	
Cherry (early): petal fall	
Cherry (late): bloom	
Peach (early): petal fall	
Peach late): early petal fall	
Plum (Stanley): petal fall	



INSECT TRAP CATCHES						
(Number/Trap/Day)						
Geneva, NY				Highland, NY		
	<u>5/5</u>	<u>5/8</u>	<u>5/12</u>		<u>5/5</u>	<u>5/12</u>
Green fruitworm	0.1	0.0	0.1	Green fruitworm	0.1	0.0
Redbanded leafroller	3.4	2.5	6.5	Redbanded leafroller	18.9	15.8
Spotted tentiform leafminer	0.0	3.7*	26	Spotted tentiform leafminer	12.3	30.0
Oriental fruit moth	0.0	0.2*	15.4	Oriental fruit moth	1.1	12.6
				Codling moth	–	0.0
				Lesser appleworm	–	1.0
* first catch						

UPCOMING PEST EVENTS		
	<u>43°F</u>	<u>50°F</u>
Current DD accumulations (Geneva 1/1–5/12/14):	321	164
(Geneva 1/1–5/12/2013):	371	200
(Geneva "Normal"):	426	218
(Geneva 1/1–5/19/14, predicted):	457	253
(Highland 1/1–5/12/14):	461	234
<u>Coming Events:</u>	<u>Ranges (Normal ±StDev):</u>	
Green fruitworm flight subsides	255–457	117–243
Spotted tentiform leafminer 1st flight peak	265–401	123–207
Oriental fruit moth 1st flight peak	338–544	170–290
Redbanded leafroller 1st flight peak	228–366	103–187
Comstock mealybug crawlers in pear buds	215–441	80–254
European red mite egg hatch	231–337	100–168
Pear psylla 1st egg hatch	174–328	60–166
Rose leafhopper nymphs on multiflora rose	239–397	96–198
American plum borer 1st catch	392–494	195–265
Codling moth 1st catch	398–572	200–310
Lesser appleworm 1st cvtch	263–561	121–303
Mullein plant bug 1st hatch	331–443	163–229
McIntosh at bloom	346–418	172–218

NOTE: 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.

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