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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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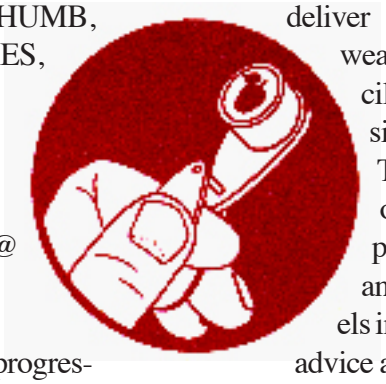
INSECTS

## EARLY GAZE

### RULES OF THUMB, BLACK BOXES, AND BUNIONS


(Art Agnello and Harvey Reissig, Entomology, Geneva; ama4@cornell.edu & whr1@cornell.edu)

❖❖ This year's strange spring progression has been putting to the test all possible methods available to us for predicting just what's happening with the trees and the pests that threaten them. Naturally, historical calendar dates have had no relation this year to tree and bud development, and by now we've pretty much thrown out some of the tried-and-true phenological associations we normally use, like tight cluster corresponding with bloom of forsythia, or ERM egg hatch. Many orchards have progressed to stages where they would typically be needing some insecticidal protection, but until recently, temperatures have been so cold that no insect in its right mind would be out there causing trouble. On the other hand, this week's warmer-than-normal predictions could very well confirm Sieg Lienk's old observation that plum curculios start moving into the trees when you see the first kid out on a skateboard.

Since many of us are spending time flipping coins and comparing notes at the coffee shop anyway, this season offers a good opportunity to test 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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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 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.

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 university 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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scaffolds
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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. ❖❖

## PEST FOCUS

Geneva: **Oriental fruit moth** and **spotted tentiform leafminer** 1st catch today.

Highland:
1st **fruittree leafroller** trap catch today.

CHEM NEWS

## A BROAD BRUSH

VOLIAM FLEXI LABELED
(Art Agnello, Entomology, Geneva; ama4@cornell.edu)

❖❖ A new pre-mix insecticide, Voliam Flexi WDG (Syngenta, EPA Reg. No. 100-1319), has been registered by the DEC for use against a range of pests in pome and stone fruits in NYS. This product is a mixture of thiamethoxam, the a.i. of Actara, and chlorantraniliprole, the a.i. found in Altacor and Voliam Xpress. Its label lists lepidopteran pests such as codling moth and oriental fruit moth, obliquebanded leafroller, leafminers and green fruitworm; plum curculio; European apple sawfly; leafhoppers and aphids (except woolly apple aphid); pear psylla; plus (in stone fruits only) cherry fruit fly, stink bugs, tarnished plant bug and thrips. It has a 12-hr REI, and a PHI of 35 days in pome fruits, 14 days in stone fruits. The label contains NY-specific language identifying it as a restricted-use product, and prohibitions against its use on Long Island, or within 100 ft of a water body, or as an aerial application. Additionally, due to NY restrictions on thiamethoxam-containing products, no more than a total of 14 oz/acre of formulated product may be applied per season; this use corresponds to the 0.172 lb a.i./acre of thiamethoxam allowed, whether applied as Voliam Flexi, Actara, or Endigo.

This product is highly toxic to bees exposed to direct treatment on blooming crops or weeds; it may not be applied between early pink and petal fall in apples, between green cluster and petal fall in pears, and between swollen bud and petal fall in stone fruit. For best effectiveness and insecticide resistance management, use of pre-mixes such as Voliam Flexi should be reserved for situations when multiple pest species are present and appropriately matched to the combination of active ingredients and modes of action contained in the product. ❖❖

HORTICULTURE

## FULL METAL JACKET

### THE BENEFITS OF BORON AND ZINC TO OVERCOME THE EFFECTS OF EARLY SPRING FROSTS

(Deb Breth, CCE-LOFT, Albion; dib1@cornell.edu)

❖❖ With the freezing weather (frosts) events that have occurred over the last two weeks, we recommend prebloom applications of the micronutrients zinc and boron to strengthen early bud, leaf, and shoot development in the Western NY fruit region. The benefits of a prebloom boron foliar application are: (1) the spray provides boron to the flower during the critical period of development of the ovules and anthers; (2) it improves pollen germination and pollen tube growth; (3) it improves early season leaf and shoot growth, and; (4) is also beneficial in overcoming the effects of winter injury or early spring frosts as occurred this year. A prebloom application of zinc can also help to strengthen early bud, leaf, and shoot development. One of the most critical periods during which a zinc shortage may seriously impair tree performance is between budbreak and fruit set. A zinc shortage at this time often results in poor growth of the leaves and new shoots, as well as abnormal development of pollen tubes, ultimately resulting in poor seed set. Mike Fargione at the Hudson Valley Lab recently stated that "Growers might consider applying Dr. Warren Stiles' spring tonic of 3 lbs of urea (feed-grade) plus 1 lb Solubor plus 1 qt zinc chelate EDTA per 100 gal. Application of this tank mix to apples at tight cluster to pink has been shown to strengthen buds and could help in a frost year like this. A few years back, some growers had trouble with zinc products that were not fully chelated, and fruit finish problems resulted. You might also consider cutting the zinc rate to 1 qt per acre to reduce the chance of russetting. Be sure you have the right zinc product and read the label. We are always reluctant to suggest adding another level of complexity to the spray tank because complex mixes sometimes cause phyto or fruit finish problems. However, this may be a year where it is worth the gamble. Try to limit the number of materials by planning sprays carefully. ❖❖

## PHENOLOGIES

| Geneva: | 4/23 Predicted: |
|---|---|
| Apple (McIntosh): pink | bloom |
| Apple (Red Delicious): pink | king bloom |
| Apple (Empire): pink | bloom |
| Pear (Bartlett): early bloom | bloom — petal fall |
| Peach: bloom | petal fall |
| Sweet cherry: bloom | petal fall — fruit set |
| Plum: 50% petal fall | petal fall |

Highland:
Apple(Golden Delicious): early bloom
Apple(Ginger Gold, McIntosh, Red Delicious): full bloom
Pear (Bartlett): full bloom
Pear (Bosc): early petal fall
Apricot (early): petal fall, shucks on
Sweet cherry: full bloom
Peach (early, late): petal fall, shucks on
Plum (Stanley): full bloom

## UPCOMING PEST EVENTS

| | 43°F | 50°F |
|---|---|---|
| Current DD accumulations (Geneva 1/1–4/16/12): | 330 | 167 |
| (Geneva 1/1–4/16/2011): | 117 | 44 |
| (Geneva "Normal"): | 145 | 60 |
| (Geneva 1/1–4/23 predicted): | 404 | 208 |
| (Highland 1/1–4/16/12): | 412 | 202 |
| (Highland 1/1–4/16/11): | 150 | 59 |

| Coming Events: | Ranges (Normal ±StDev): | |
|---|---|---|
| Green fruitworm flight subsides | 247–451 | 111–239 |
| Spotted tentiform leafminer 1st oviposition | 143–273 | 58–130 |
| European red mite egg hatch complete | 368–470 | 182–280 |
| Oriental fruit moth 1st flight peak | 352–550 | 178–294 |
| Comstock mealybug crawlers in pear buds | 215–441 | 80–254 |
| Redbanded leafroller 1st flight peak | 231–363 | 105–185 |
| Rose leafhopper nymphs on multiflora rose | 239–397 | 96–198 |
| Spotted tentiform leafminer 1st flight peak | 266–402 | 123–207 |
| Spotted tentiform leafminer sap-feeders present | 343–601 | 165–317 |
| Lesser appleworm 1st catch | 263–567 | 120–306 |
| American plum borer 1st catch | 391–493 | 194–266 |
| Mullein bug 1st hatch | 331–443 | 163–229 |
| McIntosh bloom | 348–420 | 171–219 |

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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