# scaffolds

Update on Pest Management and Crop Development

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

August 10, 2009 VOLUME 18, No. 21 Geneva, NY


INSECTS

## FINAL APPROACH

ORCHARD RADAR DIGEST (Art Agnello, Entomology, Geneva)

MODEL BUILDING

**Codling Moth** (Treatment period for the 2nd generation starts at 1260 DD base 50°F after biofix):

❖❖ Geneva Predictions:

**Dogwood borer (DWB)**

Peak egg hatch roughly: August 9.

**Codling Moth**

Codling Moth development as of August 10: 2nd generation adult emergence at 50% and 2nd generation egg hatch at 14%.

2nd generation 7% CM egg hatch: August 6 (= target date for first spray where multiple sprays needed to control 2nd generation CM).

2nd generation 30% CM egg hatch: August 15 (= target date where one spray needed to control 2nd generation codling moth).

**Spotted Tentiform Leafminer**

Third optimized sample date for 2nd generation STLM sapfeeding mines: August 4.

**White Apple Leafhopper (WAL)**

2nd generation WAL found on apple foliage: August 13.

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| Location | Biofix | DD (as of 8/9) |
|---|---|---|
| Albion | 5/15 | 1237 (as of 8/8) |
| Clifton Park | 5/21 | 1289 |
| Geneva | 5/18 | 1282 |
| Lafayette | 5/21 | 1150 (as of 8/8) |
| Lyndonville | 5/27 | 1055 |
| Sodus (inland) | 5/14 | 1193 |
| Walworth | 5/15 | 1222 |
| Waterport | 5/27 | 1231 |
| Williamson | 5/14 | 1230 |

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[NOTE: Consult our mini expert system for arthropod pest management, the
**NEWA Apple Insect Models Degree Day Calculator**:
http://newa.nrcc.cornell.edu/newaModel/apple_pest
Find accumulated degree days for the current date with the
**Degree Day Calculator**:
http://newa.nrcc.cornell.edu/newaLister/dday
Powered by the NYS IPM Program's NEWA weather data and ACIS, Northeast Regional Climate Center] ❖❖

CHEM NEWS

## A NEW TOOL

ALTACOR GETS NYS LABEL

❖❖ We have been notified that last week the NYS DEC approved a NY label for Altacor 35WDG insecticide (DuPont Crop Protection, EPA Reg. No. 352-730), to control a range of insect pests in pome and stone fruits, including codling moth, oriental fruit moth, and oblique-banded leafroller. Other species listed on the label include green fruitworm, spotted tentiform leafminer, apple sawfly, European corn borer, and suppression of apple maggot, cherry fruit fly, white apple leafhopper, and plum curculio.

The active ingredient, Rynaxypyr (chlorantraniliprole), belongs to a new chemical class not currently represented in insecticides already available, the anthranilic diamides. Its primary mode of action is through ingestion, after which it activates the insect's ryanodine receptors, which stimulates release of calcium from muscle tissues, causing paralysis and death. It has low toxicity to bees, beneficial mites, birds, fish and mammals, although because of the DEC's concern that it may affect aquatic organisms, it may not be applied within 100 feet of a water body (lake, pond, river, stream, wetland, or drainage ditch). It is therefore registered as a Restricted Use pesticide in NYS, and may not be sold, distributed, or used in Nassau, Suffolk, Kings, and Queens Counties. The Supplemental Label detailing all the NY restrictions must be in the possession of the user at the time of pesticide application.

This product has been extensively tested in fruit production regions around the world, and exhibits high efficacy against fruit-feeding Lepidoptera, with a typical residual protection period of 14–21 days. Its recommended application timing is against hatching larvae. It has a 4 hr Restricted-Entry Interval and a Pre-Harvest Interval of 14 days on pome fruits, 10 days on stone fruits.❖❖

scaffolds
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Dept. of Entomology
NYSAES, Barton Laboratory
Geneva, NY 14456-1371
Phone: 315-787-2341 FAX: 315-787-2326
E-mail: ama4@cornell.edu

Editors: A. Agnello, D. Kain

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http://www.nysaes.cornell.edu/ent/scaffolds/

DISEASES

## DOUBLE WHAMMY

RESISTANCE MANAGEMENT FOR BROWN ROT ON PEACHES AND PLUMS

(Dave Rosenberger, Plant Pathology, Highland)

❖❖ Stone fruit growers who have various stone fruit crops or cultivars that ripen throughout late summer need to be especially cautious about fungicide resistance management when they think about brown rot control. Almost everyone now recognizes that repeated use of the same fungicide or repeated use of different fungicides with the same mode of action will speed selection for resistance. Less obvious, however, is the fact that brown rot fungicides also should be rotated or alternated in orchards where multiple stone fruit cultivars ripen over a long time period, even if no single cultivar will receive more than two preharvest sprays. In smaller blocks of peaches and plums, brown rot spores from early maturing cultivars will be blown to later maturing cultivars. Thus, even if the later cultivars have not yet been sprayed with a DMI fungicide, the brown rot strains available to cause disease in that block may already have been exposed to DMI fungicides applied in earlier maturing cultivars.

We know that resistance management strategies for brown rot are critical because DMI-resistant brown rot is now widespread in peach orchards in Georgia and South Carolina. If DMI-resistant brown rot becomes established in New York, then growers will be forced to depend mostly on strobilurin fungicides, a strategy that will further speed resistance to the strobilurin fungicide group.

The DMI fungicides labeled on stone fruits and effective for preharvest brown rot control include propiconazole (Orbit, Propimax), fenbuconazole (Indar), and tebuconazole (Elite). Note that Elite is not registered on apricots or plums. Plums were also omitted on the original Indar label, but the labels for Indar that were recently approved for use in NY now include plums. New York growers using Indar 75WSP on prunes and plums will need to have the supplemental label in hand. If instead they use Indar 2F, they will need to have the Indar 2F Section 3 label in hand. On smooth-skinned fruits, Indar generally performs better when it is applied with a non-ionic spreader-sticker.

Effective non-DMI fungicides for controlling brown rot during the preharvest period include Abound (azoxystrobin) and Pristine (pyraclostrobin + boscalid). However, these alternatives have significant limitations. Abound is extremely phytotoxic to McIntosh, Gala, and some other apple cultivars, so this fungicide should NEVER be used in locations where spray drift might damage adjacent apple crops. The Abound label also states “DO NOT use spray equipment which has been previously used to apply Abound to spray apple trees” because Abound residues left in sprayers can destroy an apple crop. (Quadris products labeled for vegetable crops contain the same active ingredient and the same warnings about potential damage to apples!)

Pristine is an excellent rotation partner for DMI fungicides on stone fruits because it is comprised of two products unrelated to DMIs, and both of those components have activity against brown rot. Unfortunately, Pristine is not available in some markets this year due to product shortages, and the price has increased significantly in some places where it is available. If growers cannot access or afford Pristine for rotations with DMI fungicides on peaches, then an alternative would be to use Adament fungicide.

Adament is a package mix of tebuconazole (Elite) and trifloxystrobin (Gem, or Flint on apples). As with Elite, Adament is not registered on apricots or plums/prunes. However, research by

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Dr. Norm LaLancette in New Jersey has shown that Adament is a powerful brown rot fungicide for peaches, especially if it is used at the higher end of the labeled rates. Using Adament to alternate with DMI fungicides such as Indar, Orbit, and Elite is not quite as desirable for resistance management as alternating with Pristine because Adament contains the DMI fungicide Elite. However, Elite is among the "strongest" of the DMI fungicides for brown rot and is considered much stronger than Orbit in terms of suppressing mildly resistant strains of brown rot.

Resistance management strategies for brown rot on plums and prunes is complicated by the fact Adament is not labeled on these crops. If DMI fungicides cannot be rotated with Pristine or Abound on plums, then the best alternatives would be to use one of the labeled DMI fungicides in combination with either Captan or Topsin M. Topsin M may be totally ineffective due to fungicide resistance in older orchards where Topsin M was previously used for brown rot control or in young orchards planted adjacent to these blocks. However, brown rot resistance to Topsin M may not be a problem in younger orchards where this product was never used. Because presence of resistance to Topsin M is unpredictable even in younger orchards, Topsin M should never be used alone as a treatment for brown rot. Nevertheless, it might be useful as a mixing partner for DMI fungicides in some plum/prune orchards where the only alternative for rotating fungicides would be Captan. Captan has moderate activity against brown rot during the preharvest period, but it is much less effective than the other brown rot fungicides.

When spraying for brown rot, remember to read product labels for specific restrictions for each product. ❖❖

## PASSED BALL

CONTROLLING LATE-SEASON APPLE SCAB (Dave Rosenberger, Plant Pathology, Highland)

❖❖ Scab problems in 2009: Where primary scab was not well controlled last spring, apple scab has remained active throughout the summer, thanks to our cool wet weather and thanks, at least to some degree, to DMI-resistant apple scab. When the DMI-fungicides (Rubigan, Rally, Procure) were working properly, applications at pink, petal fall and first cover almost guaranteed that scab would not be a problem during summer. The DMI fungicides offered a combination of localized systemic movement (movement into and within leaf tissue) and post-infection and anti-sporulant activities that allowed them to work as "backstop" fungicides. As backstops, they ensured that any scab infections that might be missed in one spray would be arrested with the next spray. Dodine and the benzimidazole fungicides did the same thing in earlier eras.

Now that apple scab with resistance to the DMI fungicides is becoming prevalent, many apple growers are being forced to control apple scab without a "backstop" fungicide for the first time since the mid-1960s. As a result, minor scab control failures during April and May are increasingly turning into expensive, season-long battles to keep scab off of fruit.

The strobilurin fungicides Flint and Sovran have received increased use for scab control where DMIs are no longer effective and/or where scab problems persist into summer. Flint and Sovran, when used in combination with Captan, are very effective against scab because they arrest sporulation and, being absorbed into leaves, they are also more rainfast than Captan used alone. However, they lack the post-infection and pre-symptom activity of the DMI fungicides, and they therefore cannot stop developing scab epidemics the way that the DMIs

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did. Furthermore, label restrictions allow for only four applications per year of any combination of Flint, Sovran, and Pristine.

The future of the strobilurin fungicides for scab control has become questionable because stroby-resistant strains of apple scab have now been detected in numerous Michigan orchards and in several western NY orchards as well. These resistant strains contain a single-site mutation that makes them totally resistant to the stroby fungicides, just as Benlate-resistant strains of scab were totally uncontrollable with benzimidazoles after resistance occurred. The stability of resistance to the stroby fungicides from year to year requires more research, but it seems quite likely that orchards with stroby-resistant scab will no longer get any scab control from applications of Flint, Sovran or Pristine.

Impending problems with stroby-resistant apple scab would be bad enough, but the gravity of the situation is compounded by the fact that several new apple scab fungicides in the registration queue seem to work especially well when used in combinations with Flint. If stroby-resistant scab becomes widespread before these new products are registered (probably 2011–2012), then we may be unable to maximize the usefulness of these new compounds. Thus, growers have a great incentive to minimize selection pressure for stroby-resistant apple scab. Using appropriate resistance management strategies will be especially important through the remainder of this year in orchards where scab is still active.

Dangers from late-season scab include the potential for developing pinpoint scab or storage scab on fruit and the likelihood that numerous scab infections will develop on the undersides of leaves during September as fungicide residues are depleted. The lesions on the undersides of leaves develop because older leaves lose their natural age-related resistance to scab during late summer. Under-leaf scab can provide inoculum for infecting fruit just prior to harvest and also vastly increases the ascospore potential for next spring. Under-leaf scab can be prevented or minimized by continuing fungicide coverage into early September.

Pinpoint scab on fruit is likely to develop only in orchards where there is abundant scab inoculum and where a wetting period of more than 24 to 48 hours occurs after the fungicide residues on fruit are fully depleted during the preharvest interval. Scab infections that occur in the field cannot be eliminated with postharvest fungicide drenches, even if the lesions are not yet visible at the time of harvest.

To control late-season scab, consider the following:

1. Using Flint, Sovran, or Pristine in summer/fall sprays can be a good strategy for controlling late-season scab, but these products should always be used with a contact fungicide such as Captan or Ziram. In the past, we have suggested that Pristine could be used alone because it is a premix of a strobilurin fungicide with another product called boscalid. However, boscalid is not active against apple scab, so using Pristine alone to control late-season scab will create selection pressure for stroby-resistant scab.

2. In scabby orchards, use increased rates of Captan or Ziram, even if the products are being mixed with Flint, Sovran or Pristine. For many years, the standard recommendation for summer sprays has been Topsin M at 8–16 oz/A (for summer diseases) plus either Captan-50 at 3 lb/A or Captan-80 at 2 lb/A or an equivalent rate of Captec. Those low rates of Captan worked well in northeastern orchards when scab was absent or at low levels during summer. That was usually the case when we had backstop fungicides to shut down scab in late May. Where scab is still active in August, higher rates of Captan (e.g., Captan-50 at 5–6 lb/A or Captan-80 at 3–4 lb/A) may be needed both to provide longer residual protection between sprays and to ensure

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that, where they are used, the strobilurin fungicides are not subjected to high selection pressure for fungicide-resistant scab. The full label rates of Captan may be needed on large trees with active scab.

3. Growers using high rates of Captan throughout the summer may find that they will approach the maximum rate/A/year that is allowed on the Captan labels before the end of the spray season (64 lb/A/year for Captan-50; 40 lb/A/year for Captan-80). This is a common problem in the southeastern US, where growers have traditionally needed high rates of Captan throughout summer to control bitter rot, flyspeck, and sooty blotch. Their solution has been to use Ziram/Captan mixtures with both products at half of full label rates.

4. Consider using a good spreader-sticker in late-season sprays. We lack data on the effectiveness of spray adjuvants and therefore cannot make any recommendations for specific products. We know that "sticker" type adjuvants can actually REDUCE fungicide effectiveness when used early in the season, because the adjuvants prevent fungicides from redistributing to newly developed leaves. However, adjuvants that slow fungicide wash-off during August and September should enhance late-season disease control, so long as sprays are applied under conditions that allow for good spray coverage. ❖❖

## PEST FOCUS

Geneva:
**Oriental fruit moth** 3rd flight beginning.

## FIELD DAYS

EVENT REMINDERS

*WAYNE CO. FRUITGROWER TOUR
Wednesday, August 12, from 11:00 am
Registration and 1st stop at KC Bailey Orchards, Williamson

Sponsored by agr.assistance, this large, informative and entertaining tour is in its 11th year, and will feature presentations on new apple plantings, pesticide storage regs, GAP programs, PGR and nutritional developments, equipment demos, and updates on fire blight, weed control, mating disruption, plus much more. Door prizes, lunch, high (and low) humor, BBQ/clambake dinner with a live band, growers and industry representatives from NY and surrounding states — tough to beat on a midsummer day.
Contact Lindsay LaMora (585-734-8904; lindsaylamora@agrassistance.com) for RSVP and tour information.

*N.Y. FRUIT PEST CONTROL FIELD DAYS
Wednesday Sept. 9 (Barton Lab, NYSAES, Geneva) 8:30 am
Thursday Sept. 10 (Hudson Valley Lab, Highland) 8:30 am

After registration in the respective labs' lobbies, the tours 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 either event.

GENERAL INFO

## INSECT TRAP CATCHES (Number/Trap/Day)

### Geneva, NY

| | 8/3 | 8/6 | 8/10 |
|---|---|---|---|
| Redbanded leafroller | 1.8 | 0.5 | 1.0 |
| Spotted tentiform leafminer | 3.0 | 9.0 | 2.5 |
| Oriental fruit moth | 0.0 | 0.2 | 0.8 |
| Lesser appleworm | 0.0 | 0.0 | 0.1 |
| Codling moth | 0.0 | 0.3 | 0.9 |
| San Jose scale | 1713 | 108 | 688 |
| American plum borer | 0.0 | 0.7 | 0.3 |
| Lesser peachtree borer | 0.0 | 0.0 | 0.0 |
| Peachtree borer | 0.1 | 0.0 | 0.0 |
| Obliquebanded leafroller | 0.0 | 0.0 | 0.0 |
| Apple maggot | 2.4 | 1.3 | 1.5 |

### Highland, NY

| | 7/27 | 8/3 |
|---|---|---|
| Redbanded leafroller | 2.4 | 1.8 |
| Spotted tentiform leafminer | 168 | 148 |
| Oriental fruit moth | 1.6 | 1.1 |
| Lesser appleworm | 9.4 | 13.1 |
| Codling moth | 2.0 | 2.1 |
| Lesser peachtree borer | 0.1 | 0.4 |
| Obliquebanded leafroller | 0.2 | 0.1 |
| Dogwood borer | 0.1 | 1.3 |
| Peachtree borer | 2.0 | 3.2 |
| Tufted apple budmoth | 0.0 | 0.0 |
| `Variegated leafroller | 0.4 | 0.5 |
| Apple maggot | 0.3 | 1.6 |

* first catch

## UPCOMING PEST EVENTS

| | 43°F | 50°F |
|---|---|---|
| Current DD accumulations (Geneva 1/1–8/10/09): | 2304 | 1494 |
| (Geneva 1/1–8/10/2008): | 2534 | 1719 |
| (Geneva "Normal"): | 2602 | 1725 |
| (Geneva 1/1–8/17 Predicted): | 2523 | 1664 |

| Coming Events: | Ranges (Normal ±StDev): | |
|---|---|---|
| Apple maggot flight peak | 2101–2553 | 1418–1748 |
| Codling moth 2nd flight peak | 1921–2747 | 1275–1905 |
| American plum borer 2nd flight peak | 1976–2468 | 1337–1685 |
| San Jose scale 2nd flight peak | 1936–2336 | 1429–1759 |
| Comstock mealybug 2nd gen. crawlers emerging | 2234–2624 | 1505–1781 |
| Comstock mealybug 2nd gen. crawlers peak | 2380–2624 | 1658–1737 |
| Spotted tentiform leafminer 2nd flight subsides | 1982–2380 | 1307–1645 |
| Spotted tentiform leafminer 3rd flight begins | 2258–2652 | 1518–1838 |
| Obliquebanded leafroller 2nd flight begins | 2255–2655 | 1516–1838 |
| Oriental fruit moth 3rd flight begins | 2319–2723 | 1582–1874 |
| Redbanded leafroller 2nd flight subsides | 2201–2679 | 1495–1837 |

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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