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FRUIT JOURNAL
Update on Pest Management and Crop Development
June 11, 2007 VOLUME 16, No. 13 Geneva, NY

INSECTS

INSECT ANTENNA

ORCHARD RADAR DIGEST

San Jose Scale
1st generation crawlers appear: June 16.

Spotted Tentiform Leafminer
2nd flight begins around: June 14.

Geneva Predictions:

Roundheaded Appletree Borer
Peak emergence: June 7.
Peak egglaying period roughly: June 20 to July 6.

Codling Moth
Codling moth development as of June 11: 1st generation adult emergence at 77% and 1st generation egg hatch at 25%.
1st generation 20% CM egg hatch: June 10 (= target date where one spray needed to control 1st generation codling moth).

Obliquebanded Leafroller
1st generation OBLR flight, first trap catch expected: June 8.
Where waiting to sample late instar OBLR larvae is not an option (= where OBLR is known to be a problem, and will be managed with insecticide against young larvae):
Early egg hatch and optimum date for initial application of B.t., Intrepid, SpinTor or other insecticide with comparable efficacy against OBLR (with follow-up applications as needed): June 22.

Oriental Fruit Moth
2nd generation flight begins around: June 27.

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THOSE WERE THE (DEGREE) DAYS

MODEL BUILDING

Insect model degree day accumulations:

Codling Moth (targeted spray application at newly hatching larvae, predicted at 250–360 DD base 50°F after biofix):

Location	Biofix	DD (as of 6/11)
Clintondale	May 14	433
Geneva (Farmington data)	May 17	328
Sodus	May 17	281
Guilderland	May 23	405
Ithaca	May 24	288
Lansing	May 24	313
Albion	May 25	301
Williamson	May 25	276
Appleton (South)	May 25	290
Appleton (North)	May 25	253
Waterport	May 28	253

Plum Curculio (spray coverage required until 308 DD base 50°F after biofix; i.e., McIntosh petal fall):

Location	Biofix	DD (as of 6/11)
Clintondale	5/14	433
Guilderland	5/15	479
Geneva (Farmington data)	5/21	317
Albion	5/21*	379
Williamson	5/21*	327
Lansing	5/22	339
Appleton	5/22*	288
Sodus	5/24 (est'd.)	246
Ithaca	5/24	288

* 50% PF

[NOTE: Consult our mini expert system for arthropod pest management, the Apple Pest Degree Day Calculator:
http://www.nysaes.cornell.edu/ipm/specware/newa/appledd.php
Find accumulated degree days between dates with the Degree Day Calculator:
http://www.nysaes.cornell.edu/ipm/specware/newa/
Powered by the NYS IPM Program's NEWA weather data and the Baskerville-Emin formula]

PEST FOCUS

Geneva:
Pandemis leafroller 1st catch 6/7. **Oblique-banded leafroller** 1st catch today, 6/11.

Highland:
Oriental fruit moth 2nd flight beginning.

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DISEASES

BROWN OUT

MAKING "THE BEST" LAST: CONTROLLING BROWN ROT IN THE FACE OF FUNGICIDE RESISTANCE

(Kerik Cox & Wolfram Köller, Plant Pathology, Geneva, and Dave Rosenberger, Plant Pathology, Highland)

❖❖ It may be a good year for stone fruit in NY, considering that we appear to have escaped the spring freezes that wiped out the stone fruit crops in the surrounding states and in the south. Unfortunately, the threat of Sterol Inhibitor (SI) resistance is still with us in 2007. Unless we are careful, SI resistance could reduce or eliminate the usefulness of our best brown rot fungicides: Indar, Orbit, and Elite.

In 2005, the first reports of suspected brown rot resistance to SI fungicides in NY were confirmed. Control failures using Indar on the fruit rot phase of the disease were being reported on peaches at several orchards in the lower Hudson Valley and in an orchard in Niagara County. The Lab of Dr. Wolfram Köller found that one-fifth of the brown rot isolates from the reported sites showed decreased sensitivity to Indar. In the fall of 2006, I found that 14 out of 30 isolates collected from orchards in the Finger Lakes region were above the baseline sensitivity reported in 1993.

At this point, we still don't know how prevalent SI resistance to brown rot is in NY. SI resistance in brown rot is also occurring in other states. One of the first instances of SI resistance in brown rot occurred in the peach-growing region of middle Georgia, and in the fall of 2006, we found that 10 brown rot isolates from two orchards in Ohio were also above Indar baseline sensitivity.

How did this resistance develop? Resistant brown rot populations usually develop due to an over-reliance on one particular fungicide chemistry, which in our case is the SIs (Indar, Orbit, and Elite). As Wolfram Köller mentioned in last year's article on brown rot, resistance is unlikely to have developed from consecutive applications to manage fruit rot, but probably arose from consecutive use patterns beginning much earlier around white bud for blossom blight. In addition, overuse of fungicides doesn't necessarily have to be on-site for resistance to develop; it's entirely possible that resistant populations could come in from nearby sources.

What can we do to reduce buildup of resistance? Unfortunately, switching to one of the other SIs labeled on stone fruit — e.g., Orbit, Elite, Rubigan, and Nova — is of no use, as the resistance seems to hold for all compounds in the SI chemistry. At this stage of the game, if we want to keep the SIs for brown rot, we must continue to curb our SI usage and rotate in fungicides from other chemistries.

The first step is to avoid using SIs for early season control during bloom and petal fall. If you can't beat the rains for blossom blight and need that 'kick-back' activity, use one of the two Rovral (Iprodione) applications allowed for the season. Rovral is known to have up to 48 hr post-infection activity against blossom blight, and to date there have been no reports of Rovral resistance. Several of the strobilurin (stroby) fungicides are labeled for use on blossom blight at the petal fall spray in stone fruit, but may not be the best option, as it would use up one of the total allowed stroby uses for the season. Another possibility for blossom blight is the Anilinopyrimidine (AP) fungicides Scala and Vangard. These two have post-infection activity, but have label use restrictions for cherries. Topsin M generally is not recommended for brown rot control because benzimidazole resistance is present in orchards where Benlate and Topsin M were used to control brown rot in the 1970s and 1980s. However, Topsin M might still be effective in young orchards that are isolated from the older orchards that harbor benzimidazole-resistant brown rot. Using

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Topsin M plus captan for blossom blight control would pose relatively little risk (since the captan will work even if Topsin M does not).

Prior to and at shuck split, Captan or a Captan+sulfur combination is an option if disease pressure is low (i.e., relatively dry weather) and if the cherry and plum cultivars being sprayed will tolerate Captan. For controlling cherry leaf spot and/or black knot in addition to brown rot, consider chlorothalonil (Bravo), as it should have good activity against all three.

One to three weeks after shuck split, fruit will be fairly susceptible, but try to avoid the SIs and continue with Captan and sulfur, especially in bouts of dry weather or if disease pressure has been low. In cases where 'kick-back' is needed due to a pop-up rain event, an SI can be used if they are still working for you. Where SIs failed to provide good brown rot control last year, the only other option for post-infection activity is one of the stroby fungicides. The strobies don't have the same level of post-infection activity as the SIs, but they have good activity against fruit rot. Of the strobies, only Abound and Pristine (mixture of the stroby Cabrio with another unrelated respiration inhibitor) are labeled for the brown fruit rot phase. Between the two fungicides, Pristine is the clear favorite because it consists of two distinct chemistries, doesn't defoliate 'McIntosh' and 'Gala' apples, and allows for up to five applications per season. Regardless of your choice, no more than two consecutive stroby applications can be made.

As fruit begin to ripen and temperatures become warmer, brown rot pressure will be considerable. At this point the only viable options will be the SIs and strobies, particularly on the sweet cherries, which are the most susceptible due to higher sugar content compared with tart cherries. Since SI resistance is becoming a concern in NY, it will be more important to start substituting in Pristine applications in your fruit rot program. Even if you don't have SI resistance, make an effort to alternate between Pristine and SI fungicides to help ensure that resistance doesn't develop in years to come. If you have SI resistance in brown rot populations, Pristine is one of the few options left to manage fruit rot. Although Pristine has two different fungicide chemistries, it is in no way exempt from fungicide resistance concerns, which is why there are only two consecutive and five total applications allowed per season. Should you have to fall back on a protectant such as Captan and sulfur between Pristine applications, try to plan the protectant application for the potentially lightest wetting period. If you don't have cherries, Scala (AP) can be included in a tank mix for fruit rot control according to the label. This may provide some 'kick-back' in situations where SI resistance has limited other options.

What else can we do minimize brown rot? With peaches, apricots, and plums, hand-thinning can significantly reduce brown rot pressure. Fruit that are in contact with one another are generally more susceptible to brown rot either due to lack of fungicide coverage at the contact point and/or because the fruit cuticle is thinner where fruit contact one another. Thus, careful hand-thinning of fruit can reduce brown rot pressure while also contributing to improved fruit size.

What else should we watch for? Orchards that contain peach cultivars selected to mature at various time through summer pose a special dilemma for managing fungicide resistance to brown rot. Even though any given cultivar may receive only two or three preharvest fungicide sprays, brown rot inoculum can move from one cultivar to the next as fruit mature, which means that the brown rot population may be exposed to six, eight, or 10 preharvest fungicide applications as fungicides are applied to sequentially ripening cultivars within the same or adjoining orchards. Where sequentially ripening cultivars occur in the same block, it is especially important to alternate fungicide chemistries during the preharvest sprays. All cultivars sprayed on any given date should be sprayed with the same fun-

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gicide so that spores blowing back and for the between cultivars cannot "escape" exposure to the alternate fungicide chemistry.

When planning new peach orchards, consider segregating early varieties and later varieties into different blocks that are physically separated by intervening apple orchards, woodlots, or other cropland. Such a design would shorten the annual period of peak selection pressure from brown rot resistance, since spores from early-maturing cultivars would be less likely to get blown to trees of later maturing varieties.

If you suspect or fear fungicide resistance at your site, or have some brown rot on a few fruit, head over to the tree fruit and berry pathology website: http://www.nysaes.cornell.edu/pp/extension/tfabp/index.html to contact us about collecting some samples. Also included at the site is an updated version of Wolfram Köller's 2006 overview of fungicides labeled for brown rot in New York. The list may be directly accessed here: http://www.nysaes.cornell.edu/pp/extension/tfabp/brownrot.htm ❖❖

GENERAL INFO

ON DISPRAY

SPRAY DEMO REDUX
(Andrew Landers, Entomology, Geneva)

❖❖ The next in the series of extension demonstrations that have been organized about using sensor-controlled precision spray systems with tower orchard sprayers will take place at Kast Farms, on Zig-Zag Road (Between Densmore and Latin Rd., see map) on June 20 at 10:00 am. Growers are encouraged to attend, to view the latest technology at work and to hear about the potential savings in pesticide used. ❖❖

ERRATUM

LORSBAN 4E FOR CHERRIES

❖❖ An error was brought to our attention in the recommendations for borer sprays in cherries at petal fall, on pp. 163 and 209 in the Pest Management Guidelines. The current PHI is now 21 days. (A previous label had it at 6 days.)❖❖

YOU'RE INVITED

CAN YOU SAY QUASQUICENTENNIAL?

❖❖ Cornell University will host a Fruit Field Day and Equipment Show at the New York State Agricultural Experiment Station in Geneva, NY on Wednesday July 25. This event will commemorate the 125th Anniversary of the Experiment Station, which opened its doors on March 1, 1882. Fruit growers, consultants, and industry personnel are invited to tour field plots and learn about the latest research and extension efforts being carried out by researchers on the Geneva and Ithaca campuses. The focus will be on all commodities key to New York's $300 million fruit industry: apples, grapes, raspberries, strawberries, peaches, pears, cherries, and nectarines.

Equipment demonstrations will provide the latest techniques in improving sprayer deposition plus orchard and vineyard maintenance. Representatives from various companies will advise growers on the latest technologies. The Cornell pesticide application technology team will demonstrate different methods of improving deposition and testing sprayers, including tips about nozzle orientation.

The event will be held on the Station's Fruit and Vegetable Research Farm, 1097 County Road No. 4, 1 mile west of Pre-Emption Rd. in Geneva, NY. Signs will be posted. Attendees will be able to select from tours of apples, stone fruits, small fruits, and grapes, as well as a tour of the Station's labs and greenhouses. Admission is free and lunch is provided, courtesy of industry sponsors. Preregistration is encouraged.

For sponsorship and exhibitor information, contact Debbie Breth at 585-798-4265 or dib1@cornell.edu. More information will be posted on a website in the very near future.❖❖

INSECT TRAP CATCHES (Number/Trap/Day)

Geneva, NY

	6/4	6/7	6/11
Redbanded leafroller	0.4	0.0	0.3
Spotted tentiform leafminer	1.8	0.5	0.6
Oriental fruit moth	0.1	0.0	0.0
Codling moth	0.0	0.0	0.0
Lesser appleworm	3.9	0.5	0.3
San Jose scale	3.8	0.8	0.0
American plum borer	0.0	0.3	0.3
Lesser peachtree borer	1.5	0.2	0.9
Pandemis leafroller	0.0	0.2*	0.3
Obliquebanded leafroller	0.0	0.0	0.4*
Dogwood borer	–	0.0	–

Highland, NY

	5/29	6/4	6/11
Redbanded leafroller	–	–	0.0
Spotted tentiform leafminer	3.6	2.8	8.1
Oriental fruit moth	0.0	0.0	0.1*
Codling moth	0.9	8.3	2.4
Lesser appleworm	4.6	10.4	4.5
Obliquebanded leafroller	–	0.5*	2.4
Variegated leafroller	–	–	0.9*

* first catch

UPCOMING PEST EVENTS

	43°F	50°F
Current DD accumulations (Geneva 1/1–6/11/07):	936	571
(Geneva 1/1–6/11/2006):	935	514
(Geneva "Normal"):	910	530
(Geneva 1/1–6/18/2007, Predicted):	1107	700
(Highland 3/1-6/11/07):	884	545

Coming Events:	Ranges(Normal±StDev):	
American plum borer 1st flight peak	360–1175	278–514
Lesser appleworm 1st flight peak	372–1125	180–436
Black cherry fruit fly 1st catch	686–985	380–576
Cherry fruit fly 1st catch	650–1500	424–806
Redbanded leafroller 1st flight subsides	417–1104	325–561
Codling moth 1st flight peak	529–1326	325–581
Dogwood borer 1st catch	733–1422	454–800
Oriental fruit moth 1st flight subsides	781–1574	489–811
1st rose leafhopper adults on apple	736–1104	440–622
Pear psylla 2nd brood hatch	992–1200	584–750
Peachtree borer 1st catch	565–1557	443–837
San Jose scale 1st flight subsides	768–1422	508–748
Spotted tentiform leafminer 2nd flight begins	795–1379	562–738

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