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Update on Pest Management and Crop Development

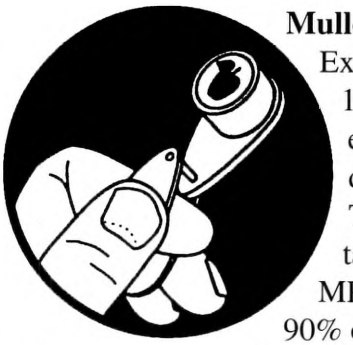
FRUIT JOURNAL

April 19, 2004 | VOLUME 13, No. 5 | Geneva, NY

INSECTS

FIRST WAVE

ORCHARD RADAR DIGEST



❖❖ Starting today, we're once again publishing pest predictions generated by the Univ. of Maine's Orchard Radar model estimation service, provided to us by Glen Koehler for Geneva. This pest management tool uses commercially available weather data as an input for apple pest occurrence and development models taken from many established university and practitioner sources. It's offered as another perspective on what's happening in the orchard to compare against our own record-generated advisories and, of course, personal observations from the field. We'll be printing only some of the short-term arthropod events; the full Orchard Radar product range covers disease and horticultural events as well. Growers interested in exploring this service for their specific site may wish to contact Glen personally (gkoehler@umext.maine.edu).

Geneva Predictions:

Roundheaded Appletree Borer

RAB adult emergence begins: June 1; Peak emergence: June 15.

RAB egglaying begins: June 10. Peak egglaying period roughly: June 30 to July 14.

Lesser Appleworm

1st LAW flight, first trap catch expected: May 12; Peak trap catch: May 25.

Mullein Plant Bug

Expected 50% egg hatch date: May 18, which is 7 days before rough estimate of Red Delicious petal fall date.

The most accurate time for limb tapping counts, but possibly after MPB damage has occurred, is when 90% of eggs have hatched.

90% egg hatch date: May 26.

Obliquebanded Leafroller

1st generation OBLR flight, first trap catch expected: June 12.

Oriental Fruit Moth

1st generation OFM flight, first trap catch expected: May 4.

Optimum 1st generation first treatment date, if needed: May 23.

Redbanded Leafrolloer

1st RBLR flight begins around: April 19.

Peak trap catch and approximate start of egg hatch: May 6.

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San Jose Scale
First adult SJS caught on trap: May 20.

Spotted Tentiform Leafminer
1st STLM flight, peak trap catch: May 13
1st generation sapfeeding mines start showing: May 20.
Optimum sample date is around Friday, May 24, when a larger portion of the mines have become detectable.

White Apple Leafhopper
1st generation WALH found on apple foliage: May 16.

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INTERNAL MEMO

RETURN OF MOTHRA: OFM MANAGEMENT OPTIONS
(Art Agnello and Harvey Reissig, Entomology, Geneva)

❖❖ After the disconcerting number of loads rejected due to internal worm infestations in 2002, most western NY growers experiencing this problem dedicated themselves to preventing a repeat during the 2003 season, and in general they were quite successful. In contrast to the 113 or so loads turned away at Cadbury Schweppes in 2002, just over a dozen were rejected last year. No doubt a number of management programs incorporated the use of such tactics as pheromone trapping, tracking of insect development, and tighter spray schedules that additionally may have included pheromone disruption, higher pesticide rates and rotation of active ingredients to combat any latent resistance in the local populations. This being said, it should be noted that the unfavorable (to insects) weather was also on our side last year, and added significantly to the success rate in the region; in fact, control failures were down significantly across the northeast.

With the new season under way, it's worthwhile to reflect on the strategies that were used last year, how they came out, and the prospects for keeping on top of this potential problem in 2004. Despite the documented occurrence of at least 3 species in the "NY internal worm club", it seems clear that the most problematic one for most growers is oriental fruit moth (OFM), which is due to start the first of its 3 annual flights sometime between the end of April and early May, considering the relatively slow progression of the spring events thus far. Harvey Reissig, Jan Nyrop, Debbie Breth and I were involved in a number of field trials to assess OFM control strategies last year, so we thought it would be of use to recap the work done in 2003 and describe what we hope to achieve this season.

Several seasonal programs were compared in large plots in 4 commercial orchards last year: an organophosphate insecticide (Imidan) standard, a synthetic pyrethroid (Warrior), a selective insecticide (Avaunt), a sprayable formulation of OFM pheromone, and Avaunt augmented

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is published weekly from March to September by Cornell University—NYS Agricultural Experiment Station (Geneva) and Ithaca—with the assistance of Cornell Cooperative Extension. New York field reports welcomed. Send submissions by 3 pm Monday to:

scaffolds FRUIT JOURNAL
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This newsletter available on CENET at: news://newsstand.cce.cornell.edu/cce.ag.tree-fruit
and on the World Wide Web at:
http://www.nysaes.cornell.edu/ent/scaffolds/

with sprayable pheromone applications. A phenology model developed in Pennsylvania was used to time the insecticide treatments after the OFM biofix. Early in the season after petal fall, initial observations indicated that this model was not accurately predicting the seasonal activity of this pest during the 2003 growing season. Therefore, initial sprays of all programs including pheromones were applied about 175–200 DD (base 45°F) after trap catch increases in the plots suggested that the flight of OFM had begun. Two pheromone traps were set out in the center of each insecticide plot and in the center of each half of the 10A pheromone treatments during the first week in July prior to the beginning of the second flight. These traps were checked twice weekly throughout the season. A total of 600 fruits per plot was sampled on the trees throughout each block weekly from the last week in June until the last week in August. At harvest, 600 fruits were harvested from each plot (20 fruit on each of 30 trees), and cut to determine if any infestations of larvae were present.

Infestation levels in the weekly fruit samples in all of the treatments in most blocks remained very low from the end of July until the last sample was taken in August, and there was no particular pattern of increasing or decreasing damage in any of the treatments. The highest damage observed prior to harvest occurred in the last samples taken on August 24. Most of the fruit damage observed at harvest occurred between Labor Day and early October, and was presumably due to late season OFM activity. However, even though some infested fruit was observed in most of the treatments except in the Warrior plots, control was generally commercially acceptable (<2%) except in one Imidan plot (ca. 16%), and in the plots receiving only early sprayable pheromone treatments on two of the farms (2.8–4.4%). Warrior was the most effective insecticide treatment in the combined data for all orchards, followed by Avaunt and Imidan. The integrated program of Imidan and sprayable pheromones was slightly more effective in protecting fruit than the programs using pheromones alone during the early part of the season.

For this year's trials, we are setting up plots with 10 grower cooperators across the Lake Ontario region; to get a clearer picture of the effectiveness of the treatments being tested, these plots have been selected so that about half of these farms would be classified as "high risk" for OFM problems, and the rest are assumed to be "low-to-moderate risk" based on field history. Four main treatment strategies will be evaluated in non-replicted large plots (5A or more) at each farm:

1 - Preventive Pesticide Std: Added to the grower's normal pesticide spray program for other direct pests (e.g., plum curculio, apple maggot, leafrollers) will be 3 special sprays directed at the newly hatching larvae of each OFM brood during the year. The first will be at pink, the second in early July, and the third between late July and early August, at a timing based on a developmental model (i.e., estimated first hatch at 175–200 DD base 45°F after biofix). These sprays will consist of whatever material is elected by each respective grower, and can be an OP, a pyrethroid, or a selective newer material such as Avaunt or (pending timely registration) Assail. Moth catch in pheromone traps will be monitored weekly and fruit damage will be assessed bi-weekly starting in mid-July.

2 - Preventive/As-Needed Pesticide Program: One special spray at pink will be added to the grower's normal spray program, against the 1st brood larvae. Additional special sprays against the later broods will be made only if a) pheromone trap catches in the block exceed a threshold of 10 moths/trap per week, or b) bi-weekly fruit inspections (up to 1000 fruits per session) reveal larval feeding damage.

3 - Pheromone/As-Needed Pesticide Program: Long-life (Isomate M Rosso) pheromone ties will be deployed in April prior to the first brood flight to provide mating disruption for the entire season. The grower will apply a normal spray program as in the other blocks, and additional special sprays against

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OFM will be made only if a) any moths are caught in pheromone traps in the disrupted plot, or b) bi-weekly fruit inspections reveal larval feeding damage.

4 - In cases where it is compatible with the grower's operation, a very small group (4–6) of trees will be left completely unsprayed to gauge the intrinsic OFM population pressure on the farm.

In addition, we hope to recruit 10–15 additional growers in the region who are interested in testing new internal lep management programs, and who would agree to implement either the pheromone or as-needed pesticide scenarios in one of their own blocks, to compare against their standard program. This way, we would be able to compare the results obtained in our trials with those from similar evaluations made in additional blocks, in order to facilitate adoption of the most effective management programs.❖❖

DISEASES

FIRST FRUITS

TWO ASCOSPORE RELEASE EVENTS RECORDED AT GENEVA

(Bill Turechek, Plant Pathology, Geneva)

❖❖ The rain that fell on April 13 and 14 resulted in the first significant ascospore release of the season at the Geneva station; we trapped 450 ascospores during the afternoon of the 13th (the peak release last year was ~1500 spores in a single day). The first spore was detected at 6 am on the 13th and the last was detected at 11 pm; the peak release was at 5 pm. No spores were detected from 11 pm up to the point the Burkard spore trap was checked at 10 am on the14th. The wetting period was sufficiently long to allow infection of any green tissue that was exposed, despite the cool temperature.

The thunderstorm(s) that rolled through western NY on April 18 produced the 2nd significant ascospore release of the season at the Geneva station. We trapped 294 spores on the 18th. The first ascospores were detected at 4 pm and the last were detected at 10 pm; the peak release was at 7 pm. No spores were detected from 11 pm up to the point the Burkard spore trap was checked at 9 am on the 19th. I suspect the wetting period was sufficiently long to allow infection, given the time of the day that it occurred and the high relative humidity. Unfortunately, I was unable to calculate the exact length of wetting as it appears the Geneva NEWA station malfunctioned during the thunderstorm, but there looks to be at least 9 hr of wetting based on precipitation data.

I suspect that most growers were covered for this infection period. If you were not, mancozeb within 24 hrs of wetting should provide sufficient kickback activity. Dodine can provide up to 48 hr of kickback activity if resistance is not an issue. Most importantly, growers should be aware that the warm weather we are experiencing is pushing the speed of ascospore maturity, and that the next event *could* produce the most significant release of the season. With the rapid increase in apple growth and the drenching amount of rain (0.6" in Geneva) I would encourage another protective application of mancozeb or captan prior to the next significant rain. If you are experiencing intermittent showers or thunderstorms you may try to squeeze in an application once the winds die down Tuesday or Wednesday.

Recall that last year Julie Carroll and I prepared a Scaffolds article explaining how to calculate the length of a wetting period during intermittent wetting events (http://www.nysaes.cornell.edu/ent/scaffolds/2003/4.28.html). The rule we adopted was that "two successive wetting periods, the first started by rain, should be considered a single, uninterrupted wet period if the intervening dry period is less than 24 hr, regardless of weather conditions (sunshine,

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temperature, and RH) during the intervening dry period." Essentially, add any wetting periods separated by less than 24 hr, calculate the average temperature during the period of wetting, and use these values in the Mills table to determine if in an infection occurred. ❖❖

PEST FOCUS

Geneva:
1st **green fruitworm** moth caught 4/15. 1st **redbanded leafroller** and **spotted tentiform leafminer** moths caught today, 4/19.

Highland:
Oriental fruit moth flight beginning. **Pear psylla** egg-laying increasing; first nymph observed.

UPCOMING PEST EVENTS

	43°F	50°F
Current DD accumulations (Geneva 1/1–4/19):	137.9	55.5
(Geneva 1/1–4/19/2003):	136	65.5
(Geneva "Normal"):	166	73
(Geneva 4/26 Predicted):	201	86
Highland 1/1–4/19):	211	85

Coming Events:	**Ranges:**	
Green fruitworm flight peak	64–255	19–108
Redbanded leafroller 1st catch	32–480	5–251
Spotted tentiform 1st oviposition	141–319	48–154
Green apple aphid present	127–297	54–156
Pear thrips in pear buds	137–221	54–101
Pear psylla 1st oviposition	25–147	1–72
Rosy apple aphid nymphs present	91–291	45–148
McIntosh at half inch green	137–221	57–102

INSECT TRAP CATCHES (Number/Trap/Day)

Geneva, NY

	4/12	4/15	4/19
Green fruitworm	0.0	0.3*	0.0
Redbanded leafroller	0.0	0.0	1.0*
Spotted tentiform leafminer	0.0	0.0	0.4*

Highland, NY

	4/12	4/19
Green fruitworm	1.0	0.3
Redbanded leafroller	0.4	3.3
Spotted tentiform leafminer	0.1*	19.9
Oriental fruit moth	0.0	0.1*

* first catch

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PHENOLOGIES

Geneva:

	4/19	4/26 (Predicted)
Apple(McIntosh):	green tip	half-inch green
Apple(Red Delicious):	green tip	half-inch green
Pear:	bud burst	bud burst – green cluster
Sweet cherry:	bud burst	bud burst – white bud
Tart cherry	bud burst	bud burst – white bud
Plum:	swollen bud	bud burst – green cluster
Peach:	1/4-inch green	half-inch green – pink

Highland:
Apple (McIntosh/Ginger Gold): early tight cluster
Pear (Bartlett/Bosc): late bud burst
Peach: pink
Plum: bud burst
Sweet cherry: bud burst

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.

This material is based upon work supported by Smith Lever funds from the Cooperative State Research, Education, and Extension Service, U.S. Department of Agriculture. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture.