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Update on Pest Management
and Crop Development

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

May 5, 2003

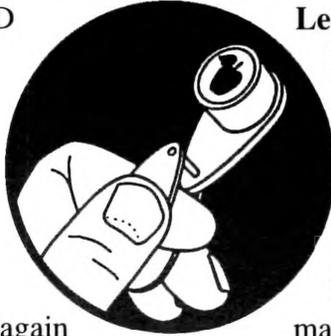
VOLUME 12, No. 8

Geneva, NY

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PLACE
YOUR BETS,
PLEASE

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: May 31; Peak emergence: June 15.

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

Codling Moth

Codling moth development as of May 5: 1st generation adult emergence at 0% and 1st generation egg hatch at 0%.

Lesser Appleworm

1st LAW flight, first trap catch expected: May 12; Peak trap catch: May 24.

Mullein Plant Bug

Expected 50% egg hatch date: May 17, which is 8 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 25.

Obliquebanded Leafroller

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

Oriental Fruit Moth

1st generation OFM flight, first trap catch expected: May 5.
Optimum 1st generation first treatment date, if needed: May 24.

continued...

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Redbanded Leafroller

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

San Jose Scale

First adult SJS caught on trap: May 19.

Spotted Tentiform Leafminer

1st STLM flight, peak trap catch: May 13

1st generation sapfeeding mines start showing:
May 23.

Optimum sample date is around Friday, May 24,
when a larger portion of the mines have become
detectable.

White Apple Leafhopper

1st generation WAL found on apple foliage:
May 16.



**PLAN
BEE**

**GETTING THE MOST
POLLINATION FOR YOUR
DOLLAR**
(Nick Calderone, Entomology,
Ithaca)

❖❖ Tree fruits, small fruits, and many vegetable crops, especially many of the vine crops, all require pollinating insects for a successful harvest. Remember! Not only is pollination important for a high yield, it is just as important to fruit size, shape and sweetness. A number of insects pollinate crops, but, for several reasons, the honey bee is the most versatile, all-around pollinator. Honey bees are available in large numbers throughout the growing season, they pollinate over 90 commercial crops, they are easily transported by truck, and they can be easily distributed throughout large plantings. Compared with other pollinators, honey bees are very cost effective. A single strong, two-story colony provides 15-25 thousand foragers.

How many colonies?

Growers are usually concerned about the number of colonies they need to rent. New York growers have traditionally used about one colony of bees per three acres for apple pollination. This number may have been adequate in small orchards visited by feral honey bees and by solitary bees and bumble bees from adjacent hedgerows and woods. However, feral honey bee populations have been greatly reduced in recent years, and modern agricultural practices have eliminated many natural nesting sites for solitary bees and bumble bees. In addition, the flight range of solitary bees is not generally sufficient to ensure coverage of the center portions of large plantings. Growers with large blocks of apples and other tree fruits may wish to increase the number of hives to one per acre. If your fruit set has been lower than expected in the past, or your fruits are lopsided or misshapen, you probably need to use more bees. Remember, if your fruit set is too high, you can always thin, but if it is too low, you are just out of luck. Move bees into apples, regardless of variety, right as the king blossoms begin to open. Also, modern cultivars with high blossom densities, such as trellised apples, require more pollinators.

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scaffolds

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Special requirements

Most other crops are also adequately served by a single strong colony per acre. Some crops, however, have special requirements. **Red Delicious** apples have flower structures that are different from most other common varieties such as McIntosh. Their anthers are widespread, and bees learn to insert their mouthparts between the anthers to obtain nectar. Consequently, the bees do not contact the flower's sexual parts and pollination does not take place. Since it takes time for bees to learn to obtain nectar in this way, you can counteract this problem by using more colonies per acre to increase the number of inexperienced bees present. Up to two colonies per acre may be needed in large stands of Red Delicious apples.

Pollination of **pears** will probably always be a problem because pear nectar contains only about 15% sugar versus 40% for apples, dandelions, and yellow rocket. The answer is to move the bees into the center of the pear block when the pears are at 50% bloom. It will take some time for the bees to discover better sources farther away, and in that time, the pears may be adequately pollinated. An alternative is to use more colonies per acre, which will increase the number of bees foraging within the orchard.

Hive Placement

Always select good locations for the bees you rent to obtain maximum benefit for your pollination dollar. It's a lot like real estate — location-location-location. A good location slopes slightly to the east or south, is protected from the wind, and has as much exposure to sunlight as possible. It is important that colonies of honey bees be kept in full sunlight in order to warm the hives rapidly in the morning and entice the workers out of the hives on chilly spring mornings. Entrances should face south to east, whenever possible. Keep colonies on pallets or cinder blocks to keep the bottom boards 3-6 inches above the ground. Hives with wet bottom boards will be cooler and have less foraging activity than dry colonies. A hive stand will also keep colonies above tall grass, which may shade or block the

entrance. Place colonies in groups of 4—6 to take advantage of good locations. In large orchards and fields, groups of 10-20 hives can be used to take advantage of prime locations. It is best to locate hives near pollinizer rows where that consideration applies, such as with apples and sweet cherries.

Pesticides

Overall, pesticides are less of a problem to bees and beekeepers today than they were 10 and 20 years ago. Nevertheless, serious poisoning incidents still occur, and several reports of bee poisoning from methyl parathion were confirmed recently in NY. It is important to read the pesticide label and to avoid using materials that are especially toxic to bees whenever there is a safer alternative available. Sevin (carbaryl), Guthion (azinphosmethyl) and PennCap-M (micro-encapsulated methyl parathion, still labeled on several crops in NY) are especially toxic to bees.

Honey bees are most often killed by pesticides when they ingest contaminated pollen. However, bees can also be poisoned by pesticides that have contaminated small pools from which foragers collect water to dilute the honey they feed their young. Bees will collect water from the closest available source, including standing water in wheel ruts and old tires in or near your fields. A problem exists if more than 10 dead bees are found in front of a hive in the morning. If too many bees die, your crops will not be adequately pollinated and it may be necessary to rent more bees. You can help the bees by providing them with a source of clean water by the hives. A small tub with a few wooden floats will work well. A lathe-strip top from a bushel basket is ideal. If you don't provide floats, many bees will drown.

You can eliminate most pesticide damage to bees, both managed and wild, by not spraying when flowers, including weeds, are open and attractive to bees. Also, do not spray when there is any risk of drift to non-target crops or flowers. Evening, about an hour before sunset, is usually a good time to spray

continued...

because there is generally little wind at that time. Always use the largest droplet size possible when spraying, and check out the use of spray stickers to help minimize drift. Keep flowering ground-cover plants mowed if you are going to spray in an orchard during the summer. Clover and dandelions are common problem for bees on orchard floors — keep it mowed or use an herbicide.

General Recommendations

Bees should be moved onto location at night, and once the hives have been set down for pollination, you should leave them at that spot until the job is done. Moving bees in the daytime and moving them short distances (less than 3 miles as the crow flies) will cause a serious loss of foragers and seriously damage the colony. Always contact the beekeepers if the need arises to move the bees. If you live in an area with known bear problems, use an electric fence to protect the bees. Keep nearby flowering plants mowed to reduce competition for the bees' attention.

The Beekeeper

I recommend establishing good working relations with several beekeepers to ensure that you have a ready supply of bees for pollination. Any individual beekeeper's situation may change over time, but if you work with several beekeepers, you should always have ready access to an adequate supply of colonies.

Pollination fees

Beekeepers are just learning what many farmers have been aware of for many years — pesticide resistance. Many beekeepers are finding heavier than normal winter die-off due to pesticide resistant parasitic mites. Look for rental fees in the \$35-\$60 range, depending on strength. Remember! The best deal may not always be the cheapest deal.

Expectations

Remember! Bees are an essential part of your crop production system, but they are only one part. In many ways, they are like the fertilizers and chemicals that you buy. Each is essential, but none

of them, by themselves, can guarantee a crop. Many things influence the quantity and quality of your crop. One is the weather. Bees will visit flowers and pollinate only if they can fly. Cool, rainy, and windy weather will delay, slow, or stop flight, and the beekeeper cannot do anything about the weather. Excessive heat during the summer can cause problems with fruit set in certain crops, like pumpkins. Again, this is beyond the beekeeper's control. Be clear up front about your expectation concerning the strength of the colonies you rent and satisfy yourself that you have received what you expected. This will eliminate misunderstandings down the road.

TIP:

Planning a new orchard? Be sure to determine if your main cultivars are self-sterile — like McIntosh and Red Delicious apples — or, worse yet, self-sterile **and** inter-incompatible like many popular cultivars of sweet cherries. If so, be sure to plant an adequate proportion of pollinizer cultivars. Be sure you select compatible pollinizers that bloom at the same time as your main variety. If you do not have pollinizers in your self-sterile stands, you can often purchase compatible pollen and use hive inserts to distribute it to the blossoms. ❖❖



WESTERN NEW YORK

WESTERN NEW YORK
DISEASE UPDATE
(Bill Turechek,
Plant Pathology, Geneva)

❖❖ In western New York, this week may prove to be a difficult one to stay ahead of primary apple scab infections. Traditionally, the peak period for apple scab activity occurs right around 'pink' and it appears that this will be the case this year according to the ascospore maturity degree-day model (Table 1). This week's weather forecast calls for intermittent showers from Monday afternoon through Wednesday, with a possible break Thursday and then a chance of showers again on Friday. This will set the stage for another significant infection event.

Table 1. Predicted 'percent ascospore maturity' as of May 5th for 11 locations in western New York based on the Gadoury and MacHardy ascospore maturity degree-day model.

Location	Ascospores mature (%)
Albion	35
Geneva	47
Ithaca	54
Knowlsville	50
Lansing	62
Lyndonville	40
North Appleton	38
Sodus	47
South Appleton	41
Waterport	43
Williamson	45

In considering the infection events to date, what options do growers have going into this week? Spore trapping done in Geneva showed two significant release periods since the beginning of the season; one on April 22 and 23 and the other on May 1 and 2. If you applied a

protectant fungicide just prior to the last infection event, either mancozeb (or a related product) alone or in mixture with an SI (such as Nova, Rubigan or Procure) or a strobilurin (Flint or Sovran) you should be protected through this next wetting period. According to NEWA, about one inch of rain fell over most of western New York last Thursday and Friday; this is not enough rain to wash off all fungicide residues applied less than 7 days ago. On Thursday, however, growers should consider an application of a strobilurin, either at the highest labeled rate or at the low labeled rate mixed with a protectant. This should provide some minor kickback activity, give excellent protection for the next 7 to 10 days, and provide good powdery mildew control. A protectant alone is recommended only for growers who are on a strict 7–10 protective schedule *and* who are growing varieties or are in blocks where powdery mildew is not a problem.

If growers applied an SI-plus-protectant combination shortly *after* the April 22 infection event, then sticking with the 10-day schedule should provide sufficient protection going into this next event (see last week's edition of Scaffolds). If you followed a 7-day schedule using the maximum rate of SI-plus-protectant fungicide or a combination of dodine plus a protectant, you should be well protected too (assuming that your second application is already on).

Lastly, we are just beginning to enter pink on a number of varieties, meaning that growers should be geared up for fire blight. In western New York, growers can access Cougarblight predictions by going to www.nysaes.cornell.edu/pp/extension/tfabp/forecast.shtml and clicking on the location nearest to you. You can also access the latest ascospore maturity degree-day model results there too. ❖❖

UPCOMING PEST EVENTS

	<u>43°F</u>	<u>50°F</u>
Current DD accumulations (Geneva 1/1–5/5):	280	142
(Geneva 1/1-5/5/2002):	360	186
(Geneva "Normal"):	309	146
(Geneva 5/12 Predicted):	372	189
(Highland 1/1–5/5):	406	212
<u>Coming Events:</u>	<u>Ranges:</u>	
Pear psylla first egg hatch	111–402	55–235
Redbanded leafroller 1st flight peak	180–455	65–221
American plum borer 1st catch	194–567	55–294
Codling moth 1st catch	273–805	141–491
Green fruitworm flight subsides	170–544	69–280
Lesser appleworm 1st catch	135–651	49–377
Mullein bug 1st hatch	322–481	156–246
Rose leafhopper nymphs on multiflora rose	188–402	68–208
Spotted tentiform leafminer 1st flight peak	180–544	65–275
McIntosh at bloom	310–448	152–251
Red Delicious at pink	299–437	122–192
Peach at bloom	229–326	95–151
Pear at bloom	242–446	117–225
Plum at petal fall	277–466	113–252
Sweet cherry at petal fall	257–448	131–251
Tart cherry at bloom	257–448	122–251

Please note that we now include a predicted degree day accumulation for the next week, based on temperature forecasts supplied by SkyBit, Inc. for Geneva, in our degree day table under UPCOMING PEST EVENTS. Using crop phenology and weather data that we have collected over the years, we have used this value to predict about where crops should be next week (in Geneva) in the PHENOLOGIES table.

PHENOLOGIES

Geneva:		
	<u>5/5</u>	<u>5/12 (Predicted)</u>
Apple(McIntosh):	pink	bloom
Apple(Red Delicious):	tight cluster	king bloom
Pear:	white bud	bloom
Sweet cherry:	full bloom	petal fall
Tart cherry	25% bloom	bloom
Plum:	bloom	petal fall
Peach:	pink	bloom to petal fall
Highland:		
Apple (McIntosh/Ginger Gold):	75% bloom	
Apple (Red Delicious/Golden Delicious):	king bloom	
Pear (Bartlett/Bosc):	bloom	
Peach:	petal fall	
Plum:	petal fall	
Apricot:	bloom to fruit set	

PEST FOCUS

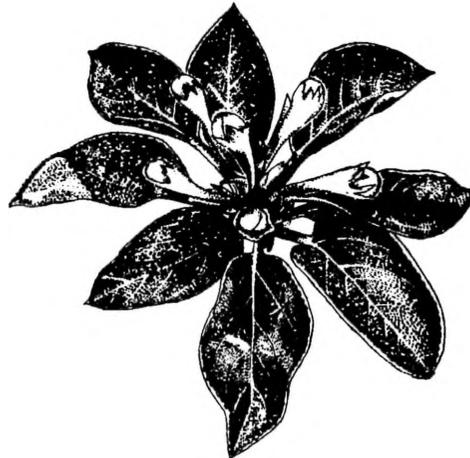
Geneva:

Oriental fruit moth 1st catch 5/1.

Highland:

European apple sawfly present in flower clusters.

Low numbers of **European red mite** observed.



INSECT TRAP CATCHES (Number/Trap/Day)

	Geneva, NY			Highland, NY		
	4/28	5/1	5/5	4/28	5/5	
Green fruitworm	0.4	0.0	0.0	0.1	0.1	
Redbanded leafroller	5.1	9.2	7.4	3.9	8.6	
Spotted tentiform leafminer	321	589	606	7.2	34.3	
Oriental fruit moth	0.0	0.5*	4.8	0.4	1.3	
Lesser appleworm	0.0	0.0	0.0			
San Jose scale	0.0	0.0	0.0			

* first catch

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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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