scaffolds Update on Pest Management and Crop Development

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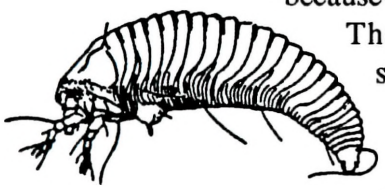
INSECTS

# THEY COME IN PEARS

## PEAR RUST MITE

(Art Agnello, Entomology, Geneva)

❖❖ This occasionally serious pest of fresh market pears gives a number of growers problems each year. Pear rust mite outbreaks may be worse in areas receiving extensive sprays of materials destructive to predators, and the development of miticide-resistant strains are suspected in some cases. Scouts and growers have difficulty detecting these pests until after they have already damaged the crop because of their minute size.



The overwintering stage is a light brown, wedge-shaped adult, which is nearly invisible without a 15X hand lens; these mites settle in any protected area on the trees, such as behind leaf buds, especially on wood 1 or 2 years old.

The mites become active as tree growth starts in the spring, and feed upon the first green tissue at the bud base, later moving to the foliage or fruit. The summer forms are nearly white in color, and even smaller than the overwintered adults. The more tender foliage is preferred, so populations on leaves decrease as the leaves mature and toughen. Damaging populations sometimes develop on the fruit soon after petal fall, sheltered in the hairs around the calyx and remaining active for a few weeks, until sometime in mid-July when they appear to leave the fruit.

Mite feeding causes leaves to turn brown or bronze, which may stunt the growth of young trees; on older trees the damage to fruit is far more significant. Severe russetting of the fruit can leave the entire surface rough and brown, which alters or destroys the desirable varietal skin appearance. Early in the growing season, mite feeding at the calyx or stem ends gives a localized russetting to those areas. If mite growth is unchecked, this feeding and russetting may spread over the fruit entirely, depending on the population and the length of their feeding period.

Monitoring guidelines tend to be pretty complicated, but one rule of thumb is a 2–3% fruit infestation rate for fresh market pears; also, a spray should be applied if any pears contain 30 or more rust mites. If levels on individual fruits do not exceed 10 mites, there is generally a grace period of about 2 weeks within which a spray could be applied. A miticide such as Kelthane or Carzol should be used at petal fall if any of these thresholds are reached, but frankly, a preventive petal fall spray is probably the most advisable course of action in blocks with a history of rust mite infestations. Those growers electing to use Agri-Mek for pear psylla within the recommended 7–14-day post-petal fall time period will probably realize some added rust mite control from that spray. The effectiveness of summer sprays to control rust mite in N.Y. is questionable.

## PEAR LEAF MIDGE

This is an old member of the insect community that had not been noticed for a number of years until recently. Pear leaf midge (*Dasyneura*

continued...

*pyri*) is a gnat-like insect that has been responsible for increasing amounts of damage in Eastern New York pear orchards the past few years.

This insect occurs in Europe, the United Kingdom, New Zealand, and New Brunswick; however, its first reported U.S. occurrence was actually in the Hudson Valley in 1932. It has 3–4 generations per year, which are overlapping and variable in their timing. The adult is a dark brown fly, 1.5–2.0 mm in length; this small size, plus the fact that it lives for only 1–3 days, makes it difficult to observe in the orchard. The first generation adults begin to fly in late April, but this date can vary from mid-April to early May; the flight lasts until late May to early June. Eggs, which are reddish in color, are laid within the rolled margins of only undeveloped leaves, as soon as the leaves emerge from the bud. Several eggs, up to as many as 35, may be laid per leaf. The maggots (which are white to yellow-red in color) hatch out in 4–6 days and feed on the leaf surface for 10–12 days; this damage prevents the normal unrolling of the leaf. After the feeding period, some of the maggots drop to the soil and pupate close to the surface, while others pupate inside the rolled leaves. The entire life cycle takes 25–30 days, except that maggots of the last one or two generations of the season remain in the soil over the winter and pupate the following spring. The number of generations per year is probably determined by the length of the period during which there is new shoot growth in the summer.

Damage caused by pear leaf midge infestations can take a number of forms. This insect attacks only the foliage, which causes the edges of leaves to roll tightly upwards and inwards towards the midrib. Heavy infestations may cause shortening of extension shoots, an effect that is probably more important in nursery stock than in mature trees. During the early stages of an infestation, there is a slight, irregular puffiness or "lumpiness" to the rolled portion of the leaf, which may become reddened and brittle. Eventually the leaf curves downward like a sickle, and the red areas turn black; leaf drop may follow. Early in the season, infested leaves occur only at the tips of shoots. As the shoot extends, however, the young leaves at the tip may in turn be attacked by later generations, so that affected leaves may be found at several levels along the shoot.

At the present time, we can give only generalized guidelines for the control of pear leaf midge. Presumably, conventional management practices using insecticides had been controlling this insect, but economically damaging infestations have begun to occur because of either missed or poorly timed sprays, or because of an emerging pesticide tolerance in local populations. Successful control has been reported in New Hampshire using standard organophosphate compounds (i.e., azinphos-methyl, phosmet) to kill maggots rolled inside the leaves. In European orchards, diazinon also has been reported to be successful. In general, the best strategy appears to be spraying a known infestation in the late spring, after the first generation adults have laid eggs, but before pupation begins. Insecticide persistence is important; in problem orchards, 2–3 post-bloom applications are markedly better than 1–2. It may be necessary to examine the leaves regularly to determine the proper timing. To be practical, it is

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**scaffolds**

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probably best to spray as soon as symptoms of an infestation are found (mid-May to early June).

Very little supplementary information is available about this pest. In New Zealand apple orchards, the use of the synthetic pyrethroid fenvalerate has been correlated with outbreaks of a closely related species (apple leaf midge). Bosc pears are slightly less susceptible than are Bartletts and Clapps. The prospects for natural control are uncertain, although two species of parasitic wasps have been recorded from the apple leaf midge. If insecticide resistance is the root cause of these infestations, and if they start to become more noticeable in commercial orchards, we may ultimately need to re-evaluate our pesticide use patterns in pears and begin looking for different approaches to this problem.❖❖

## SCAB

APPLE SCAB
ASCOSPORE MATURITY
(Dave Rosenberger, Plant Pathology, Hudson Valley Lab)

| | Imm | Mature | Discharged | Tower shoot |
|---|---|---|---|---|
| Peru: | | | | |
| 4/24 | 92% | 8% | 0% | 169 spores |
| Highland: | | | | |
| 4/25 | 58% | 36% | 6% | 1063 spores |

❖❖ In the Champlain Valley (Peru), ascospore maturity early last week was still below the 15-17% mature spores level I usually consider the threshold for beginning fungicide applications in commercial orchards. However, some pseudothecia contained mature spores and were beginning to discharge ascospores. The high leaf-to-leaf variability caused by dry weather resulted in significant discharges in our tower shoot (169 spores) while the % mature spores remained relatively low. Ascospore maturity was expected to advance very rapidly, especially after the area finally received some rain last week.

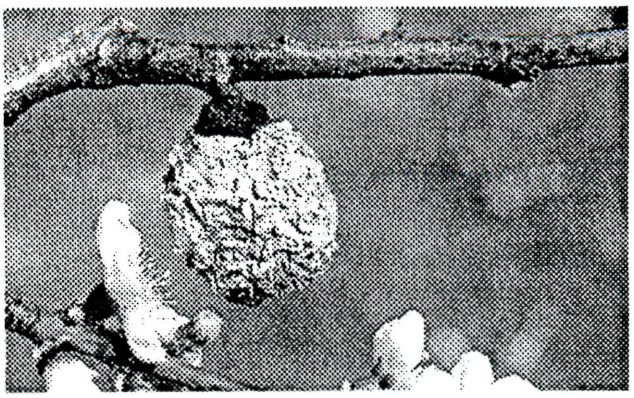
In the lower Hudson Valley, the rain and moderate Mills' period April 21–22 resulted in only a slight increase in the proportion of empty asci detected, changing from 4% on April 20 to 6% on April 25. However, large numbers of spores are available for discharge. No infection periods occurred the week of April 24–29, but we had a light infection period beginning Sunday afternoon, April 30.❖❖

## SO MANY CHOICES

BROWN ROT FUNGICIDES
(Dave Roseberger, Plant Pathology, Hudson Valley Lab)

❖❖ Choosing a brown rot fungicide can be complicated, especially for growers with more than one kind of stone fruit and with concerns about controlling other diseases at the same time that they are applying brown rot fungicides. Many products that are labeled for controlling brown rot are not labeled for all stone fruit crops. The chart on Page 4 has been compiled as an aid for selecting the most appropriate brown rot fungicide for the crop and disease complexes involved. Only the most commonly used brown rot fungicides are included.

Note that restrictions in addition to those noted on the table may apply. Always read the product label. Indar is a new fungicide that is not yet labeled in New York, but the New York label may be available in time for preharvest applications later this summer.❖❖



FIELD NOTES

DISEASES

| Fungicide | Crops labeled for brown rot control[1] | Spray timings on label[2] | PHI[4] (days) | Rate/A | Limitations noted on the label or other concerns about this compound | Other diseases controlled: cherry leaf spot | peach scab | powdery mildew | cory-neum blight | black knot | peach leaf curl |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Captan | Ch, Pe, Ne, Pl, Ap | BB[3] & Prhvst | 0 | 4–8 varies by crop | 4-day worker reentry interval despite 0-d PHI | X | X | – | X | – | – |
| Bravo 500 | Ch, Pe, Ne, Pl, Ap | BB only | — | 4.5–8 pts | Do not apply after shuck split | – | X | – | X | X | X |
| Botran 75W | Ch, Pe, Ne, Pl — Ch, Pe, Ne, — Ap | BB Prhvst: 10-1[3] | 1 | 4 lb | Tart cherries not labeled for any applications | – | – | – | – | – | – |
| Benlate[6] 50W | Ch, Pe, Ne, Pl, Ap | BB Prhvst: 21-3[3] | 3 | 1–2 lb | max 4 lb/A/yr (Ch, 6 lb) Resistance problems— must use in combinations | X | X | X | – | X | – |
| Topsin[6] M (70W) | Ch, Pe, Ne, Pl, Ap | BB Prhvst: 21-1[3]; | 1 | 1.5 lb (Pe—2.25 lb) | Resistance problems | X | X | X | – | X | – |
| Rovral[7] 50W | Ch, Pe, Ne, Pl, Ap | BB & Prhvst | 0 | 1–2 lb | max. 5 appl./yr | X | – | – | – | – | – |
| Ronilan[7] 50W | Ch, Pe, Ne, — Ap | BB & Prhvst | 14 | 1–2 lb | max. 3 BB sprays max. 1 Prhvst spray | – | – | – | X | – | – |
| Funginex[8] 1.6 EC | Ch, Pe, Ne, Pl, Ap — Pe, Ne, — — | BB Prhvst: 21-0[3] | 0 | 36–48 fl oz | max. 3 BB sprays max. 3 Prhvst sprays | – | – | – | – | – | – |
| Nova 40W[8] | Ch, Pe, Ne, — — | BB | 7 | 2.5–6 oz | max. 3.25 lb/A/yr, marginal activity on brown rot | X | – | X | X | – | – |
| Orbit[8] 3.6E | — Pe, Ne, Pl, Ap | BB & Prhvst: 21-0[3] | 0 | 4 fl oz | max. 3 BB sprays max. 2 Prhvst sprays | – | – | – | – | – | – |
| Indar[8] 75WSP | Ch, Pe, Ne, — Ap | BB & Prhvst: 21-1[3] | 1 | 2 oz | Not yet labeled in NY[5] max. 1 lb/A/yr Apply with a wetting agent | X | X | – | – | – | – |

**Footnotes:** [1]Ch = cherries; Pe = peach; Ne = Nectarines; Pl = plums; Ap = apricots.
[2]General spray timings listed for brown rot; other spray timings may be needed for controlling other diseases listed at the right of the chart.
[3]BB = blossom blight; Prhvst = preharvest sprays, with numbers that follow indicating preharvest spray timing in days as specified on the labels (e.g., 10-1 means applications can be made beginning 10 days before harvest with additional applications up to one day before harvest).
[4]PHI = preharvest interval in days.
[5]This product just received its federal label; the label for New York State is expected later this year.
[6-8]Fungicide classes: [6]Benzimidazoles; [7]Dicarboximides; [8]Sterol-inhibitors. Pathogens may develop cross-resistance to fungicides within the same fungicide class.

## PEST FOCUS

Orleans Co.: **Rosy apple aphid** and **pear psylla** 1st hatch.
Geneva: **Lesser appleworm 1st catch. Green fruitworm @ peak.**
Highland: **Rose leafhopper** nymphs increasing.

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

**Geneva NY**

| | 4/24 | 5/1 |
|---|---|---|
| Green fruitworm | 0.3 | 2.7 |
| Redbanded leafroller | 1.0* | 0.6 |
| Spotted tentiform leafminer | 157 | 371 |
| Oriental fruit moth (apple) | 0 | 0 |
| Oriental fruit moth (peach) | 0 | 0 |
| Lesser appleworm | 0 | 0.07* |

**HVL, Highland NY**

| | 4/17 | 4/24 | 5/1 |
|---|---|---|---|
| Green fruitworm | 0.3 | 0.7 | 0 |
| Pear psylla eggs/bud | 2.5 | 12.6 | - |
| Redbanded Leafroller | 2.6 | 10.4 | 8.7 |
| Spotted tentiform leafminer | <0.1* | 13.0 | 45.6 |
| Oriental fruit moth | <0.1* | 0 | 9.3 |
| Fruittree leafroller | – | 0 | 0 |

* = 1st catch

(Dick Straub, Peter Jentsch)

## UPCOMING PEST EVENTS

| | 43°F | 50°F |
|---|---|---|
| Current DD accumulations (Geneva 1/1 – 5/1): | 230 | 97 |
| (Highland 3/1 – 4/30): | 259 | 96 |

| Coming Events: | Ranges: | |
|---|---|---|
| Green fruitworm subsiding | 170–448 | 75–251 |
| Redbanded leafroller 1st flight peak | 180–455 | 65–221 |
| Spotted tentiform leafminer 1st oviposition | 141–319 | 48–154 |
| Spotted tentiform leafminer 1st flight peak | 180–420 | 65–217 |
| Rosy apple aphid nymphs present | 91–291 | 45–148 |
| Green apple aphids present | 127–297 | 54–156 |
| Pear psylla 1st egg hatch | 111–402 | 55–208 |
| European red mite egg hatch | 157–358 | 74–208 |
| Obliquebanded leafroller overwintered larvae active | 149–388 | 54–201 |
| Tarnished plant bug adults active | 71–536 | 34–299 |
| McIntosh at pink | 258–356 | 113–182 |
| Peach at pink | 152–269 | 68–119 |
| Pear at white bud | 217–423 | 99–217 |
| Sweet cherry at bloom | 187–326 | 83–150 |
| Tart cherry at white bud | 257–326 | 109–149 |

## PHENOLOGIES

**Geneva**:
McIntosh @ early tight cluster
Sweet cherry (Windsor) @ early white bud.
Tart cherry (Montmorency)@ bud burst
Pear @ early green cluster
Peach @ half-inch green
Plum @ bud break
**Highland**: McIntosh, @ pink
Bartlett pear @ white bud

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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