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Update on Pest Management and Crop Development

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INSECTS

CAN OF WORMS

OTHER COUNTIES HEARD FROM (Art Agnello, Harvey Reissig & Dick Straub, Entomology, Geneva & Highland)

❖❖ Not all of the summer orchard inhabitants are well known, either during a given season or in every part of the state. Several lesser-known species of NY's legendary caterpillar lineup can pose some concern in localized areas, so it pays to become familiar with some of the more predictable ones.

Apple Leafminer (*Lyonetia prunifoliella*)

This lepidopteran pest was formerly known as *L. speculella*, and it has been most evident in the upper Hudson Valley in recent years, particularly around the Capital District. Larval food plants recorded for this species are apple, plum, cherry (including pin cherry), birch and grape. Female moths oviposit in tender new foliage by piercing the undersides of leaves and depositing single eggs inside the leaf tissue. The hatched larvae form serpentine mines, which are visible as wavy brown lines on the tops of leaves. As the larvae grow, they enlarge their mines into brown blotches, within which they consume all of the leaf tissue between the upper and lower epidermis. Larvae eject their black feces through slits in the bottom of the blotches. When they become full-grown (third instar), they leave their mines to pupate, usually by descending to lower leaves on a silken thread. Just before pupating, the larvae spin silken cocoons, which are suspended by threads and resemble a hammock. There are probably 4–6 generations per year in this area, but only the late summer larvae are noticeable (or problematic); moths are generally never even caught before the end of July.

Larval feeding is confined to the youngest foliage, particularly terminal leaves of vigorously growing shoots. Root initials or water sprouts that are partially shaded are the preferred sites for feeding and pupation. Severely mined leaves turn brown and die; most such leaves drop off prematurely, thereby decreasing the number of some of the most photosynthetically active leaves. The potential for damage is greater in young orchards than in mature ones, and vigorous trees (i.e., those on dwarfing rootstocks) usually suffer more injury than do less vigorous ones.

Populations of apple leafminer normally do not attain high abundance and cause noticeable damage until the beginning of the harvest period. Insecticidal control of larvae or adults may not be

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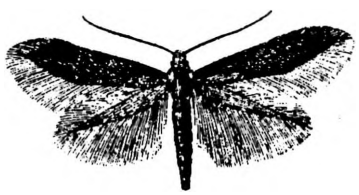
a reasonable tactic because of the pre-harvest intervals of most candidate materials (i.e., carbamates that are used against STLM). Broad-spectrum insecticides used in cover sprays are unlikely to control larvae or adults because leafminer numbers have increased in orchards that have been sprayed regularly with these chemicals. A 1990 field trial in West Va. compared the effectiveness of different insecticides applied 2 times (7-day interval) in August against different life stages of this insect. All the materials tested—Asana, Thiodan, Lannate, Vydate, Cygon, and (to a lesser extent) Carzol — effectively reduced population levels of larvae and pupae, and Asana also had some effectiveness against egg numbers.



Two cultural practices may affect the amount of larval damage obtained. The preferred food of the miners is the new growth of vegetative shoots. The removal of root and water sprouts may greatly reduce the amount of available food for larvae, and thereby control the growth of moth populations. Another practice that may influence leafminer abundance is fertilization. Application of fertilizer in excess amounts or late in the season would enhance vegetative growth, particularly late in the growing season. Abundant larval food at this time would permit additional generations of the insect. These leafminers cause very little injury to unfertilized apple trees with poor or moderate shoot growth. For the present, a good pruning program and restraint in fertilizer use may be the best available means to control populations of this leafminer.

Hudson Valley Leafrollers

Variegated Leafroller *(Platynota flavedana)*
Sparganothis Fruitworm (*Sparganothis sulfureana*)

These two species have occasionally damaged fruit in the Hudson Valley, and have apparently become serious problems in some orchards during the last several years because they have developed resistance to organophosphate insecticides. The variegated leafroller is found from Kingston (in Ulster County) south to the Rockland County line, in a narrow band bordered by the Hudson River on the east and the Marlboro mountain range on the west. The Sparganothis fruitworm is found predominantly in Columbia County on the east side of the Hudson River and north to Albany. It is also prevalent in western New York, but is currently not a pest in commercial apple orchards there.

Both species overwinter as third-instar larvae in the orchard ground cover and begin feeding in early spring on weeds and plants under trees. Larvae pupate in the ground cover, and adult moths emerge shortly after petal fall. Adults lay eggs on apple leaves during June; eggs hatch and larvae are found from late June to July. A second flight begins in late July. These larvae may feed on fruit in late summer

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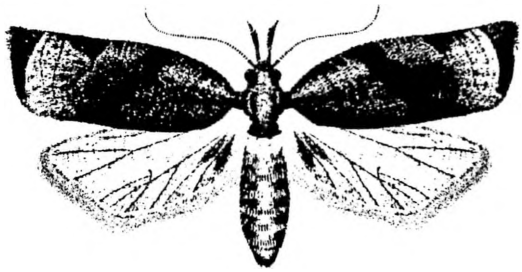
until they reach the third instar, at which time they spin down into the ground cover to overwinter.

Larvae of the summer generation may use dead leaves to build a feeding shelter beneath the apple. Most of the larvae from the overwintering generation probably feed primarily on leaves in the late summer, but they may occasionally damage fruit. This late-season damage is less extensive than that from the summer generation of larvae but usually consists of tiny pinholes on the fruit surface.

Sparganothis Fruitworm

Males of both species can be monitored in pheromone traps, but numbers caught in the traps cannot be related to potential fruit damage in the orchard. Because these species are a serious problem only in certain orchards, the most reliable way to determine if a specific block requires treatment would be to monitor larval populations during June and July. No formal techniques have been developed to sample these larvae. Likewise, no formal studies have been done to estimate an economic threshold level for initiating summer treatments. It would not usually be considered economically feasible to apply special treatments to control these leafrollers unless at least 3–5% fruit damage was anticipated. This threshold represents a larger value than the cost of the spray, but leafroller sprays are often not able to completely eliminate damage. Depending on the material used, special leafroller sprays may also harm mites and beneficials and could increase the cost of mite management.

Several parasites attack leafroller larvae, keeping them to relatively low levels in unsprayed orchards. Because these parasites are susceptible to insecticides, they are not effective in controlling leafrollers in sprayed commercial orchards. Leafrollers in the Hudson Valley are resistant to the commonly used organophosphate insecticides. Other chemicals available for use are the same as those commonly used to control OBLR (SpinTor, Lorsban, Lannate, B.t., Asana). Larger larvae are more difficult to kill with these materials, so sprays should be targeted against small larvae whenever possible.



Variegated Leafroller

TRUNK CALL

This is the time of the season when a second application of a pesticide should be made against peachtree borers in cherries and peaches. A coarse spray directed at the trunk and scaffold branches gives the best protection against ovipositing adults; shutting off all but the bottom nozzles on a speed sprayer won't do an effective job. Use Lorsban 4EC, Thiodan, or a pyrethroid (Ambush, Asana, Pounce); do not spray the fruit.❖❖

PEST FOCUS

Geneva: **Spotted tentiform leafminer** 2nd flight began 6/15. Degree days (base 43°F) since then = 481. **Obliquebanded leafroller** flight began 6/8. Degree days (base 43°F) since then = 644. Larval hatch 50% complete. **Codling moth** flight began 5/19; DD50 since then = 582. **Comstock mealybug** flight beginning.

Highland: **Codling moth** flight began 5/8; DD50 since then = 960. **Obliquebanded leafroller** flight began 6/5. Degree days (base 43°F) since then = 509. **Spotted tentiform leafminer** 2nd flight began 6/12. DD43 since then = 350. **Rose** and **potato leafhopper** nymphs over threshold; **PLH** nymphs numerous in pears. 2nd flights of **oriental fruit moth** and **lesser appleworm** starting.

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UPCOMING PEST EVENTS

	43°F	50°F
Current DD accumulations (Geneva 1/1–7/3):	1500	908
(Geneva 1999 1/1–7/3):	1555	1009
(Geneva "Normal" 1/1–7/3):	1426	967
(Highland 1/1–7/3):	1732	1099
Coming Events:	**Ranges:**	
American plum borer 1st flight subsides	848–1668	440–1205
Apple maggot 1st catch	1045–1671	629–1078
Codling moth 1st flight subsides	1112–2124	673–1412
Lesser appleworm 2nd flight begins	1152–2302	778–1531
Peachtree borer peak flight	864–2241	506–1494
Redbanded leafroller 2nd flight begins	1096–2029	656–1381
Spotted tentiform leafminer 2nd flight peak	1266–2005	775–1355

INSECT TRAP CATCHES (Number/Trap/Day)

Geneva, NY

	6/22	6/26	6/29
Redbanded leafroller	0	0.1*	0.5
Spotted tentiform leafminer	547	378	399
Oriental fruit moth	0.0	1.0	1.5
Lesser appleworm	0.0	1.3	1.0
Codling moth	5.3	5.3	13.7
San Jose scale	0	0	0.3
Pandemis leafroller	0.5	0.3	0.2
American plum borer	1.0	0.4	0.2
Lesser peachtree borer	2.2	3.0	5.5
Peachtree borer	0.0	0.1*	0.3
Obliquebanded leafroller	-	4.1	2.0
Apple maggot	0	0	0
Dogwood borer	0.2*	0.1	0.3

* first catch

Highland, NY

	6/26	7/3
Redbanded leafroller	0.6*	0.9
Spotted tentiform leafminer	49.6	42.5
Oriental fruit moth	0	0.4
Codling moth	4.7	3.6
Pear psylla (eggs/leaf)	1.8	0.4
Pear psylla (nymphs/leaf)	2.2	0.4
Lesser peachtree borer	0.3	0.3
Lesser appleworm	0	0.4
Dogwood borer	0	0
American plum borer	0.3	0.1
Obliquebanded leafroller	0.5	0.6
Tufted apple budmoth	1.1	0