

scaffolds

Update on Pest Management
and Crop Development

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

July 13, 2015

VOLUME 24, No. 16

Geneva, NY

BUGS
OF
SUMMER

ORCHARD
RADAR
DIGEST



HOME FIELD
ADVANTAGE
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BETTER
UP

[H = Highland; G = Geneva]:

Roundheaded Appletree Borer

Peak RAB egg hatch roughly: July 4 to July 23 (H)/July 7 to July 29 (G).

Dogwood Borer

Peak DWB egg hatch roughly: July 24 (H)/July 29 (G).

Codling Moth

Codling moth development as of July 13:

1st generation adult emergence at 93% (H)/77% (G) and 1st generation egg hatch at 85% (H)/40% (G).

Oriental Fruit Moth

2nd generation, second treatment date, if needed:
July 11 (H)/July 18 (G).

❖❖ There are many insects present in apple orchards that provide a benefit to growers by feeding on pest species. It is important that growers and orchard managers be able to recognize these natural enemies, so that they are not mistaken for pests. The best way to conserve beneficial insects is to spray only when necessary, and to use materials that are less toxic to them (see Tables 6.1.2 & 7.1.2, pp. 56 and 65 of the Recommends). This brief review, taken from IPM Tree-Fruit Fact Sheet No. 18 (available online at: <http://www.nysipm.cornell.edu/factsheets/treefruit/pests/ben/ben.asp>), covers the major beneficial insects that are likely to be seen in N.Y. orchards, concentrating on the most commonly seen life stages. Factsheet No.

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PEST FOCUS

UPCOMING PEST EVENTS

23, "Predatory Mites" (online: <http://www.nysipm.cornell.edu/factsheets/treefruit/pests/pm/pm.asp>), reviews mites that are important predators of leaf-feeding mites. Photos and biological information on these and other beneficial species can also be found using the online (hosted by MSU) search engine version of the "Tree Fruit Field Guide to Insect, Mite, and Disease Pests and Natural Enemies of Eastern North America": <http://www.ipm.msu.edu/search>. A hard copy of the Tree Fruit Field Guide (formerly NRAES-169) can be purchased from Plant and Life Sciences Publishing in Ithaca; a link to the site can be found at the Cornell Fruit Page: http://www.fruit.cornell.edu/tree_fruit/IPM-General.html

CECIDOMYIID LARVAE (*Aphidoletes aphidimyza*)

These gall midge flies (Family Cecidomyiidae) are aphid predators, and overwinter as larvae or pupae in a cocoon. Adults emerge from this cocoon, mate, and females lay eggs among aphid colonies. The adults are delicate, resembling mosquitoes, and are not likely to be seen. The eggs are very small (about 0.3 mm or 1/85 in long) and orange. They hatch into small, brightly colored, orange larvae that can be found eating aphids on the leaf surface. These predacious larvae are present from mid-June throughout the summer. There are 3–6 generations per year. In addition to aphids, they also feed on soft-bodied scales and mealybugs.

SYRPHID FLY LARVAE (Family Syrphidae)

The Family Syrphidae contains the "hover flies", so named because of the adults' flying behavior. They are brightly colored with yellow and black stripes, resembling bees. Syrphids overwinter as pupae in the soil. In the spring, the adults emerge, mate, and lay single, long whitish eggs on foliage or bark, from early spring through midsummer, usually among aphid colonies. One female lays several eggs. After hatching, the larvae feed on aphids by piercing their bodies and sucking the fluids, leaving shriveled, blackened aphid cadavers. These predacious larvae are shaped cylindrically and taper toward the head. There are 5–7 genera

per year. Syrphid larvae feed on aphids, and may also feed on scales and caterpillars.

LADYBIRD BEETLES (Family Coccinellidae)

- *Stethorus punctum*: This ladybird beetle is an important predator of European red mite in parts of the northeast, particularly in Pennsylvania, and has been observed intermittently in the Hudson Valley of N.Y., and occasionally in western N.Y. *Stethorus* overwinters as an adult in the "litter" and ground cover under trees, or in nearby protected places. The adults are rounded, oval, uniformly shiny black, and are about 1.3–1.5 mm (1/16 in) long. Eggs are laid mostly on the undersides of the leaves, near the primary veins, at a density of 1–10 per leaf. They are small and pale white, and about 0.3–0.4 mm (1/85 in) long. Eggs turn black just prior to hatching. The larva is gray to blackish with numerous hairs, but becomes reddish as it matures, starting on the edges and completing the change just prior to pupation. There are 3 generations per year in south-central Pennsylvania, with peak periods of larval activity in mid-May, mid-June and mid-August. The pupa is uniformly black, small and flattened, and is attached to the leaf.

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- **Other Ladybird Beetles:** Ladybird beetles are very efficient predators of aphids, scales and mites. Adults are generally hemisphere-shaped, and brightly colored or black, ranging in size from 0.8 to over 8 mm (0.03–0.3 in). They overwinter in sheltered places and become active in the spring. Eggs are laid on the undersides of leaves, usually near aphid colonies, and are typically yellow, spindle-shaped, and stand on end. Females may lay hundreds of eggs. The larvae have well-developed legs and resemble miniature alligators, and are brightly colored, usually black with yellow. The pupal case can often be seen attached to a leaf or branch. There are usually 1–2 generations per year. One notable species that is evident now is *Coccinella septempunctata*, the seven-spotted lady beetle, often referred to as C-7. This insect, which is large and reddish-orange with seven distinct black spots, was intentionally released into N.Y. state beginning in 1977, and has become established as an efficient predator in most parts of the state.

LACEWINGS (Family Chrysopidae)

Adult lacewings are green or brown insects with net-like, delicate wings, long antennae, and prominent eyes. The larvae are narrowly oval with two sickle-shaped mouthparts, which are used to pierce the prey and extract fluids. Often the larvae are covered with "trash", which is actually the bodies of their prey and other debris. Lacewings overwinter as larvae in cocoons, inside bark cracks or in leaves on the ground. In the spring, adults become active and lay eggs on the trunks and branches. These whitish eggs are laid singly and can be seen connected to the leaf by a long, threadlike "stem". Lacewings feed on aphids, leafhoppers, scales, mites, and eggs of Lepidoptera (butterflies and moths).

TRUE BUGS (Order Hemiptera)

There are many species of "true bugs" (Order Hemiptera) such as tarnished plant bug, that feed on plants, but a number of them are also predators of pest species. The ones most likely to be seen are "assassin bugs" or reduviids (Family Reduviidae), and "damsel bugs" or nabids (Family Nabidae).

These types of predators typically have front legs that are efficient at grasping and holding their prey.

PARASITOIDS

Parasitoids are insects that feed on or in the tissue of other insects, consuming all or most of their host and eventually killing it. They are typically small wasps (Order Hymenoptera; e.g., families Ichneumonidae, Braconidae, Chalcididae), or flies (Order Diptera; e.g., family Tachinidae). Although the adult flies or wasps may be seen occasionally in an orchard, it is much more common to observe the eggs, larvae, or pupae in or on the parasitized pest insect. Eggs may be laid directly on a host such as the obliquebanded leafroller, or near the host, such as in the mine of a spotted tentiform leafminer. After the parasitoid consumes the pest, it is not unusual to find the parasitized larvae or eggs of a moth host, or aphids that have been parasitized ("mummies"). Exit holes can be seen where the parasitoid adult has emerged from the aphid mummy.

GENERALIST PREDATORS

There is a diversity of other beneficial species to be found in apple orchards, most of which are rarely seen, but whose feeding habits make them valuable additions to any crop system. The use of more selective pesticides helps to maintain their numbers and contributes to the level of natural control attainable in commercial fruit plantings. Among these beneficials are:

- **Spiders (Order Araneida):** All spiders are predaceous and feed mainly on insects. The prey is usually killed by the poison injected into it by the spider's bite. Different spiders capture their prey in different ways; crab spiders (Thomisidae and Philodromidae) and jumping spiders (Salticidae) forage for and pounce on their prey — the crab spiders lie in wait for their prey on flowers — and web-building spiders (e.g., Araneidae, Theridiidae, and Dictynidae) capture their prey in nets or webs.

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- **Ants (Family Formicidae):** The feeding habits of ants are rather varied. Some are carnivorous, feeding on other animals or insects (living or dead), some feed on plants, some on fungi, and many feed on sap, nectar, honeydew, and similar substances. Research done in Washington has shown certain species (*Formica* spp.) of ants to be effective predators of pear psylla.

- **Earwigs (Family Forficulidae):** Although these insects may sometimes attack fruit and vegetable crops, those found in apple orchards are probably more likely to be scavengers that feed on a variety of small insects. ❖❖



**FRUIT
TOUR**

**EVENT
ANNOUNCEMENTS**

WAYNE COUNTY FRUITGROWER TOUR
 Wednesday, August 5, from 9:30 am
 Registration and 1st stop at Wilbert's Fruit Farm, Walworth-Ontario Rd, Walworth, NY (GPS: N 43.160577, W 77.287325)

❖❖ Sponsored by agr.assistance, this large, informative and entertaining tour is in its 17th year, and will feature presentations on return bloom, pollination & crop set, frost control, apple scab and fire blight control, hard cider production, improving tree growth, black stem borer, plus much more. Door prizes, lunch, a light-hearted atmosphere, a BBQ/clambake dinner with a live band, growers and industry representatives from NY and surrounding states — always a great way to spend a midsummer day. Free attendance. Contact Lindsay LaMora (585-734-8904; lindsaylamora@agrassistance.com) for RSVP pre-registration and tour information. ❖❖

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PEST FOCUS

Highland: 1st **apple maggot** trap catch today, 7/13. fruit damage observed.

INSECT TRAP CATCHES (Number/Trap/Day)

Geneva, NY			Highland, NY			
	<u>7/6</u>	<u>7/10</u>	<u>7/13</u>		<u>7/6</u>	<u>7/13</u>
Redbanded leafroller	1.9	2.0	1.7	Redbanded leafroller	0.0	0.0
Spotted tentiform leafminer	26.5	15.3	12.0	Lesser appleworm	0.4	0.2
Oriental fruit moth	4.8	3.9	1.7	Oriental fruit moth	1.0	0.5
Lesser appleworm	0.0	0.0	0.2	Codling moth	0.8	1.7
Codling moth	0.0	0.0	0.0	Spotted tentiform leafminer	41.1	26.2
American plum borer	0.0	0.0	0.0	San Jose scale	0.1	33.9
Lesser peachtree borer	1.1	0.5	1.0	Dogwood borer	0.9	1.7
Peachtree borer	0.3	0.2	0.0	Obliquebanded leafroller	0.7	0.4
Dogwood borer	19.9	19.0	–	Tufted apple budmoth	–	0.0
Pandemis leafroller	0.1	0.2	0.0	Apple maggot	0.0	0.1*
Obliquebanded leafroller	1.3	1.0	0.4			
Apple maggot	0.5	0.2	0.3			

* first catch

UPCOMING PEST EVENTS

	<u>43°F</u>	<u>50°F</u>
Current DD* accumulations (Geneva 1/1–7/13/15):	1658	1097
(Geneva 1/1–7/13/2014):	1727	1151
(Geneva "Normal"):	1783	1100
(Geneva 1/1–7/20, predicted):	1860	1250
(Highland 1/1–7/13/15):	2024	1383
<u>Coming Events</u>	<u>Ranges (Normal ±StDev):</u>	
Oriental fruit moth 2nd flight peak	1451–1969	925–1323
American plum borer 2nd flight begins	1557–2089	1029–1395
Comstock mealybug 1st flight peak	1505–1731	931–1143
Comstock mealybug 1st flight subsides	1818–2132	1216–1418
Pandemis leafroller flight subsides	1428–1690	891–1099
Spotted tentiform leafminer 2nd flight peak	1382–1794	866–1196
Codling moth 2nd flight begins	1563–2251	1019–1511
Dogwood borer flight peak	1477–1895	925–1257
Lesser appleworm 2nd flight begins	1408–2104	909–1401
Redbanded leafroller 2nd flight peak	1553–1993	997–1337
STLM 2nd gen. tissue feeders present	1378–2035	913–1182
Apple maggot 1st oviposition punctures	1605–2157	1144–1544
Obliquebanded leafroller 1st flight subsides	1610–2040	1046–1374
San Jose scale 2nd flight begins	1629–1979	1058–1336
*[all DDs are Baskerville-Emin (B.E.)]		

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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