

Ohio Fruit ICM News

Editor: Shawn R. Wright
Ohio State University South Centers
1864 Shyville Rd., Piketon, OH 45661
Phone (740) 289-2071 extension 120
E-mail: wright.705@osu.edu

<http://southcenters.osu.edu/hort/icmnews/index.htm>

Volume 11 (22)

July 13, 2007

In This Issue

Comments from the Editor
Fruit Observations and Trap Reports
Preliminary Monthly Climatologic Data for Selected Ohio Locations
Plant and Pest Development
Mean and Green
Insect Management for Organic Highbush Blueberries
Calendar
Ohio Poison Control Phone Number

Comments from the Editor

Black raspberry harvest is almost complete for the traditional varieties. We picked our first blackberry from one of Dr. Clark's new primocane blackberries we are evaluating and it had good size and flavor. Blueberry harvest is almost complete at Piketon. Depending on what varieties are being grown harvest can continue throughout the summer. Japanese beetles are becoming a pest again, so it is important to check your pre-harvest interval when you are spraying to control them.

Fruit Observations and Trap Reports Trap reports for Columbus are posted at least once per week on the internet at <http://bugs.osu.edu/welty/tree-traps.html>

Waterman Lab Apple Orchards, Columbus, 7/05/07 to 7/11/07

Redbanded leafroller:	0 (down from 3 last week)
Spotted tentiform leafminer:	679 (up from 557 last week)
San José scale (mean of 2):	68.5 (up from 17 last week)
Codling moth (mean of 3):	3.3 (up from 1.6 last week)
Lesser appleworm (mean of 2):	7 (down from 9 last week)
Tufted apple budmoth:	2 (up from 0 last week)
Oblique-banded leafroller:	0 (down from 1 last week)
Variegated leafroller:	0 (same as last week)
Apple maggot (mean of 3):	0.6 (same as last week)

Ron Becker Trap reports 7/9-7/13
Wayne:

Codling Moth- 0.1
 Oriental Fruit Moth - 7.0
 Lesser peachtree borer - 0
 Peachtree borer - 4

Holmes:

Codling Moth - .08
 Oriental Fruit Moth - 0 (down from 4.5)
 Lesser peachtree borer - 14.5 (down from 17.0)
 Peachtree borer - 1.0 (up from .5)

Medina:

Codling Moth - .08
 Oriental Fruit Moth - 5.0
 Lesser peachtree borer - 0
 Peachtree borer - 0

Preliminary Monthly Climatologic Data for Selected Ohio Locations - June 2007

	June		Average Temperatures			
	Precip.	Normal	High	Low	Monthly	Normal
Akron-						
Canton	3.01	3.55	80.6	57.2	68.9	67.5
Cincinnati	1.74	4.42	85.6	62.8	74.2	72.0
Cleveland	1.66	3.89	80.2	59.1	69.6	67.5
Columbus	2.78	4.08	84.2	62.0	73.1	71.2
Dayton	1.78	4.21	83.0	60.4	71.7	70.2
Mansfield	3.88	4.52	80.4	56.8	68.6	66.8
Toledo	2.95	3.80	83.3	58.1	70.7	68.8
Youngstown	3.67	3.91	80.3	54.4	67.4	65.9

This data is from the National Weather Service. Temperature is Fahrenheit and precipitation is in inches.

Plant and Pest Development - (Based on Scaffolds Fruit Newsletter, Coming Events (D. Kain & A. Agnello), NYSAES, Geneva)

American plum borer 2nd flight peak	1310-1676
Spotted tentiform leafminer 2nd flight subsides	1328-1672
Codling moth 2nd flight peak	1337-1977
Rose-of-Sharon first bloom	1347
San Jose scale 2nd flight peak	1432-1790
Apple maggot flight peak	1455-1763
Redbanded leafroller 2nd flight subsides	1469-1855
Lesser appleworm 2nd flight peak	1473-2263
Comstock mealybug 2nd gen. crawlers	1505-1781

emerging	
Spotted tentiform leafminer 3rd flight begins	1522-1864
Obliquebanded leafroller 2nd flight begins	1528-1836
Oriental fruit moth 3rd flight begins	1597-1893
Comstock mealybug 2nd gen. crawlers peak	1658-1737
Spotted tentiform leafminer 3rd flight peak	1775-2121
Obliquebanded leafroller 2nd flight peak	1784-2108
San Jose scale 2nd flight subsides	1785-2371
Oriental fruit moth 3rd flight peak	1821-2257
Redbanded leafroller 3rd flight peak	1881-2327
Apple maggot flight subsides	1908-2368
Codling moth 2nd flight subsides	1944-2536
Lesser appleworm 2nd flight subsides	1973-2387
Oriental fruit moth 3rd flight subsides	2000-2288
Lesser peachtree borer flight subsides	2017-2433
Obliquebanded leafroller 2nd flight subsides	2036-2458
Redbanded leafroller 3rd flight subsides	2142-2422
American plum borer 2nd flight subsides	2184-2544
Spotted tentiform leafminer 3rd flight subsides	2246-2432

Mean and Green by Art Agnello (Source: Scaffolds Fruit Journal Vol. 16, No. 17)

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 5 & 12, pp. 58 and 64 of the Cornell 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. 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.

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 generations 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.

• **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.
- **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.

Insect Management for Organic Highbush Blueberries by Dr. Cesar Rodriguez-Saona, Extension Specialist in Blueberry Entomology, Rutgers University
Mr. Dean Polk, IPM Agent – Fruit (Source: The Blueberry Bulletin Vol. XXIII, No. 13)

We provide a list of cultural, behavioral, and chemical insect control strategies approved for organic farming in blueberries.

- 1) Regular pruning to take out old canes will remove potential overwintering sites of Putnam scale. Putnam Scale overwinters as adult female under the bark of old canes. Pruning of old canes reduces overwintering population.
- 2) Practice clean cultivation and suppress weeds in and around blueberry fields. Lack of ground cover (weeds) will preclude the availability of suitable overwintering habitats for a number of pests such as cranberry weevil and plum curculio. Regular disking and cultivation of the space between blueberry rows will not only help suppress weed populations, but will also expose both overwintering and active stages of the pests to their natural enemies and high temperatures during summer.
- 3) Use pheromone traps to monitor redbanded leafroller, obliquebanded leafroller, and cranberry fruitworm populations. Pheromone traps are useful in timing the approved insecticide applications.
- 4) Entrust is a formulation of spinosad approved by the Organic Materials Review Institute (OMRI) for use on organic blueberries. This product is expected to have activity against caterpillars (e.g. cranberry fruitworm), blueberry maggot, and thrips.
- 5) GF-120 is a bait formulation containing spinosad registered exclusively for managing blueberry maggot. This formulation has proteins and sugars that are known to enhance feeding by adult blueberry maggots.
- 6) Insecticides based on *Bacillus thuringiensis* (Bts) and azadirachtin (neem plant extract) are effective against caterpillar pests. Azadirachtin-based products (e.g., Aza-Direct, Agroneem, Neemix) are more broad-spectrum and are expected to have efficacy against aphids, leafhoppers, thrips, and caterpillar pests. Rotenone is another botanical product that can also be used for managing caterpillar pests and sucking insects.
- 7) Products containing natural pyrethrum (e.g. Pyganic) are effective against blueberry maggot, the most important pest of highbush blueberries. However, not all products containing natural pyrethrum are approved for organic growing because of the presence of synergist piperonyl butoxide. Pyrethrum products formulated with petroleum-based carriers are also not permitted for organic use. Only products that contain natural pyrethrum alone without petroleum-based carriers are approved for use.
- 8) Early maturing varieties such as Weymouth, Bluetta, and Earlyblue can nearly escape blueberry maggot infestations compared to late maturing varieties whose ripening periods synchronize with the flies' egg-laying period. The blueberry maggot flies in New Jersey

typically begin laying eggs around 20-22 June, but started this year by June 14. Usually by this date, some early varieties would have been harvested two or more times, significantly escaping infestation.

9) Blueberry scorch and blueberry stunt diseases are caused by blueberry scorch virus and blueberry stunt phytoplasma, respectively. Blueberry scorch is vectored by several species of aphids and blueberry stunt is transmitted by sharpnosed leafhoppers. Effective vector management and aggressive rouging of symptomatic plants are the only viable strategies available to manage these diseases at this time. The botanical pesticide sabadilla and insecticidal soap (e.g. M-Pede) can be effective against leafhoppers. Surround (for processing blueberries only) and Neemix are also registered for leafhopper control in blueberries. Aphids have several natural enemies such as lady beetles, lacewings, syrphid flies, and parasitic wasps. Populations of these natural enemies can keep this as well as other pests below economic thresholds. Insecticidal soap can be effective against aphids.

For information of organic farming visit the Northeast Organic Farming Association website (<http://www.nofa.org/index.php>); for a complete list of organic materials visit the Washington State Department of Agriculture Organic Food Program website (<http://agr.wa.gov/FoodAnimal/Organic/default.htm>).

Calendar - Newly added in ***Bold***

July 14 -- Kentucky Nut Growers Association Summer Grafting Meeting, Don Compton's Farm, 387 W. Short St, Marengo, IN 47140; 812-365- 2278.

July 19, Crop, Soil, and Water Field Night, OSU South Centers, Piketon. For more information contact Dr. Rafiq Islam, 740-289-2071.

July 24, Farm Focus Field Day 2007, 8 a.m to 3 p.m Van Wert, Ohio. Rain date if needed- Thursday, July 26, 2007. Topics include GPS guidance and autosteering demonstrations, One pass fall tillage equipment demonstrations, OSU Entomology specialists covering corn rootworm scouting and root rating, plus other pests! There will be no charge for admission. For more information phone (419) 238-1214.

July 26, Beekeeping Workshop, OSU South Centers, Piketon. 3:00-8:00. See this issue for more information.

August 9, OSU South Centers Horticulture Field Night.

August 14-15, 2007. NASGA Summer Tour, Niagara Falls Canada and Niagara region of New York.

August 16, Ohio Grape & Wine Day, Ashtabula Agricultural Research Station, Kingsville. For more information contact Greg Johns (440/224-0273).

August 23, Northwest Michigan Horticultural Research Station Open House and Equipment Show, Traverse City, Michigan. For more information phone (231) 946-1510 or www.maes.msu.edu/nwmihort.

September 15 -16, Ninth Annual Ohio Pawpaw Festival, Lake Snowden. The Pawpaw will be celebrated with music, vendors, tastings, a cook-off, contests, kid's activities, and more for the whole family. To find out more visit www.pawpawfest.com or email info@pawpawfest.com.

October 5-6, US Highbush Blueberry Council Fall Meeting, Crowne Plaza Northstar Hotel, Minneapolis, Minnesota. For more information: <http://www.blueberry.org/calendar.htm>.

Oct. 27, Kentucky Nut Growers Association Fall Meeting, UK Research and Education Center, Princeton. Contact Joe Masabni 270-365-7541 ext 247; e-mail jmasabni@uky.edu.

Nov. 11-13, Southeast Strawberry Expo. Sheraton Imperial Hotel in Research Triangle Park. For more information contact Debby Wechsler, NC Strawberry Association, phone 919-542-3687 or email ncstrawberry@mindspring.com.

Jan. 7-8, 2008 -- Kentucky Fruit and Vegetable Conference, Embassy Suites, Lexington, KY. Contact John Strang 859-257-5685; e-mail: jstrang@uky.edu

Jan 14-16, 2008. Ohio Produce Growers and Marketers Association Congress, Kalahari Resort & Conference Center, Sandusky Ohio

NOTE: Disclaimer - This publication may contain pesticide recommendations that are subject to change at any time. These recommendations are provided only as a guide. It is always the pesticide applicator's responsibility, by law, to read and follow all current label directions for the specific pesticide being used. Due to constantly changing labels and product registrations, some of the recommendations given in this writing may no longer be legal by the time you read them. If any information in these recommendations disagrees with the label, the recommendation must be disregarded. No endorsement is intended for products mentioned, nor is criticism meant for products not mentioned. The author and Ohio State University Extension assume no liability resulting from the use of these recommendations.

Ohio Poison Control Number

(800) 222-1222
TDD # is (614) 228-2272