



Newsletter Extension

Fruit ICM News

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Calendar

May 10-12: Ohio Wine Competition, Fisher Auditorium, North Exhibit Area and Conference Room, OARDC, Wooster, 2 pm to 6:30 pm. For more information contact Todd Steiner, 330-263-3881.

May 26: Twilight Tree Fruit Field Meeting, Branstool Orchards, Utica, OH. Meet at the farm market on the north side of S.R. 62, 1 ½ miles east of the Utica intersection of S.R. 62 & S.R. 13. Guest speakers will be Dr. Diane Miller and Dr. Mike Ellis.

June 30: Ohio Fruit Growers Society Summer Tour, OARDC Horticulture Unit 2, Wooster, 8 am to 3 pm. Registration fee.

Oriental Fruit Moth

Source: <http://tfpg.cas.psu.edu/part2/part22bv.htm>

Oriental fruit moth, *Grapholita molesta*, is a pest of most stone and pome fruits. In pome fruits, its appearance and injury is similar to that of the codling moth and lesser appleworm.

Description and life cycle

Adults are gray, with a wing spread of 1/4 inch; the wings are gray with brown markings. Eggs are single, flat, whitish ovals on twigs or the undersides of leaves. Larvae are grayish-white with a black head and reach 1/2 inch at maturity. Larvae are distinguished from codling moth by the presence of a

black anal comb on the bottom of the last body segment.

Oriental fruit moths have four to five generations per year in Pennsylvania, with the first and last two generations most numerous. They overwinter as larvae in silken cocoons on the tree or on the ground, and they pupate and begin to emerge as adults during April, shortly before peach trees bloom. These females lay up to 200 eggs, primarily during May. The succeeding overlapping generations extend into September and October.

The earliest indication of injury is a dying back of the new growth of twigs in spring. A first-generation larva enters at a leaf axil near the tip of a shoot and bores down the central core for several inches, causing the terminal to wilt, or "flag." Later-generation larvae may enter the fruit near the stem end and make feeding burrows that can extend to the pit or to the core. In peaches, the mature larva exits the fruit from the side, leaving a large gumming hole with much frass. In apples, Oriental fruit moth larvae may feed around, but not in, the core.

Monitoring and management

Spray timing can be aided by using pheromone traps to establish a biofix (i.e., first sustained capture of two or more moths per trap) and then calculating and recording degree days to determine the percent egg hatch for each generation. Place sex pheromone traps in stone fruit and/or apple orchards in early April and check daily until biofix is established. Then, monitor the traps weekly thereafter throughout the season. You will need to record the local temperature each day, beginning with the establishment of biofix. Timing of insecticide sprays for the first and second generations on peaches are as follows:

- First generation: 150 to 200 and 350 to 375 degree-days following biofix;
- Second generation: 1,150 to 1,200 and 1,450 to 1,500 degree-days;
- Third generation: 2,100 to 2,200 and 2,450 to 2,500 degree-days for peaches and 2,450 to 2,500 and 2,900 to 3,000 degree-days for apples

The differences in larval development due to feeding on various food sources (i.e., terminals, fruits, apple, peach) and possible adult movement between adjacent apple and peach orchards contribute to significant overlapping between generations late in the season. See accompanying table for insecticide efficacy against OFM and other pests.

Mating disruption materials such as sprayable pheromones and hand-applied dispensers (i.e., Isomate M-100, Isomate Rosso, Hercon Confuse OFM) can be used to manage this pest. Hand-applied dispensers should be placed in the mid- to upper level of the tree canopy at the label rate at the pink stage. Various kinds of hand-applied dispensers are available on the market, but even the dispensers with the shortest pheromone release time remain effective for at least 90 days. The sprayable pheromones can be applied together with routine pesticide applications. Their effective time depends upon pheromone formulation, rate, and weather conditions. Ideally, orchards should be at least 5-10 acres in size for mating disruption to be effective. Moreover, monitoring should proceed as usual to check the effectiveness of disruption.

In addition, new, less time-consuming mating disruption technologies such as point release or attract-and-kill products (Last Call OFM) are being developed and will be available for Oriental fruit moth control. Red banded leafroller, *Argyrotaenia velutinana*, is considered a minor pest of apples and many other deciduous fruit crops throughout most of Pennsylvania.

Description and life cycle

Adults have a wingspread of 1/2 inch. The forewing is marked with a band that widens towards the edge. Egg masses of the first brood are deposited on the undersides of larger limbs, while the eggs of the later broods are laid mostly on the upper leaf surface. Larvae are pale green with yellowish heads, and reach 5/8 inch at maturity.

This leafroller has three generations in Pennsylvania. Pupae overwinter in the groundcover. Moths emerge during April and May. First generation larvae hatch at late petal fall. Subsequent flights occur in July and late August. Larvae may be found from May to late September.

Larvae skeletonize leaves from the underside, folding and webbing them together. They feed on the fruit, especially when leaves touch it, making shallow, irregular channels.

Monitoring and management

In orchards with a history of redbanded leafroller problems, the pheromone traps should be used for monitoring moth activity. The redbanded leafroller injury can be controlled by insecticide sprays directed against the early larval instars. See accompanying table for insecticide efficacy against RBLR and other pests.

Key to Pests

AM -- apple maggot

CM -- codling moth

LAW -- lesser appleworm

OBLR -- obliquebanded leafroller

OFM -- Oriental fruit moth

PC -- plum curculio

RAA -- rosy apple aphid

RBLR -- redbanded leafroller

SJS -- San Jose scale

STLM -- spotted tentiform leafminer

WALH -- white apple leafhopper

Apples: Insecticide & Miticide Efficacy ^{a, b}

Source: <http://tfpg.cas.psu.edu/tables/table4-7.htm>

Pesticide ^c	AM	CM	LAW	OBLR	OFM	PC	RAA	RBLR	SJS	STLM	WALH
Actara	-	-	-	-	-	2	1	-	-	2	1
Agri-Mek	-	-	-	-	-	-	-	-	-	1	3
Asana XL	2	1	1	1	1	2	1	1	4	1	2
Assail	-	2	1	4	1	-	1	4	-	1	1
Avaunt	3	2	3	4	2	1	-	2	-	4	2
azinphos-methyl	1	1	1	1	2	1	3	2	3	4	4
<i>B. thuringiensis</i>	-	3	3	2	3	-	-	1	-	-	-
Calypso	2	2	1	4	2	1	1	4	3	1	1
carbaryl	2	2	2	3	2	2	3	3	4	3	1

chlorpyrifos 4E	-	-	-	-	-	-	2	2	1	-	-
Danitol	2	1	1	2	1	2	3	1	4	1	2
Diazinon	2	2	2	3	2	2	1	2	2	3	2
endosulfan	4	4	4	4	4	3	3	4	3	3	2
Esteem	-	2	-	2	2	-	2	-	1	1	-
Imidan	1	2	1	2	2	1	3	2	3	4	4
Intrepid	-	2	2	1	2	-	-	1	-	2	-
Lannate	3	2	2	1	2	3	3	1	4	2	2
Lorsban 50WP	-	-	-	1	2	-	2	2	2	4	-
permethrin	-	-	-	1	1	2	1	1	4	1	2
Provado	-	-	-	-	-	-	1	-	-	1	1
SpinTor	3	3	4	1	3	4	-	2	-	1	-
Supracide	-	-	-	-	-	-	1	1	1	-	-
Surround	3	3	3	4	3	3	-	4	3	4	4
Warrior	2	1	1	1	1	1	1	1	-	1	1

^a Pest control rating system when used at recommended rates: 1 = excellent, 2 = good, 3 = fair, 4 = poor, -- = not rated for this insect or mite. Ratings are based on moderate insect or mite pressure. Heavy infestation may require either higher dosage or shorter intervals, or both.

^b Fruit finish on yellow varieties when used as directed excellent for all products except the following: good for diazinon and Lorsban 50WP.

^c Uppercase names are trade names, lowercase names are common names for products with more than one trade name.

NE-183 Apple Cultivar Evaluation Project

Source: <http://www.ne183.org/>

Objectives

- Evaluate horticultural qualities and pest susceptibility of new apple cultivars, strains, and advanced selections at numerous locations throughout the United States to determine both the limitations and positive attributes of these cultivars
- Develop horticultural and pest management strategies for new cultivars or cultivar strains that are emerging as commercially-acceptable cultivars
- Compare the cost of production and profitability of new apple cultivars

History, Background, and Justification

Apple production in the United States is a strong and viable industry, producing a crop value of over \$1.6 billion dollars annually. Much of the growth and economic viability of this industry has been based upon the development of cultivars for new and traditional markets. Increasingly, the U.S. is competing with foreign producers. Chile, Brazil, South Africa, New Zealand, the European Economic Union, and eastern European countries all impact the market price and sale of apples in the United States. In order

to stay competitive, it is important to rapidly deploy new and viable apple cultivars. This research will test the performance of new apple cultivars for different growing regions within the U.S. and develop new protocols for managing these cultivars.

NE-183 News

2003 Annual Meeting Minutes <http://www.ne183.org/2003/2003ne183minutes.pdf>

2002 Annual Report <http://www.ne183.org/2002/2002ne183annualreport.pdf>

At a ceremony in June 2001 at the Ronald Reagan International Trade Center in Washington, DC, Secretary of Agriculture Ann M. Veneman presented the 55th Annual Secretary of Agriculture's Honor Awards, the highest awards bestowed by USDA. NE-183 received an award "for providing timely information to apple growers nationally about the likely success of establishing new apple cultivars in different regions while meeting consumers' desire for diverse and tasty apples."

ODA Fact Sheet on Farm Markets & Retail Food Licences

Source: ODA, via Eric Barrett, Washington County, Ohio Extension Agent

What is a farm market?

A farm market is a producer-operated facility where fresh fruits and vegetables and other food items are offered for sale.

Are all farm markets exempt from a Retail Food Establishment (RFE) license?

No, the exemption to an RFE license is based upon the *types* of foods being offered for sale at the farm market and registration with the Ohio Department of Agriculture's Division of Food Safety.

What types of foods may the farm market offer for sale and still be exempt from the RFE license?

A farm market that only offers for sale the following types of food items is exempt from the RFE license:

- fresh unprocessed fruits or vegetables
- maple syrup, sorghum, or honey [properly labeled]
- properly labeled products of a cottage food production operation
- cider and other juices *manufactured on site* at the farm market [properly labeled]
- eggs on the condition that the farm market operator is selling eggs *from his own flock* of five hundred or fewer birds
- poultry on the condition that the farm market operator offering to sell the poultry annually slaughters one thousand or fewer chickens *of his own raising*
- non-amenable meats (rabbit, bison, etc.) on the condition that the non-amenable meats that farm market operator is offering to sell are raised by him
- commercially prepackaged food that is not potentially hazardous, on the condition that the food is contained in displays, the total space of which equals less than one hundred cubic feet on the premises where the person conducts business at the farm market

Is a farm market prohibited from offering other foods for sale such as milk and cheese?

No. The farm market operator, however, will lose exemption status and will need to become licensed by their local health department as an RFE.

Is a farm market that is listed in the *Ohio Farmers' Market Directory* exempt from the RFE

license?

Not necessarily. The exemption from the RFE license is based upon the *types* of foods being offered for sale at the farm market. The *Ohio Farmers' Market Directory* is a state directory of farm markets that sell a variety of foods. Some of those listed in the directory may be exempt based upon the foods being offered for sale, while others may not be exempt.

If a farm market is NOT exempt, how is it regulated?

A farm market that is not exempt because of the types of food it is selling is licensed and regulated by the local health department that has jurisdiction. It will be regulated under Chapter 3717 of the Revised Code as an RFE. The local health department will apply the *Ohio Uniform Food Safety Code* rules.

Who regulates exempt farm markets?

The Ohio Department of Agriculture's Division of Food Safety inspects farm markets that are exempt from the RFE license and that are registered with that division.

How does a farm market register with the Ohio Department of Agriculture's Division of Food Safety?

A farm market operator may contact the Division of Food Safety at 1-800-282-1955 to obtain registration information, or e-mail: foodsafety@odant.agri.state.oh.us.

Degree Day Accumulations for Ohio Sites May 12, 2004

Ohio Location	Degree Day Accumulations Base 50	
	Actual	Normal*
Akron-Canton	281	240
Cincinnati	432	406
Cleveland	276	229
Columbus	392	319
Dayton	385	367
Kingsville	245	175
Mansfield	283	237
Norwalk	297	210
Piketon	438	346
Toledo	286	217
Wooster	312	220
Youngstown	272	217

Pest Phenology

Coming Events	Degree Day Accum. Base 50F
Lesser appleworm 1 st flight	49 - 377

Spotted tentiform leafminer sap-feeders present	130 - 325
1 st codling moth catch	141 - 491
European red mite egg hatch complete	183 - 298
San Jose scale 1 st flight peak	229 - 449
Plum curculio oviposition scars present	232 - 348
Peachtree borer 1 st catch	299 - 988
Codling moth 1 st flight peak	307 - 824

Scaffolds Fruit Journal (Art Agnello)

Fruit Observations & Trap Reports

Insect Key	
AM:	apple maggot
CM:	codling moth
ESBM:	eye-spotted budmoth
LAW:	lesser apple worm
LPTB:	lesser peachtree borer
OBLR:	obliquebanded leafroller
OFM:	oriental fruit moth
PTB:	peachtree borer
RBLR:	redbanded leafroller
SJS:	San Jose scale
STLM:	spotted tentiform leafminer
TABM:	tufted apple budmoth
VLR:	variegated leafroller

Site: Waterman Lab, Columbus

Dr. Celeste Welty, OSU Extension Entomologist

Apple: 5/5 to 5/12/04	
Redbanded leafroller	0 same as last wk
Spotted tentiform leafminer	2 down from 17
San Jose scale	9 up from 0
Codling moth	37.0 up from 0.0
Lesser appleworm	29 up from 3
Tufted apple budmoth	3 up from 0
Variegated	0 same as last wk

leafroller	
Obliquebanded leafroller	0 same as last wk

Codling moth biofix date at Columbus was 5/7/04

Site: Medina, Wayne, and Holmes Counties

Ron Becker, IPM Program Assistant

Apple: 5/5 to 5/12/04	
Redbandedleafroller	Holmes: 11 down from 24
	Wayne: 8.3 down from 17
	Medina: 20.5 up from 18
Spotted tentiform leafminer	Holmes: 27.5 down from 300
	Wayne: 70.3 down from 215
	Medina: 180 down from 240
Oriental fruit moth	Holmes: 0 same as last wk.
	Wayne: 2 same as last wk.
	Medina: 0.5 same as last week
Codling Moth	Holmes: 0.5 up from 0
	Wayne: 0 same as last wk.
	Medina: 0 same as last wk

No presence or damage from plum curculio in apples or stone fruit has been found.

Site: West District; Huron, Ottawa, Richland, and Sandusky Counties

Lowell Kreager, IPM Scout/Technician

Apple 5/4 to 5/11/04	
Codling moth	4.8 first report
Lesser appleworm	5.7 up from 3.0
Oriental fruit moth	20.9 up from 1.6
Redbanded leafroller	43.5 up from 40.8
Spotted tentiform leafminer	622 first report
Peach 5/4 to 5/11/04	
Oriental fruit moth	3.7 up from 0.8
Redbanded leafroller	29.2 down from 30.8

Codling moth biofix date at some locations was 5/9/04

Site: East District; Erie and Lorain Counties

Jim Mutchler, IPM Scout/Technician

Apple 5/4 to 5/11/04	
Oriental fruit moth	15.6 up from 12.7
Redbanded leafroller	25.6 up from 23.8
Spotted tentiform leafminer	682 first report
Peach 5/4 to 5/11/04	
Oriental fruit moth	4.3 up from 1.5
Redbanded leafroller	25.5 up from 11.0

WeatherTracker® Apple Scab Report

Thanks to funding from the Ohio Fruit Growers Society and other friends of apple producers, Dave O'Brien, Production Specialist with UAP Great Lakes, and Ted Gastier have established an apple disease network in Ohio. This funding, along with individual purchases by apple producers, has placed 15 Spectrum Technology's WeatherTrackers® in orchards for the purpose of monitoring apple scab infection periods. Growers in eight counties are willingly sharing e-mail reports twice weekly about possible scab infection events as indicated by their monitoring instruments.

The WeatherTracker® instrument constantly monitors air temperature and leaf wetness. Combined with internal software based on the Modified Mills Apple Scab Table, the WeatherTracker® provides direct readings of possible scab infections, as well as a 30 day archive.

The following table is a summary of scab reports from cooperating apple growers. The degree of possible infection is indicated by light, medium, and heavy as used in the Modified Mills Table.

County	Columbiana	East Erie	West Erie	Geauga	Holmes	Licking	Lucas	Sandusky	Wayne
4/13-14	Light					Light			
4/18	Light	Light							
4/21-22			Light	Light					
4/23	Light				Medium	Medium			
4/25				Light		Light			
4/26	Light			Light		Light			
4/30		Medium	Medium	Light	Light	Light	Light		Light
5/1		Medium	Medium	Light	Medium	Light	Heavy	Heavy	
5/2	Medium	Light	Heavy	Light	Medium	Light	Heavy	Heavy	Medium
5/3	Heavy	Light	Heavy	Light					Medium
5/10							Light		
5/11							Light		
5/12		Medium				Medium			

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Information presented above and where trade names are used, they are supplied with the understanding that no discrimination is intended and no endorsement by Ohio State University Extension is implied. Although every attempt is made to produce information that is complete, timely, and accurate, the pesticide user bears responsibility of consulting the pesticide label and adhering to those directions.

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