

# scaffolds

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

May 3, 2010

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Update on Pest Management  
and Crop Development

Geneva, NY

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FULL  
STEAM  
AHEAD

ORCHARD  
RADAR  
DIGEST



## Roundheaded Appletree Borer

RAB adult emergence begins: May 19;  
Peak emergence: June 7.  
RAB egg laying begins: June 1. Peak egg laying period roughly: June 24 to July 9.

## Codling Moth

1st generation adult emergence at 1% and 1st generation egg hatch at 0%.  
1st generation 3% CM egg hatch: June 4 (= target date for first spray where multiple sprays needed to control 1st generation CM).  
1st generation 20% CM egg hatch: June 12 (= target date where one spray needed to control 1st generation codling moth).

## Lesser Appleworm

1st LAW flight, peak trap catch: May 7.

## Mullein Plant Bug

Expected 50% egg hatch date: May 4, which is 7 days before rough estimate of Red Delicious petal fall date.  
The most accurate time for limb tapping counts, but possibly after MPB damage has occurred, is when 90% of eggs have hatched.  
90% egg hatch date: May 11.

## Obliquebanded Leafroller

1st generation OBLR flight, first trap catch expected: June 3.

## Oriental Fruit Moth

1st generation - 55% egg hatch and first treatment date, if needed: May 22.

## San Jose Scale

First adult SJS caught on trap: May 4.

## Spotted Tentiform Leafminer

1st generation sapfeeding mines start showing: May 8.

Optimum sample date is around May 11, when a larger portion of the mines have become detectable.

## White Apple Leafhopper

1st generation WALH found on apple foliage: May 2.



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## INSIDE PITCH

GUEST CORNER I: NEW PRODUCTS FOR USE AGAINST INTERNAL LEPS  
(Larry Hull, Fruit Res & Extension Center, Penn State, Biglerville)

❖❖ The following is a review of the uses of Altacor and Delegate, to alert you to what we have learned since their registration and to inform you about other newly registered insecticides that possess similar activity and selectivity. (Editor's note: This article has been slightly edited to remove references to products not registered in NY. [AMA])

### Altacor 35WDG

Altacor (Trade name, Rynaxypyr; common name, chlorantraniliprole) from DuPont Inc., possesses a new unique mode of action – activation of the insect's ryanodine receptors within the cells of their muscles. A treated insect exhibits a rapid cessation of feeding, lethargic muscle paralysis and eventually death. The primary route of exposure to orchard pests is through ingestion, but there is some reported ovicidal (i.e., egg) and ovi-larvical activity for CM and OFM. It also is highly effective against TABM, OBLR and leafminers. The rate per acre for Altacor on pome fruit ranges from 2.5–4.0 oz with a seasonal maximum of 9.0 oz per acre. In our research trials here at the FREC over the past seven years, Altacor has provided excellent residual control of CM, OFM and the leafrollers at rates of 2.5–3.0 oz per acre. Altacor belongs to the Insecticide Resistance Action Committee's (IRAC) Group 28 classification.

### Delegate 25WG

Delegate (common name, spinetoram) from Dow AgroSciences LLC, is derived from the fermentation product of *Saccharopolyspora spinosa*. Delegate's mode of action is through the excitation of the insect's nervous system by altering the function of the nicotinic and GABA-gated ion channels. More importantly, it does not interact with other known binding sites as used by the neo-

nicotinoids, or the avermectins. On tree fruit, it is highly effective with good residual activity against CM, OFM, leafrollers and leafminers. On pears, it is also highly effective against pear psylla and on peaches in addition to OFM and leafrollers it is active against thrips. This product possesses direct contact and ingestion activity as well as trans-laminar activity. The rate per acre for Delegate on pome and stone fruit ranges from 4.5–7.0 oz with a seasonal maximum of 28 oz per acre and four applications. On pears, only two applications are recommended because of the threat of resistance development by pear psylla. In our research trials here at the FREC, Delegate has consistently provided excellent control of CM, OFM and the leafrollers at rates of 4.5–6.0 oz per acre. Delegate belongs to the IRAC group 5 classification.

### Selectivity Toward Natural Enemies

Both of the above products were registered as reduced-risk insecticides (i.e., low impact to humans, the environment, non-target organisms and natural resources). They are highly selective for certain pests with only minimal impact to our existing natural enemies present in many grower orchards. Again, from our studies at the FREC,

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### scaffolds

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Dept. of Entomology  
NYSAES, Barton Laboratory  
Geneva, NY 14456-1371  
Phone: 315-787-2341 FAX: 315-787-2326  
E-mail: [ama4@cornell.edu](mailto:ama4@cornell.edu)

Editors: A. Agnello, D. Kain

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where we have evaluated all of these products against our primary pest and natural enemy complex in tree fruit over a range of different rates and application timings, we have only found Delegate to be slightly to moderately toxic to one of our major mite predators on tree fruit, the predatory mite – *Typhlodromus pyri*. We have also recently found that Delegate is moderately toxic to the primary parasite of the woolly apple aphid, *Aphelinus mali*. We plan to investigate this further in 2010.

### **Use of New Products in a Resistance Management Approach**

How should growers use these new products within the same season? As stated previously, both products are highly active against CM, OFM and the leafrollers. In Pennsylvania, we have two full generations and a partial third generation of CM, 3 to 4 generations of OFM, and two generations of each leafroller species. Since there are other products that are chemically related (i.e., Voliam Xpress also belongs to IRAC group 28), we are promoting the use of only one IRAC group of chemicals against a single pest generation per season. Therefore, fruit advisors and growers need to decide which generation of CM, OFM and the leafrollers they want to target with each chemical class. For example, I have outlined two options for using these two major chemical classes in such a management scheme. For option A, Delegate or another non-IRAC 28 group (i.e., OPs – IRAC 1B, neonicotinoids – IRAC 4A, etc.) can be used as a two-spray program against the first generation of CM (i.e., first application due at 250 DD post-biofix, followed by a second application at 14 to 17 days later or 550–600 DD) and then rotate to the products within the IRAC 28 group (i.e., Altacor, Voliam) for the second generation of CM. For a complete listing of the IRAC classification groups refer to Penn State's 2010–2011 Tree Fruit Production Guide (web site <http://agsci.psu.edu/tfpg>) [OR, Table 7.1.1 (p. 65) in the Cornell Guidelines (web site: <http://ipmguidelines.org/TreeFruits/content/CH07/default-1.asp>) – AMA]. If Delegate is used as suggested in option A for first generation control of CM, it will also provide excellent con-

trol of TABM and probably OBLR (ideal timing for OBLR is slightly later) and some partial control of the second generation of OFM on apples which starts to emerge in mid- to late June. For option B, Altacor can be used for the first generation of CM (i.e., first application starting at 200–250 DD post biofix and followed by a second application 14 to 17 days later) and then the grower can rotate to Delegate or another IRAC group for second generation control of CM. If the grower chooses Delegate, as outlined in option B, they will also get control of OFM and the leafrollers.

A third option for grower consideration, especially where CM/OFM populations are very high, is to integrate either chemical rotational scheme with pheromone mating disruption (MD) products to reduce high populations rapidly. I have used this approach in several grower orchards during the last two years and have reduced high populations of both species to very low levels, even during the first year. Depending on the population density of CM/OFM and the effectiveness of the combination of MD with either rotational scheme, I found the need for fewer insecticide applications for these pests, especially where growers have used MD for one or more years.

Before deciding on what chemical products to use and in what rotation scheme, fruit advisors and growers also need to assess what other pests may need to be controlled during a given application, and whether the product of choice also impact these other pests. [For example, Voliam Xpress, which contains two active ingredients – lambda cyhalothrin and chlorantraniliprole – as part of the mixture, can control aphids/leafhoppers/leafminers and CM/OFM/leafrollers. For a complete listing of the spectrum of pest activity for these products, please refer to the product label or to the efficacy tables in Table 7.1.1 in the Cornell Guidelines – AMA.]

### **Final Ideas and Thoughts**

I offer some other ideas to control CM and oth-  
continued...

er pests in orchards. We have used Rimon 0.83EC at 75–100 DD following CM biofix as an ovicide to control the first eggs deposited by CM females. Using this approach will allow a delay in the timing of the above products until approximately 350 DD. Another approach that we have researched with great success is the use of a granulovirus (i.e., Cyd-X or Carpovirusine) applied during the first generation egg hatch period of CM (i.e., 225–700 DD) in conjunction with a MD product that affects the mating behavior of both CM and OFM. Using this approach for the past five years has substantially reduced some serious CM populations and allowed for significant reductions in the overall insecticide program for CM.

Also, it is extremely important that growers achieve THOROUGH coverage to get the most activity from all of the above products – remember for all targeted pests (i.e., especially CM, OFM and leafrollers), the primary route of exposure to these products is through ingestion. If thorough coverage is not achieved, the desired level of control will likely not be attained.

In 2010, we now have available a number of highly effective products to add to our arsenal of tools for pest management. I highly encourage growers to use these products carefully and sparingly so we do not lose any of them to resistance over the long-term. If more detailed information is needed regarding the above products or management approaches, please contact Larry Hull at [lah4@psu.edu](mailto:lah4@psu.edu) [or Art Agnello at [ama4@cornell.edu](mailto:ama4@cornell.edu)]. ♦♦♦

## SPOTTING SCOPE

GUEST CORNER II:  
FRUIT FLIES  
SPOTTED?  
(Debbie Breth, CCE-Lake  
Ontario Fruit Team,  
Albion)

❖❖ A new pest on the west coast has the potential to occur in NY. The spotted winged drosophila, *Drosophila suzukii*, has been found in California, Oregon, Washington and Florida. It is one of the vinegar fruit flies attracted to damaged and rotting fruit. But it is different from our endemic fruit fly because it will lay eggs in ripening fruit. The fruit crops where larvae (maggots) of this fruit fly have been detected include raspberries, blueberries, blackberries, strawberries, grapes, cherries, stone fruit, apples and pears. This pest was first identified in Japan and has been detected in China, India, Thailand, Korea, and in 1980 was detected in Hawaii.

In Japan, *D. suzukii* can complete a life cycle in 8–9 days, and has up to 13 generations per year, from April through November. This fly thrives in a temperate climate, especially in moist weather. It is most active when the temperature is about 68°F and will slow down when temperatures exceed 86°F. It does not survive temperatures below freezing, which means it will likely not overwinter in the northeast unless it is kept warm in a compost pile.

The fly looks like our regular vinegar fruit fly with a yellowish brown body and red eyes, as you remember from your biology lab. But the male adults have a dark spot on the edge of the wing near the tip. The female does not have this spot but it has an unusual serrated ovipositor that allows it to cut into ripening fruit to lay eggs which then hatch as maggots. You can see pictures of this fly

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and its damage on the web at <http://cemariposa.ucdavis.edu/files/67726.pdf> developed by UC-Davis. There are other Drosophilidae species, some of which have spots on their wings. Do not mistake sap feeding beetle larvae in strawberries for this pest, as beetle larvae are significantly different from fly larvae. They can also be mistaken for cherry fruit fly larvae.

Are spotted winged Drosophila in NY? None have been detected in NY so far. In California, they are trying different trap styles. One type is a 1 qt. yogurt container with the lid, and small holes drilled in the sides, and 1–2 inches of white wine as bait. This method focuses on finding the male flies with spots on their wings. If you bring in fruit for farm markets, it may be interesting to trap for these pests, although you will also likely be overrun with regular fruit flies. If we identify any unripe fruit with these maggot type larvae, they would be suspect and need to be identified.

It is likely that many insecticides used in our production systems will also kill these flies and they may not be serious pests except in unsprayed plantings, or in organic plantings where organic insecticides used have short residuals.

There are extensive websites developed by UC-Davis, Oregon State University, and Florida Department of Agriculture, where they are publishing more information in the biology and management strategies for this new pest: [http://www.ipm.ucdavis.edu/IPMPROJECT/workshop-spotted-wing\\_drosophila.html](http://www.ipm.ucdavis.edu/IPMPROJECT/workshop-spotted-wing_drosophila.html), <http://swd.hort.oregonstate.edu/>. ♦♦♦

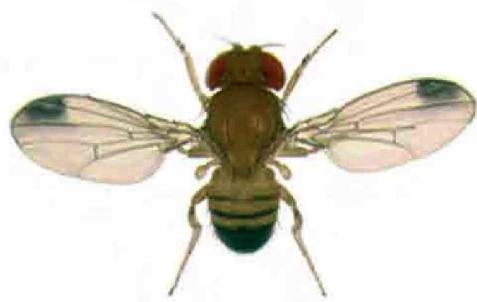


photo courtesy of N. Gompel

## SAMPLES IN THE MAIL

APPLE SCAB  
FUNGICIDE  
RESISTANCE SURVEY  
2010  
(Kerik Cox, Plant  
Pathology, Geneva)

# D I S E A S E S

❖❖ With at least two infection periods across the region and the apple season arriving a month early, apple scab is just around the corner. If you want to participate in the 2010 apple scab fungicide resistance survey, please prepare to make a sample submission. Go here: <http://www.nysaes.cornell.edu/pp/extension/tfabp/smor.htm>

Fresh young scab lesions on cluster leaves are suitable, but fresh terminal leaf scab (coming later) is even better. If you want to send cluster leaf scab in the near future and terminal leaf scab later, that's fine with us. There are a lot of potential sources of attrition with this test, and it doesn't hurt to have an extra set of leaves to fall back on in case the first ones fail. We have only a limited number of slots open for testing in 2010, so be the first to get your scab samples in.

When you are ready to submit, go to our website: (<http://www.nysaes.cornell.edu/pp/extension/tfabp/smor.htm>) and download the instructions and sample submission form. If you don't have the internet, contact a local Cornell cooperative extension support specialist, and have them provide you with a copy of the instructions and submission form. ♦♦♦

## AROUND THE HORN

### REGIONAL TRAP NUMBERS

#### **Week Ending 4/30, Avg No./trap**

Location/County	STLM	OFM	LAW	CM
Lyndonville/Orleans	206	0.3	0.0	0.0
Waterport/Orleans	112	3.3	0.0	0.0
Hilton/Monroe	1928	0.0	0.0	0.0
Lincoln/Wayne	28.0	0.3	0.0	0.0
Sodus-Lakesite/Wayne	8.7	0.0	0.0	0.0
Sodus-Inland/Wayne	5.3	0.3	0.0	0.0
Alton/Wayne	35.0	0.0	0.0	0.0
Wolcott/Wayne	7.7	0.0	0.0	0.0
Newfield/Tompkins	1008	0.3	0.0	0.0
Lafayette/Onondaga	149	0.0	0.0	0.0
Granville/Washington	496	2.3	0.0	0.0
Burnt Hills/Saratoga	490	3.0	0.0	0.0
Altamont/Albany	740	2.5	0.0	0.0
Modena/Ulster	67.0	0.7	0.0	0.0
Marlboro/Ulster	1536	57.5	0.0	0.0

### PEST FOCUS

Geneva: 1st **American plum borer** trap catch today, 5/3.

Highland:

**Black cherry aphid** observed on sweet cherry. **Plum curculio** oviposition scars observed. As of today, < 1% damage to fruitlets observed on Ginger Gold & McIntosh. **European apple sawfly** observed in apple blossoms with low damage levels observed. **Tarnished plant bug** feeding damage observed on apple fruit clusters.

### PHENOLOGIES

#### Geneva:

Apple(McIntosh):	5/3	5/10 (Predicted)
Apple(Red Delicious):	95 % petal fall	fruit set
Apple(Empire):	25% petal fall	petal fall
Pear:	petal fall	fruit set
Sweet cherry:	petal fall	fruit set
Tart cherry	fruit set/shuck split	—
Plum:	50% petal fall	fruit set
Peach:	fruit set/shucks on	—
	petal fall	fruit set/shuck split

#### Highland:

Apple fruit set  
 Pear (Bartlett/Bosc): fruit set  
 Peach: fruit set/shucks off  
 Plum (Italian/Stanley): fruit set/shucks off  
 Apricot: fruit set/shucks off  
 Sweet cherry (Attica): fruit set

## **INSECT TRAP CATCHES**

**(Number/Trap/Day)**

	Geneva, NY			Highland, NY		
	4/26	4/29	5/3		4/26	5/3
Redbanded leafroller	3.0	0.3	4.0	Redbanded leafroller	10.6	4.6
Spotted tentiform leafminer	8.8	1.2	24.9	Spotted tentiform leafminer	72.8	57.2
Oriental fruit moth	0.9	0.5	5.0	Oriental fruit moth	13.6	9.5
Lesser appleworm	0.0	0.0	0.0	Lesser appleworm	0.0	0.0
American plum borer	0.0	0.0	0.4*			

\* first catch

## UPCOMING PEST EVENTS

### Coming Events:

### Ranges (Normal ±StDev):

Green fruitworm flight subsides	246–456	111–241
Spotted tentiform leafminer sap-feeders present	343–601	165–317
Comstock mealybug 1st gen. crawlers in pear	215–441	80–254
Lesser appleworm 1st catch	260–538	119–287
Lesser appleworm 1st flight peak	355–773	174–440
Mirid bugs 90% hatch	472–610	247–323
American plum borer 1st catch	389–487	190–262
Codling moth 1st catch	399–579	200–314
Oriental fruit moth 1st flight peak	348–542	176–288
European red mite 1st summer eggs present	447–555	237–309
Lesser peachtree borer 1st catch	483–689	250–382
Plum curculio oviposition scars present	485–589	256–310
Pear psylla hardshells present	493–643	271–361
San Jose scale 1st catch	446–618	223–339
McIntosh at petal fall	447–523	228–280

**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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