

# Ohio Fruit ICM News

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Volume 13 (8)

May 27, 2009

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## Comments from the Editor

Plasticulture strawberry demand remains strong and production is at peak in southern Ohio. Early matted row strawberries are just coming in to market. Black Raspberry season will be coming up soon though the crop will probably range from 30-80% of normal depending on your location because of winter injury and a late scattered frost that froze some bloom.

## Fruit Observations and Trap Reports

**North Central Ohio Tree Fruit IPM Program** -Report Prepared by Cindy Crawford  
(Erie County Adm Assoc.)

Ted Gastier – West District IPM Scout (Sandusky, Ottawa, Huron & Richland) – 5/18/09

Apples

Spotted tentiform leafminer – 9.3 (down from 20.9)

Redbanded leafroller – 1 (down from 3)

Oriental Fruit Moth – 11 (down from 19.5)

Lesser appleworm – 0 (same as last week)

San Jose scale – 0 (same as last week)

Peaches

Redbanded leafroller- 4 (up from 1)

Oriental Fruit Moth – 1.8 (down from 15.2)

Lois McDowell – East District IPM Scout (Erie and Lorain Counties) – 5/18-19

Apples

Spotted tentiform leafminer – 83.7 (down from 219.6)

Redbanded leafroller – .8 (down from 4.1)

San Jose scale – 0 (same)

Codling Moth - .8 (up from 0)  
Oriental Fruit Moth – .3 (down from 1.4)  
Lesser Appleworm - 1.3 (up from 0)

Peaches

Redbanded Leafroller- 1 (same as last week)  
Oriental Fruit Moth – 2.2 (down from 2.3)  
Lesser Peachtree Borer – 5.3 (up from 1.3)

**Columbus Trap Report – Reported by Gretchen Sutton**

Waterman Lab apple orchards, Columbus, Ohio - 5/20/09 to 5/27/09

Pests:

Redbanded leafroller: 0 (same as last week)  
Spotted tentiform leafminer: 530 (up from 0 last week)  
San Jose scale(mean of 2): 0.5 (up from 0 last week)  
Codling Moth (mean of 3) : 8.3 (up from 3 last week)  
Codling Moth DA/ Combo : 3 (up from 2 last week)  
Lesser appleworm (mean of 2): 141 (up from 30.5 last week)  
Tufted apple budmoth: 7 ( up from 2 last week)

5/13/09 to 5/20/09

Pests:

Redbanded leafroller: 0 (same as last week)  
Spotted tentiform leafminer: 0 (same as last week)  
San Jose scale(mean of 2): 0 (down from 0.5 last week)  
Codling Moth (mean of 3) : 3 (up from 1 last week)  
Codling Moth DA/ Combo : 2 (up from 1 last week)  
Lesser appleworm (mean of 2): 30.5 (up from 8.5 last week)  
Tufted apple budmoth: 2 ( up from 1 last week)

**Alternate Row Middle Spraying with Some of the New Insecticides for Tree Fruits** by Dr. LA Hull, Professor of Entomology, NK Joshi, Ph.D. Candidate, Entomology, Penn State University Fruit Research and Extension Center (*Source*: Fruit Times, Vol.28. #5)

Alternate row middle (ARM) spraying has been an integral component of the IPM approach in Pennsylvania fruit orchards for over 40 years. In ARM spraying, the pesticide is applied to every other row middle rather than spraying every row middle or both sides of the trees as the sprayer passes through the orchard. Currently, ARM spraying is widely practiced by many fruit growers for the following entomological benefits: (1) a reduction of the overall pesticide load during the crop season, therefore lower environmental pollution due to pesticide use;(2) a reduction of production costs as a result of cost savings in terms of labor, machinery, pesticide chemicals, and other utilities associated with the pesticide application process;(3) a lower risk for phytotoxicity because many products are used at reduced application rates;(4) a higher probability for the survival of various natural enemies of insect and mite pests; and (5) this method of application can support the insecticide/acaricide resistance management approach by

allowing more natural enemies to survive (thus greater opportunities for biological control).

#### Requirements of Alternate Row Middle Spraying and New Chemistries:

During the early years of the ARM inception, researchers advocated certain requirements in order to achieve better spray results especially on the old, standard size fruit trees measuring 18-22 ft in height. Some of these requirements included:(1) proper pruning of trees;(2) proper calibration of the sprayer in order to have a minimum air output of 90,000 ft<sup>3</sup> per minute and to assure partial coverage (20-40 %) on the non-sprayed side of each tree row;(3) a short time interval (usually 5-7 days) between each spray; and (4) the application of pesticides at usually lower rates (1/3-2/3 of recommended rates). The pesticides were applied more frequently, but at lower rates to allow greater survival of natural enemies (i.e., the black lady beetle -*Stethorus punctum*). Growers successfully used this method of application for many years when their arsenal of products consisted of only the organophosphate (OP) and carbamate insecticides - highly toxic and fairly short residual products (dependent on rate applied). In today's orchard environment, the trees are planted at higher densities per acre, they are smaller in size and many growers are using small capacity sprayers (PTO). Another change is rapidly taking place as well, many of the OP and carbamate insecticides are disappearing due to the re-registration process or they are less active because of pest resistance. However, taking their place are many new insecticidal products that are highly effective, target less pests (not as broad-spectrum), have less contact activity; some are short residual, while others are more residual than products of old. One thing that has not changed much though - many growers continue to apply their pest control products using the ARM method of spraying. Therefore, we should revisit the requirements of ARM spraying, in light of products that have less contact activity, are not as broad-spectrum as the older products, and must be ingested to obtain their best activity.

Currently, many of the recently registered insecticides available to growers today (i.e., Altacor 35WDG, Belt 480SC, Delegate 25WG, Voliam Flexi, etc.) have lower adverse impacts on the populations of different species of natural enemies as well as pollinators in fruit orchards. These pesticides also have comparatively longer residual activity (compared to the organophosphates and carbamates). In addition, pesticides such as those above have a unique mode of action to kill such targeted pests as codling moth (CM), oriental fruit moth (OFM) and the various leafroller (LR) species. Also, there are no known instances of insecticide resistance to these new chemistries. Considering all of the new advantages associated with using these new classes of insecticides, the practice of ARM spraying in orchards is back in the spotlight once again. Presently, researchers and fruit growers are working diligently in order to understand whether the ARM method of spraying can be successfully used with these new insecticides.

*Altacor 35WDG*: Altacor (Rynaxypyr) is a new class of selective pesticides from Dupont Co. In Pennsylvania, it was registered in the spring of 2008 for the use in pome and stone fruit orchards. Altacor has a new mode of action acting on insect ryanodine receptors. It activates the ryanodine receptors located in the muscles of targeted insect pests.

Consequently, the targeted insect stops feeding (usually in minutes after consuming a dose), becomes paralyzed and dies within 1 to 3 days. Altacor is known to be very effective against such pests as the codling moth, oriental fruit moth, tufted apple bud moth, oblique-banded leafroller and leafminers. Altacor is quite non-toxic against many of our common natural enemies (parasitoids and predators) of insect pests. In research trials at the FREC, the application of Altacor at comparatively lower rates (2.5 oz – 3.0 oz) has provided an excellent residual activity against CM, OFM and LRs.

*Belt 480SC*: Belt (Flubendiamide) belongs to the same chemical class as Altacor (phthalic acid diamides). Belt was recently registered in the fall of 2008 for use on both pome and stone fruits in Pennsylvania. It primarily acts on the same group of insects as Altacor. The label allows three applications per season and the use rate ranges from 3-5 oz/acre.

*Delegate 25WG*: Delegate (Spinetoram) is also a new class of eco-friendly chemical pesticides. The product was registered in the fall of 2007 and many PA growers used the product during the 2008 season. Delegate 25WG contains active ingredient Spinetoram, which is derived from a species of soil bacterium, *Saccharopolyspora spinosa* through the process of fermentation. Upon application, Spinetoram excites the nervous system of the targeted insect pests. Delegate is found to be effective against a number of tree fruit pests including CM, OFM, TABM, OBLR, leafminers, pear psylla and thrips. In orchards, the spray applications of Delegate are reported to be friendly to most of beneficial insects, but it is moderately toxic towards the predatory mite – *Typhlodromus pyri*.

*Voliam Flexi 40WP*: Voliam Flexi (Chlorantraniliprole plus thiamethoxam – common name for Actara®) was registered this past spring for use on pome and stone fruits in PA. Chlorantraniliprole is the active ingredient in the product – Altacor®. Voliam Flexi is more broad-spectrum than Altacor because it also contains thiamethoxam, which is active against aphids, leafhoppers, leafminers, plum curculio and stinkbugs. Use rates for tree fruit crops ranges from 4-7 oz/acre.

#### Need of Modifications in ARM Spraying with the New Chemistries:

As mentioned above, it became quite evident from our previous research that Altacor and Delegate are highly effective against many of our current major pests – CM, OFM, LRs. Both insecticides possess excellent residual activity against these targeted pests at comparatively lower rates of application. Considering these facts, we know that growers are going to apply these new chemistries using the ARM approach (even though the various chemical manufacturers are currently not in favor of using this method to deliver these insecticides to the orchard). Therefore, we conducted a large research trial in 2008 to determine the effectiveness of these two new insecticides using both ARM and every row middle (complete) spraying. In our research trial, all insecticide treatments were applied with an engine driven airblast sprayer calibrated to deliver 100 gpa at 2.4 mph. Treatments were applied as either every row middle sprays (both sides of the tree) or as alternate row middle applications (only one side of the tree during each application). The trees were approximately 14' in height and 10-12' wide.

From this research trial conducted at the FREC farm in Arendtsville, we found that the ARM method of applying Altacor and Delegate was very effective against both internal worms (CM/OFM) as well as leafrollers (see Table 1). For example, three ARM applications of Altacor for 1st generation CM, followed by three ARM applications of Delegate for 2nd generation CM and 2nd and 3rd generation OFM or vice versa, provided excellent control of both IW species as well as the LR complex. When one compares the control of these two treatments to the standard treatment (i.e., Intrepid, Calypso, Rimon – applied two times per generation to every row middle), one can see all effective these two products are for CM/OFM and the leafrollers (see Table 1).

Even with the availability and activity of these new chemistries, some of the factors affecting ARM spraying would remain the same as with the previously used highly toxic pesticides (OPs, carbamates, etc). Some of these factors are as following: (1) tree structure and proper pruning; (2) matching sprayer size and calibration to tree size; (3) appropriate volume of water and spray coverage; (4) spray timings; and (5) awareness and scouting of pests and natural enemy populations.

**Conclusions and Recommendations:**

The key to successful use of Altacor, Belt, Delegate and Voliam Flexi and any new insecticide product when using the ARM spraying method largely depends on thorough spray coverage (these new products must be ingested, they do not have the contact activity characterized by many of the old products), tree size, sprayer type and the timings of spray, interval between sprays, etc. Based on this research, when growers desire to apply these new products, using the old, but trusted ARM spraying method, we highly recommend that growers ensure proper and thorough spray coverage, not only on side of the tree being sprayed, but on the offside of trees as well. Spray coverage and timing are both crucial elements to the successful use of these products within our existing IPM program. In addition, growers should also consider other factors such as sprayer speed, certainly pruning to allow better spray penetration, tree size, and spray intervals – all these factors contribute to the effective use of ARM spraying. During 2009, we plan to continue our research trials to investigate the efficacy of ARM and the every row middle method spraying with Altacor and Delegate as well as some of the newer insecticide products recently registered. We will share the results of these trials with the grower community.

**Table 1. Internal worm (IW-CM/OFM) and leafroller (LR) injury on trees sprayed with alternate row middle and every row-middle (C) applications of Altacor and Delegate – 2008.**

Treatment	Amt/A1	Application dates <sup>1</sup>	% apples IW injury 2 Oct <sup>2</sup>	% Total LR injury
Delegate 25WG	4.5 oz	12 & 23 Jun, 3 Jul (ARM)		
Altacor 35WDG	2.5 oz	28 Jul, 6 & 18 Aug (ARM)	3.2 a	1.2 a

Altacor 35WDG 2.5 oz	12 & 23 Jun, 3 Jul (ARM)		
Delegate 25WG 4.5 oz	28 Jul, 6 & 18 Aug (ARM)	3.3 ab	1.1 a
Delegate 25WG 6.0 oz	16 & 25 Jun (ARM)		
Altacor 35WDG 3.0 oz	31 Jul, 11 Aug (ARM)	4.4 a-d	2.2 ab
Altacor 35WDG 3.0 oz	16 & 25 Jun (ARM)		
Delegate 25WG 6.0 oz	31 Jul, 11 Aug (ARM)	4.4 bcd	2.2 ab
Altacor 35WDG 2.5 oz	16 Jun (C)		
Delegate 25WG 4.5 oz 4	Aug (C)	5.6 d	2.0 ab
Delegate 25WG 4.5 oz	16 Jun (C)		
Altacor 35WG 2.5 oz	4 Aug (C)	5.1 bcd	1.3 a
Intrepid 2F 8.0 oz	12 Jun (C)		
Calypso 480SC 6.0 oz			
+ Intrepid 2F 8.0 oz	25 Jun (C)		
Rimon 0.83EC 20.0 oz	31 Jul (C)		
Calypso 480SC 6.0 oz	14 Aug (C)	9.1 e	2.9 b
Untreated check		35.3 f	6.3 c

<sup>1</sup> C = Complete spray (every row middle), ARM = Alternate row middle. Rates/acre are the amounts applied to both sides of the trees, if an ARM application then rate/acre is 50% of rate listed for each application.

<sup>2</sup> IW and LR injury from Golden Delicious and Yorking (approx. 2,800 apples examined per treatment).

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

June 6 Summer KY State Beekeepers Assoc. Field Day, Walter T. Kelley Company, Letchfield. Pre- registration is required. For more information contact Joe Taylor,KSBA at (270) 879-8654, [shopteacher@gmail.com](mailto:shopteacher@gmail.com) or [shop\\_teacher@yahoo.com](mailto:shop_teacher@yahoo.com).

June 11, Illinois Summer Horticulture Field Day, Royal Oak Farm Orchard, Harvard, Ill. For more information call 309-530-7678.

June 17, Beekeeping Field Day, OARDC (start at Fisher Auditorium), Wooster, 3-7 p.m., registration fee (TBD), (330) 263-3684.

June 18, New Crop Opportunities Workshop, OSU South Centers, Piketon, 6-8 p.m., \$5 registration fee, (740) 289-2071.

June 22-26, The 10th International Rubus and Ribes Symposium. Zlatibor, Serbia.

June 23, National Pollinator Week Celebration, Secest Arboretum, OARDC, Wooster, 2-4 p.m., free, (330) 263-3761.

June 23-24 Southern Indiana Fruit Tour,Engelbrecht Orchards, Evansville, IN on June 23 and Reid's Orchard in Owensboro, KY on June 24. More information to follow.

June 24, OPGMA Summer tour. Hosted by, Bachman's Sunny Hill Fruit Farm and Schacht Family Farm Market. The day begins at Bachman's and will conclude at Schacht's, approximately 5 miles away. OPGMA will host a brief session focusing on food safety during lunch. For more information contact OPGMA, 614-487-1117, [opgma.org](http://opgma.org), or [opgma@ofa.org](mailto:opgma@ofa.org).

More information in this issue.

June 25, Organic Farming Education and Research (OFFER) Program Field Day, West Badger Farm, OARDC, Wooster, 1:30 p.m., free, (330) 202-3528.

July 4-11, 83<sup>rd</sup> National Cherry Festival, Traverse City, MI. For more information [www.cherryfestival.org](http://www.cherryfestival.org).

July 12-15 North American Farmers Direct Marketing Associations Advanced Learning Retreat, Hubers Orchard and Winery, Starlight, Ind. For more information [www.nafdma.com](http://www.nafdma.com).

July 14 U.K. Nursery Crops Program –Air Blast Sprayer Calibration, Green Ridge Tree Farm, 6100 Bardstown, Rd., Elizabethtown, KY. Pre-registration is required. For more information contact Amy Fulcher at 859-257-1273 or [afulcher@uky.edu](mailto:afulcher@uky.edu).

July 16, Irrigation Management Workshop, OSU South Centers, Piketon, 6-8 p.m., \$5 registration fee, (740) 289-2071.

July 23 University of Kentucky Research and Education Center All-Commodity Field Day, Princeton, KY. For more information contact: Win Dunwell (270)365.7541 ext 209 or [wdunwell@uky.edu](mailto:wdunwell@uky.edu)

Aug. 1 U.K. & KVS Grape Summer Field Day, Lover's Leap Vineyards and Winery, Lawrenceburg. For more information contact Chris Smigell 859-257-3598.

Aug. 2-5, IFTA Annual Orchard Short Tour, Nova Scotia, Canada. For more information [www.ifruittree.org](http://www.ifruittree.org).

Aug. 6-9, 46<sup>th</sup> Annual National Blueberry Festival, South Haven, MI. For more information [www.blueberryfestival.com](http://www.blueberryfestival.com).

Aug. 11-12 NASGA 2009 Summer Strawberry Tour. Chicago, IL. For more information contact Kevin Schooley, 613-258-4587, or [www.nasga.org](http://www.nasga.org).

Aug. 13, Horticulture Field Day, OSU South Centers, Piketon, 6-9 p.m., \$10 registration fee, (740) 289-2071.

Aug. 19, Ohio Grape and Wine Field Day, OARDC's Ashtabula County Agricultural Research Station, Kingsville, 1-4 p.m., free, (440) 224-0273.

Aug. 19, OSU Extension Grape Twilight Tour, locations and program TBD, 5 p.m., registration fee (TBD); for details call OSU Extension's Ashtabula County office, (440) 576-9008.

Aug. 20-21, Apple Crop Outlook and Marketing Conference, Ritz-Carlton Hotel, Chicago, IL. For more information [www.usapple.org](http://www.usapple.org).

Sept. 17, Growing Winegrapes Workshop, OSU South Centers, Piketon, 6-8 p.m., \$5 registration fee, (740) 289-2071.

Sept. 22-24, Farm Science Review, Molly Caren Agricultural Center, London; 8 a.m.-5 p.m., Sept. 22-23; 8 a.m.-4 p.m., Sept. 24; tickets \$5 in advance from most Ohio agribusinesses and all county offices of Ohio State University Extension, \$8 at the gate, children 5 and under free; (614) 292-4278.

Nov. 19, Wildlife Control Workshop, OSU South Centers, Piketon, 6-8 p.m., \$5 registration fee, (740) 289-2071.

Dec. 8-10 Great Lakes Fruit Vegetable and Farm Market Expo. DeVos Place Convention Center, Grand Rapids, MI. For more information [www.gleexpo.com](http://www.gleexpo.com).

Jan. 4-5, 2010 Kentucky Fruit and Vegetable Conference and Trade Show. Embassy Suites Hotel, Lexington, KY. Contact John Strang 859-257-5685.

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