http://ipm.osu.edu/fruit/index.html

THE OHIO STATE UNIVERSITY Newsletter Extension

Fruit ICM News

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Calendar

March 25: In-Depth Fruit School on Apple Mineral Nutrition, Saratoga County Extension Office, Ballston Spa, NY. Contact Max Welcome at 607-255-5439 or e-mail: MW45@Cornell.edu.

March 27: In-Depth Fruit School on Apple Mineral Nutrition, Orlean County Fairgrounds, Albion, NY. Contact Max Welcome at 607-255-5439 or e-mail: MW45@Cornell.edu.

March 28-29: Berry School, video sites include OSU Learning Center, South, Piketon, OH; 244 Kottman Hall, OSU Columbus Campus; and OARDC Wooster, 1680 Madison Ave. Contact Sandy Kuhns at 1-800-297-2072 (Ohio only) or 740-289-4591 or e-mail kuhn.37@osu.edu

April 2: North-Central Ohio Fruit Crops Breakfast; Vanson's Restaurant, Monroeville, OH, 8:00 a.m. Breakfast from the menu, program at 8:45 a.m. Guest presenter, Dr. Celeste Welty, Ohio State University Extension Entomology, will discuss codling moth management for Ohio apple growers.

June 25: Ohio Fruit Growers Society Summer Tour, Glen Hill Orchard, 17156 Glen Road, Mt Vernon, OH. More details to follow later.

Welcome to Maurus Brown Ohio Tree Fruit Team Coordinator

Maurus Brown, Richland County Extension Agent for Agriculture and Natural Resources, recently took over the reins as the Ohio Fruit Team Coordinator. He took over as Ted Gastier rotated out of that position.

Maurus has extensive experience in grapes and is the editor of the grape newsletter "Vineyard Vantage." He also has a strong interest in other fruit crops. Welcome Maurus!

It Don't Mean a Thing If It Ain't Got to Spring

Source: Art Agnello, Entomology, Geneva, Scaffolds Fruit Journal, Volume 12, No. 1, March 17, 2003

Just a word here about the anticipated effects of a really cold winter on insect and mite populations in this region. First, we most frequently get questions about the winter weather pattern's effect on ERM eggs, in terms of their ability to either tolerate exceptionally cold temperatures, or to take advantage of unusually mild weather. The fact is that there is always some winter mortality of ERM eggs, that it can be quite variable (ranging from perhaps 15% to nearly 60% in severe cases), and that it is dependent on many different factors, such as orchard micro-habitat and air drainage, amount of snow cover, and genetic characteristics of local populations, in addition to simple raw temperature readings.

One study conducted in NY after the extremely cold winter of 1956-57 showed that ERM hatch was cut drastically (to 1-20% of normal) in western NY after a 3-5-day period in the -23 to -28 F range, but that hatch reduction was not uniformly this severe in the Lake Champlain growing region following the same temperature pattern. These results suggest that the eggs in that district may have been conditioned to withstand lower winter temperatures than in warmer parts of the state. The long-term average winter minimum in Peru is approximately -22 F, whereas in the Geneva area it ranges from -10 to -15 F.

In general, a severely cold winter can reduce the viability of the eggs that are present in the spring, but favorable developmental weather early in the season can easily compensate for a small founding egg population, whereas a cold, wet and extended April and May can serve as effectively to retard mite development as would a good early season spray program. Similarly, regardless of the cold winter, which generally only predicts higher overwintering mortality of things like mite eggs and small OBLR larvae, the fate of the season's insect populations probably depends more on what kind of early spring weather we end up having. Observations over the years support the conclusion that the growth of most pre-bloom arthropod populations is pretty much determined for the first half of the season by spring weather patterns.

European red mite, rosy apple aphid, spotted tentiform leafminer, tarnished plant bug, San Jose scale, and mullein bugs are only the most obvious of the species that suffer from a cold, wet, rainy and windy (in other words, typical) spring. They may be slowed considerably until the summer generations, or they might fail to show up at all in some cases. Conversely, a warm, dry, quick spring can result in nearly spontaneous generation of most of these pests.

After the petal fall period, the rate of heat unit (Degree Days) accumulation is a primary factor in the duration of plum curculio oviposition (hotter = shorter period) and the speed of summer mite population growth. This latter case is especially crucial, as the first summer ERM eggs are generally hatching in June so the population is already primed to expand; additionally, the trees are particularly susceptible to foliar feeding stress, so a failure to act against a threshold-level infestation early will result in a long, hard battle for the rest of the summer. As usual, we'll be publishing accumulated DD values for various spots around the state, together with advisories relating to timely control interventions where appropriate.

Sluggo®: A New Bait for Slugs Fruits, Berries, and Grapes

Sources: Margaret Appleby, IPM Systems Specialist, Ontario Hort Matters, Volume 3, Issue 3, March 7, 2003, and http://www.cdms.net/ldat/ld2HP002.pdf

Slugs can cause significant marketable yield loss for fruit crops. For strawberries, if wet weather occurs during harvest and slugs are numerous, up to half the crop can be destroyed by slugs eating holes in the fruit. The unsightly appearance of slugs and the associated damage can deter PYO customers and increase economic losses. In the case of juice grapes, slugs can be a problem at harvest especially in weedy sites and during wet weather.

Sluggo® is a newly registered slug bait for berries (strawberries, blackberries, blueberries, botsenberries, loganberries, and raspberries). Sluggo® is a unique product containing iron phosphate, a compound commonly found in soils. Any uneaten bait will degrade and become part of the soil. Sluggo® attracts slugs and lures them from their hiding places. After ingesting this bait (even in small amounts) slugs cease feeding. Affected slugs die within three to six days. Dead slugs may not be visible, as they often crawl away to secluded places to die.

Sluggo® has low mammalian toxicity and will not harm pets, birds or wildlife. Sluggo® should not be placed in piles, but scattered by spreader and should be applied selectively. Evening is the best time to apply bait, as slugs are active at night or early morning. The

soil should be moist, but with little or no standing water. A rate of 24 to 44 lbs. per acre (1 level teaspoon per square yard) is recommended. The higher rates should be used if populations of slugs are high.

The label allows for use on many other fruit crops including apples, apricots, cherries, peaches, plums, pears, and nectarines. The bait should be spread around the base of these trees to intercept the slugs traveling to the trunk. http://www.cdms.net/ldat/ld2HP002.pdf

The Efficient Use of Chlorine and Other Sanitizers in Postharvest Fruit and Vegetable Operations

Prepared by the Center for Innovative Food Technology, a cooperating partner of the Ohio Specialty Crop Food Safety Initiative. Forwarded by John Wargowsky at 614-246-8286 or labor@ofbf.org

The use of sanitizers such as chlorine is an important part of postharvest handling and preparation of fresh fruits and vegetables. For reasons of product quality, cost, and worker safety, it is therefore important that the grower understand how to use sanitizers efficiently.

In order to efficiently use these important substances, one must first understand the role that they play. Clean, disinfected water minimizes the transmission of pathogens from water to produce, or from infected to healthy produce, either within a lot or from lot to lot. Plant surface contours and cuts can introduce pathogens into the fruit, and provide growth opportunities for them. It is essential that a sufficient quantity of sanitizer be available to kill these pathogenic microbes before they find a home on or in the produce.

To ensure this availability, the following facts are important to remember:

- Pre-harvest practices. Excessive use of chlorine (or other sanitizers) has negative effects on product quality. As harvest approaches, therefore, the microbial standards used for water should increase gradually to minimize infestation and potential contamination.
- Water. Potable water should be used for all postharvest activities, including washing, grading, material handling (fluming), and cooling. Sanitizers do not easily kill some pathogens that are harmful to humans, so clean potable water is the best preventative step available. When quality is in doubt, a certified analytical lab should perform a water quality evaluation.

- Organic Matter. Chlorine and other sanitizers are able to kill pathogens because they are powerful oxidizers, and are highly reactive. Unfortunately, they do not discriminate in their reactions. Reacting with both organics and inorganics in wash water rapidly uses up chlorine, in particular. Care should be taken to filter out soil, leaves, and other debris, and to periodically change water as it becomes full of exudates such as sap from cut or scuffed produce.
- Performance Enhancers. Sanitizers will only kill what they contact. Water films that form on small surface contours may prevent contact with target microorganisms. Surfactants decrease water surface tension, and in effect, "make water wetter" by allowing freer flow, which can make chlorine and other sanitizers more effective. Examples of approved materials are polysorbate 80 and Chlorine Potentiator from Bonagra Technologies, Inc.
- Temperature. Sanitizers such as chlorine tend to be more active as temperatures increase, but in general, the need for cooling from water is more important than the slight increase in performance from higher temperatures.
- pH. As those with home swimming pools realize, the performance of chlorine is affected by the pH (acidity/alkalinity) of the water. This is because chlorinated water actually has three components; chlorine gas, hypochlorous acid (HOCl), and hypochlorite ions. Of these, HOCl is the most effective and desirable as a bactericide, and is the one which varies the most with changes in the pH. In general, a pH of 6.5-7.5 produces the optimum balance of activity, stability, and safety (at low or acidic pH's, chlorine gas is actually released from water.) The pH should be frequently, if not continuously, monitored. Both chlorine and pH can and should be monitored using test paper strips, colorimetric kits, or electronic sensors. Muriatic (HCl) or citric ($C_6H_8O_7$) acid are commonly used to keep pH within the proper range.
- Concentration. The optimum sanitizer concentration and dwell time varies from product to product, but exposure time of 3-5 minutes in a solution with a sanitizer concentration of 50 to 75 parts per million in a solution of slightly acidic (6.5 pH) is generally viewed as adequate.

Caution must be used, however, as some products will lose color or develop surface defects when levels are too high or exposure times too long. Proper and efficient use of sanitizers will maximize the benefits of the substances to product safety and quality, while minimizing the expense and risks associated with them.

The Ohio Specialty Crop Food Safety Initiative is financed in part through a grant from the Ohio Department of Agriculture, the State of Ohio, and the United States Department of Agriculture under the provisions of the Specialty Crop Grant.

Degree Day Accumulations for Ohio Sites March 19, 2003

Location	**Degree Day Accumulations Base 43 F**	
	Actual	Normal
Akron-Canton	53	57
Cincinnati	102	125
Cleveland	34	55
Columbus	80	80
Dayton	77	80
Kingsville Grape	29	39

Branch		
Mansfield	42	54
Norwalk	32	45
Piketon	95	138
Toledo	19	37
Wooster	63	52
Youngstown	50	48

Fruit Tree Phenology

Normal Degree Days (base 43F)

Source: Scaffolds Fruit Journal, September 9, 2002

McIntosh Apple - green tip	93 to 147
Half-inch green	148 to 198
Tight cluster	213 to 251
Pink	273 to 311
Bloom	346 to 420
Petal fall	441 to 529
Red Delicious Apple - green tip	108 to 184
Half-inch green	146 to 208
Tight cluster	221 to 275
Pink	292 to 386
Bloom	368 to 500
Petal fall	470 to 648
Bartlett Pear - bud burst	122 to 212
Green cluster	211 to 265
White bud	255 to 341
Bloom	300 to 400
Petal fall	387 to 497
Sweet Cherry - bud burst	143 to 195
White bud	192 to 244
Bloom	236 to 296
Petal fall	340 to 434
Fruit set	407 to 493
Montmorency Tart Cherry - bud	169 to 247

burst	
White bud	239 to 297
Bloom	301 to 401
Petal fall	404 to 512
Fruit set	484 to 606

Jim Patterson on the Mend

Jim Patterson, of Patterson Fruit Farm in Chesterland, recently underwent triple heart bypass surgery at University Hospital in Cleveland. He is doing very well and may be able to go home by the first of next week.

Jim is a member of The Ohio State University Board of Trustees, was former Ohio Farm Bureau president, and is also a past president of the Ohio Fruit Growers Society. In January Jim was honored with the OFGS Distinguished Service Award.

Those interested in sending cards may do so to his home: 8765 Mulberry Road, Chesterland, OH 44026. Best wishes for a speedy recovery, Jim!

Insect Traps and Lures

Source: Deborah Bretyh, Lake Ontario Fruit Program. Albion, Scaffolds Fruit Journal, March 27, 2000
http://www.nysaes.cornell.edu/ent/scaffolds/2000/3.27_general.html

Trapping insects is not usually done to determine if a pest population is significant, but rather when it must be monitored or controlled. For some pests we use the first (sustained) trap catch date as the "biofix", the starting point to accumulate heat units or degree days. With many pests, we follow up the trap catch with a scouting session to assess the pest level. Trap types and placement in and around the orchard are critical.

The basis traps recommended for IPM programs in apples are used to monitor pests, including obliquebanded leafroller, codling moth in problem or low-spray blocks, and apple maggot. In peaches, it is important to trap for Oriental fruit moth, lesser peachtree borer, and peachtree borer. In apples with dwarfing rootstocks, it is wise to trap for dogwood borer. In sites close to run-down cherry and peach blocks, it is wise to trap for American plum borer. Tarnished plant bug traps have not been useful in determining potential damage in apples. In cherries, it is important to trap for cherry fruit fly.

Visual Aids

Scouting requires some visual aids to identify fruit pests and predator and to magnify these small animals. IPM fact sheets are available on the web at http://www.nysipm.cornell.edu/factsheets/treefruit/index.html and in hard copy to help identify fruit pests and predators. To monitor pests and diseases, magnification is necessary for many pests, depending on your clarity of vision. Magnification aids include a hand lens, 10x and 20x (for rust mites), and a glass binocular magnifier (Donegan OptiVisor 3.5x). You may need to use a counter so you can scout without losing your count while looking at other things in the orchard. Remember to carry sample bags to collect unknowns for your local fruit specialist. Oh, yes, some say they need an ATV to scout! Have fun!

What traps? What lures? How many traps do I set? Where do I hang the traps and when? These questions must be answered for each specific pest. You can find the answers in the table on the following page.

Insect Traps and Lures

Pest	**Crop**	**Approx. date /* DD (base temp)**	**Trap type****	**Number Per Block**	**Where to Place**
OBLR	Apples plus	June 1 or earlier when pupae are noted in orchard	wing	2 to 3	Head height, in center of block
Codling moth	Apple, pear	Apple bloom 484 DD (base 43F)	wing	2 to 3	Around borders near woods or alternate hosts
Dogwood borer	Apple	July 1	wing	1 to 2	Block interior
Apple maggot	Apple	July 1	red sphere w/ apple volatile lure	3 to 4	Around border of orchard near likely source
Oriental fruit moth	Apple, peach	Pink	wing	4 to 5	Around borders
Cherry fruit fly black cherry fly	Cherry	Mid-June 1025 DD (base 43F)	yellow board	2 to 3	Around border of orchard near likely source
American plum borer	Stone fruit (& nearby apple)	Tart cherry bloom 423 DD (base 43F)	wing	2 to 3	Block interior
Lesser peachtree borer	Peach, cherry	End of May 580 DD (base 43F)	wing	2 to 3	Block interior
Peachtree borer	Peach	Mid-June 1025 DD (base 43F)	wing	2 to 3	Block interior

* New York conditions, adjust accordingly
** MultiPher® traps have been successfully substituted for wing traps in Ohio orchards

Traps and lures are available from several sources:

- Great Lakes IPM, 10220 Church Road NE, Vestaburg MI 48891; phone 517-268-5693 or 517-268-5911; fax 517-268-5311; e-mail: glipm@nethawk.com. Web address: http://www.greatlakesipm.com

- Gempler's, P.O. Box 270, Belleville WI 53508; phone 800-382-8473; fax 800-551-1128; http://www.gemplers.com

- Salem Fruit Growers Cooperative Association, P.O. Box 3, 12093 Lisbon Rd., Greenford OH 44422;
  phone: 330-533-3328 or 800-423-3609; fax: 330-533-0736.

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