



# Newsletter

Extension

## Fruit ICM News

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## Calendar

**August 4-5: HACCP (Hazard Analysis Critical Control Point) Workshop for Apple Cider & Juice:** will take place at the Berks County Ag Center in Leesport, PA. For more information please contact Dr. Luke LaBorde, Penn State University, at 814-863-2298 or e-mail at [lfl5@psu.edu](mailto:lfl5@psu.edu).

**August 11: Pumpkin Field Day** will be held from 4 to 6 p.m. at the Western Branch of the Ohio Agricultural Research and Development Center (OARDC), located on State Route 41, between I-70 and the town of South Charleston. Contact Jim Jasinski at (937) 454-5002 or e-mail [jasinski.4@osu.edu](mailto:jasinski.4@osu.edu) for more information

**August 19: Ohio Grape & Wine Field Day** will be held at the Grape Research Branch, 2625 S. Ridge Road East, Kingsville, OH, from 2:00-5:00 p.m. Free admission. Contact Greg Johns at 440-224-0273 or [johns.1@osu.edu](mailto:johns.1@osu.edu).

**August 19: Grape Twilight Tour** will immediately follow the Grape & Wine Field Day. The twilight tour is scheduled for 6:00-8:30 p.m. at Gene & Heather Sigel's South River Vineyard, 6062 South River Road, Geneva, OH. Advance registration is \$15.00 per person and includes dinner. Call Ashtabula County Extension for details at 440-576-9008 or send email to [dmarrison.2@osu.edu](mailto:dmarrison.2@osu.edu).

## Late Season San José Scale

*Source: Celeste Welty, OSU Entomologist*

A new flush of adult scales has been recently detected in pheromone traps at some orchards, which brings up the question of whether late summer scale infestation can be prevented on fruit. The little research data that exists for scale control is limited to early-season control, not late-summer control, so proven recommendations are not available. The best bet for insecticidal control in late summer on apples is diazinon 50WP at 3 lb/A, which has a 21-day preharvest interval. Diazinon should be applied when the new flush of crawlers is detected, and followed by a second application 2 weeks later. For best results, a high volume of water should be used (at least 100 gallons). At summer temperatures, crawlers should appear about 2-3 weeks after adult flight, and can be confirmed by wrapping black sticky tape around infested branches; the tiny bright-yellow scale crawlers show up well on the black background. Another control option is Esteem, which has shown excellent efficacy for early-season scale control but which has a 45-day PHI. Although other options include the neonicotinoid Provado, and the pyrethroids Warrior and Asana, it is uncertain whether or not these provide adequate scale control under late-summer conditions. Whether or not late summer control is attempted, growers are advised to make note of which blocks show scale at harvest, so that early-season control can be planned for next year.

## **New Strawberry Cultivars Ripe with Potential**

*Source: <http://www.aganswers.net> (July 25, 2003)*

Ohio may soon be on tap to compete nationally in retail and wholesale strawberry production -- an agricultural market normally dominated by such big players as California, Florida, and North Carolina. A relatively small player in strawberry production (ranked ninth by the ODA), Ohio could be off the porch and running with the big dogs with the help of some new cultivars. Dick Funt, an Ohio State University Extension small fruit specialist, said the cultivars, in their first harvest year, have pulled off impressive production numbers. Yields are averaging three to six times more than other strawberry cultivars grown, with berries averaging two to three times larger.

"This is very exciting news," Funt said. "Ohio has the opportunity to grow and place a better tasting berry on the market similar to what states like California put out. These cultivars may help Ohio compete better in that national wholesale market."

The cultivars evaluated by researchers were midseason fruits: 'Cabot' is a Nova Scotia cultivar on the market for a few years. NYUS 304B ('Clancy') and NY 1819 ('L'Amour') are two New York cultivars that were commercially released this month. Funt compared their performance to standard Ohio-grown strawberries such as Earliglow, Allstar, and Avalon, and found that the new cultivars outperformed the standard cultivars in yield and berry size. They also showed good resistance to diseases including root rot, driven by excessively wet weather, and maintained a good interior red color, a trait advantageous in the wholesale market.

Ohio growers have struggled to obtain their production goal of a pound of berries per linear foot of row, a number they felt they needed in order to be profitable, Funt said. Most growers manage only a half-pound of berries per linear foot of row and average 5,000-7,000 pounds of berries per acre.

"With these new cultivars, growers may be able to reach that goal and even go beyond that 5,000 to 7,000 pound average," Funt said.

Researchers found that Cabot, for example, generated 1.7 pounds of berries per foot of row, which translates into 17,000 pounds per acre if growers manage an average of 10,000 plants. For L'Amour, the cultivar produced nearly 3 pounds of berries per foot of row, potentially generating a whopping 30,000 pounds of berries per acre. The researchers grew the berries under a simple management system: on

raised beds 12 inches apart with trickle irrigation and a standard spray system to ward off diseases and weeds.

"We are still finessing the system, trying to find the best practices for weed control, disease control, runner development and adequate and effective irrigation," Funt said. "For example, our irrigation system 'pumped' the berries up so large that they literally split in half."

They also are working on reducing the number of culls, or damaged fruit, produced by the three cultivars. The percentage of culls ranged from 11 percent to 19 percent. The acceptable range is normally between 5 percent and 10 percent, Funt said.

"We are searching for that standard recipe for strawberries," Funt said. "We can never predict the weather, which has such a big impact on a crop's performance. But we do expect production like this to continue as the grower uses good management practices. And just based on genetics of these new cultivars, the potential is there."

## Strawberry Cultivars For Ohio Berry Growers

*Source: Richard C. Funt, Department of Horticulture and Crop Science, The Ohio State University*

Strawberries are an important fruit crop and can be grown in every Ohio county. Cultivar selection is an important management decision for production, marketing, and profitability. Most cultivars grown in Ohio are suited for the matted row system and for pick-your-own and ready picked (hand harvested) markets. These systems must have root, fruit, and leaf disease resistance to be successful under the cold, wet spring and hot, dry summer conditions of Ohio.

Fruit size, firmness, and flavor are largely genetic characteristics and vary among cultivars. Fruit size is an important economic factor because labor efficiency increases as fruit size increases. Pick-your-own customers are impressed by large sized berries and many customers will only have a short time for a farm visit. Fruit firmness is a factor in transporting fruit to retail or wholesale markets.

A comparison of several new strawberry cultivars was conducted in 2002 and 2003 in central and north central Ohio. Plants were obtained from New Jersey, North Carolina, and the United States Department of Agriculture (USDA) Small Fruit Breeding Programs and were compared with the standard early ripening Earliglow and mid-season ripening Allstar cultivars.

All plants were set into black plastic on raised beds with trickle irrigation in August/September of 2001 at a 12-inch spacing. Soil tests indicated that zinc was low and both locations added zinc to the soil. Amazingly, the two soils were close in fertility test results. Growers applied nitrogen, either as fertigation or foliar, and fungicides, herbicides, and insecticides according to the needs in their location. No runners were allowed to set (black plastic covered the row in 2002) and runners were chemically burned off at renovation. This project was completed in July 2003.

Avalon, Earliglow, NC 95-08, Allstar, and B440 were compared. In early 2003, B440 was named Ovation by USDA-ARS in Beltsville, Maryland.

**Avalon** ripens several days before Earliglow. It had a yield similar to Earliglow in 2002 (Table 1.). Avalon's berry size was larger than Earliglow in both years. Generally, Avalon had 1.5 to 3.0 times greater yield than Earliglow. Earliglow is still one of the best flavored berries, but Avalon has good flavor under wet and dry soil conditions. It has a good outside red color.

**Earliglow** ripens after Avalon and has been the standard berry in central Ohio for over 20 years. It has outstanding fruit color, fruit rot resistance, and excellent fresh and frozen flavor. It has been the berry of choice. It had the smallest average fruit size of all cultivars tested (Table 1.). Generally, it had a lower percent of culls than most cultivars except for Allstar. It compares to NC 95-08 in yield.

**NC 95-08** ripens after Earliglow with good fruit size, but yields tend to be low. It tended to have a higher percentage of culls, which could be an issue of berry firmness. Flavor and color are good.

**Allstar** is a mid-season standard cultivar in Ohio known for root and leaf disease resistance, firmness, good interior color, fruit size, and yield. Interior color can be reddish orange, but can be enhanced by low nitrogen (more sunlight) and harvesting one day after developing full color. For the two-year period, Allstar produced 1.2 pounds per linear foot of row while Avalon produced 1.25 pounds.

**B440 (Ovation)** is a large, red, and attractive berry with good flavor when planted at the proper spacing and provided minimal nitrogen. The plant is vigorous, and was the tallest plant of all cultivars. Its berry size and flavor is comparable to Allstar. It has a deeper red color than Allstar. It ripens about 10 days after Allstar, or when 50% of the Allstar berries have been harvested. It makes an outstanding berry for the very late season on or about June 20<sup>th</sup>. Ovation has size, color, firmness, and flavor for an outstanding late season market when grown properly.

**Conclusions:** Two cultivars were tested and compared to the early season standard Earliglow cultivar. Both had larger berry size than Earliglow and acceptable flavor. Ohio growers should try Avalon for the very early season, just before Earliglow. NC 9508 ripens after Earliglow and has good fruit size, flavor, and color.

B440 (Ovation) was the very latest ripening cultivar. It ripened several days later than Allstar, a standard mid-season strawberry. Ohio growers should try Ovation, as it is a very large, red, good tasting, and late season berry. It must be grown properly to achieve its best performance.

Appreciation is extended to the Ohio Small Fruit and Vegetable Research and Development Fund for their support of this research.

**Table 1. Strawberry cultivar total weight, average weight per berry, and grams per foot of row, central Ohio, 2002 and 2003.**

Cultivar <sup>1</sup>	Total Weight Grams	Average Berry Weight	Average % Culls	Grams/Foot of Row
First Year				
Avalon	2679	13.3	6.9	179
Earliglow <sup>2</sup>	2775	10.8	6.5	111
95-08	2715	15.5	8.6	108
Allstar	5492	13.9	5.5	225
B440	4663	15.3	8.2	187
Second Year <sup>3</sup>				
Avalon	5793	15.3	10.3	386
Earliglow	3060	10.4	7.1	122

95-08	2942	14.4	9.4	118
Allstar	7925	18.5	6.1	316
B440 <sup>4</sup>	5605	18.1	8.4	224

<sup>1</sup> We are grateful to the Ohio Small Fruit and Vegetable Research and Development Fund and to Circle S Farm for their financial support. In order of ripening.

<sup>2</sup> Most plots 25 ft. Avalon is 15 ft.

<sup>3</sup> 2003 provided larger berries than 2002 due to cool wet weather. Second harvest year with black plastic, raised bed and microirrigation; 12 inch plant spacing, no runners.

<sup>4</sup> B440 named Ovation by USDA-ARS, Beltsville.

## Brown Rot Of Stone Fruits

*Source: Paul Pecknold, Purdue Plant Pathologist, Facts for Fancy Fruits, 2002-09, July 10, 2002. Chart is based on the 2003 Commercial Tree Fruit Spray Guide.*

As peach harvest continues, be aware of the need for sprays to control brown rot. Warm, wet, humid weather is particularly favorable for brown rot. Pre-harvest sprays should be started no later than three weeks before harvest or when fruit begins to color.

In addition to maintaining sprays for brown rot, also maintain sprays for insect pests that may injure fruit and allow brown rot to gain a foothold. Use care in the picking and handling of fruit to avoid punctures and skin abrasions. Any break in the skin of the fruit enables brown rot to more easily cause infection.

### Brown Rot Control Materials for Peaches

Material	Rate per 100 gal.	Rate/acre
Benlate 50 WP <b>OR</b> Topsin-M 70 WSB <i>plus</i> Captan 50 WP	4-8 oz 8 oz 1.3 lb	0.75 to 1.5 lb 1.5 lb 4 lb
<b>OR</b> Captan 50 WP	2.6 lb	8 lb
<b>OR</b> Ziram 76 DF	1.5 to 2.7 lb	4.5 to 8 lb
<b>OR</b> Wettable sulfur 95%	6 lb	18 lb
<b>OR</b> Orbit 41.8 L		4 fl oz
<b>OR</b> Indar 75 WSP		2 oz
<b>OR</b> Elite 45 DF	2 oz	8 oz

## Peach Harvesting Tips

*Contributed by Dr. Diane Miller, OSU Extension Fruit Horticulturalist, as adapted from the Virginia Fruit Newsletter*

Peach producers spend a lot of time and money producing top quality fruit, but the quality must be maintained during and after harvest to provide a quality product to the consumer. Three major factors affecting fruit quality are fruit maturity, fruit bruising, and fruit temperature.

- **Maturity:** Peaches are usually harvested on the basis of ground color and fruit size. Fruit with inadequate ground color are immature and do not have the ability to ripen to an acceptable eating quality. Unlike apples, peaches contain little starch, and sugar levels will not increase appreciably after harvest. Picking immature fruit will reduce yield because peach size increases 2-3% per day during the final stages of fruit development. A one day delay in harvest may increase yield by 2-3%. Immature fruit also have less surface wax and are more susceptible to bruising.
- **Bruising:** There are three types of bruising found in peaches.
  - **Impact bruising** results from falling onto a hard surface either individually or within packages, and may not be visible from the surface. Impact bruising can occur in the field when pickers drop fruit into picking bags or boxes. A soft peach may bruise when dropped 0.7 inches onto a hard surface, and a firm peach will bruise when dropped 1.3 inches.
  - **Compression bruising** can occur if pickers try to grasp too many fruits or if soft-sided picking bags are pressed against limbs and ladder rungs. This type of bruising is usually visible.
  - **Vibration bruising** occurs when fruits are free to move within containers, and when fruits rub against each other or against the sides of crates. Other precautions to prevent bruising include repairing rough roads and preventing rough handling by forklift or in transit.
- **Temperature:** Research results indicate that warm fruits bruise more easily than fruit at 40 to 60 F. Harvest as early in the day as possible when fruits are coolest. During the middle of the day, do not let fruit sit in the sun. Covering harvested fruit with shade cloth may reduce fruit temperature. Cool fruit below 40 F as soon as possible. Peach fruit respiration is nearly 3 times greater at 50 F than at 40 F, and fruit ripens as much in a day at 70 F as they do in 7 days in a cooler at 32 F.

## Plant Dr. Explains IPM Ties

*Source: Mike Ellis, OSU Plant Pathologist, written by Caitlin McHugh, OSU News and Media Relations*

Ohio State University scientist Mike Ellis believes that everything in the world of plant diseases relates in some way to Integrated Pest Management (IPM). Ellis, a plant pathologist with the Ohio Agricultural Research and Development Center (OARDC) and Ohio State University Extension, relates his work to IPM using the term Integrated Disease Management (IDM).

IPM doesn't just include insects; it also includes diseases that can only be controlled by integrating different methods. IDM programs develop and explain the biology and pathology behind plant diseases, then share this information with growers, which is one of the goals of IPM.

"Integrated Disease Management is a critical portion of the overall pest management program," Ellis said. "I consider myself a plant doctor. I got my master's degree in botany and I went into plant pathology because I viewed it basically as plant medicine.

Diseases aren't like insects that you can see," Ellis added. "Diseases have to be controlled before you see them. When you see a disease, you're seeing the symptoms of the disease, (which result from) the

interaction between the pathogen and the host." The pathogen can infect the host days or even weeks before symptoms are visible.

A plant pathologist for 27 years, Ellis develops IDM programs that integrate as many control practices as possible for the diseases of small fruits and tree fruits: apples, grapes, peaches, raspberries, and strawberries. His work addresses the needs of both commercial fruit growers and backyard fruit growers and gardeners.

"When we talk about the major fruit crop diseases, we're talking about situations where you're going to lose 100 percent of your crop," Ellis said. "If you don't spray susceptible apples in Ohio with a fungicide, you've lost 100 percent of your crop due to apple scab infections on the fruit."

The key is not just to spray with the fungicide, but also to integrate programs that cover all bases of pest and disease management. IDM programs include not only cultural practices, like pruning and mulching, but also disease resistance and biological control.

A large part of IPM (and IDM) programs involves reducing pesticide and fungicide use. In fact, Ellis' number-one goal is to develop programs that will provide an acceptable level of control to growers with minimal fungicide use. "If I could give the Ohio fruit grower a disease management program that would take care of their disease problems without fungicide use, I would do it," he said. Fungicides cost Ohio growers huge amounts of money; this is what concerns Ellis.

"The thing that drives my thinking there is not so much the food safety issues, because I believe fungicides we use are safe if they're used the way they're registered," Ellis said. "These products cost Ohio growers millions of dollars. And it comes right out of their own pockets." For example, it costs a strawberry grower \$1,000 to purchase a four-gallon case of the fungicide Quadris. Quadris costs approximately \$40 an acre to apply. Other fungicides, like Switch, get still more expensive: \$60 an acre per application. "The growers aren't using them unless they have a real perceived need for them," said Ellis. "Nobody throws their money away. Would you?"

And that's part of the beauty of IPM. By applying Ellis' research, farmers won't have to empty their pockets on fungicides. Omer Erincik, a former graduate student of Ellis', recently finished a disease predictive model for Phomopsis cane and leaf spot on grapes, which is caused by the fungus *Phomopsis viticola*.

Erincik studied the temperature and wetness durations needed for the fungus to infect grapevines. These variations can be measured by equipment in the vineyard to determine when an infection period is occurring. So, using predictive models, growers can spray only when infection is actually taking place. In dry years, little or no infection may occur; therefore, fungicides are not needed.

Ellis also works with fellow OARDC plant pathologist Larry Madden to develop other predictive models. Madden is interested in anthracnose fruit rot (caused by *Colletotrichum acutatum*) and leather rot (caused by *Phytophthora cactorum*), both of which affect strawberries. So far the pair has developed predictive models for these two diseases as well as Botrytis fruit rot (gray mold). They have developed models on grapes for black rot (*Guignardia bidwellii*), downy mildew (*Plasmopara viticola*), and Phomopsis cane and leaf spot.

One success story is Ellis' work with gray mold, caused by *Botrytis cinerea*. This rot infects strawberries almost exclusively during bloom. The fungus goes into the flowers and waits until the fruit starts ripening. As development progresses, the fungus spreads into the fruit and symptoms develop close to harvest. In the past, growers sprayed fungicides close to harvest because that is when they observed the

disease. This led to two problems: it put fungicide on the fruit when it was time to pick, and it had no effect on the fungus because the fruit was infected during bloom.

Now growers know to spray during bloom, not harvest. In some years, this reduces fungicide applications from six sprays to just two. "All the Ohio strawberry growers that I know personally are using the program, and it is working very well," Ellis remarked.

### IPM and IDM Abroad

Ellis' research exceeds the boundaries of Ohio and the Midwest. Most of it, like the work being done on Phomopsis, has international ramifications. "If you've got a predictive model here, it's going to work in France or anyplace else," Ellis pointed out. This ties his work in with the Integrated Pest Management Collaborative Research Support Program (IPM-CRSP), an initiative of the U.S. Agency for International Development (USAID). Ellis and his co-workers have published extensively on their research, with special attention to strawberries and raspberries. Publications include the *Midwest Small Fruit Pest Management Handbook*, used by 10 different states across the Midwest. Ellis' lab is at the forefront of small fruit disease research in the Midwest, if not in the United States.

In addition to publications, Ellis travels the country and the world to share his findings with growers. He gives four to seven invited talks out of state per year. Internationally, Ellis works for IPM-CRSP in Ecuador. He trains local scientists there on how to conduct IPM research and develop programs like his own. This work is important because Ecuador's exports must meet U.S. pesticide regulations. Many developing countries do not have the same, if any, regulations on pesticides and fungicides. The information and training Ellis gives them can help reduce the use of these products.

"If you are going to control diseases, you've got to have these integrated programs in order to make them work," Ellis said. "Fungicides alone won't work. For example, you can take a fungicide for apple scab and spray it every seven days. But if you've got a tree that's so big and so dense that you're not getting coverage on the inside, you'll still lose 10 percent of your crop, and you've lost your profit. So these things go hand in hand."

Ellis received his bachelor's degree in education and his master's degree in botany from Eastern Illinois University. He received his doctorate in plant pathology from the University of Illinois. Before joining OARDC, Ellis worked as a plant pathologist for the University of Puerto Rico.

"It's great," said Ellis of his career. "It's one of the most rewarding things when a grower comes up to you and thanks you for something you have developed that actually works."

## Degree Day Accumulations for Ohio Sites July 30, 2003

Ohio Location	Degree Day Accumulations			
	Base 45° F		Base 50° F	
	Actual	Normal	Actual	Normal
Akron/Canton	2107	2171	1509	1618
Cincinnati	2546	2792	1908	2150
Cleveland	2153	2119	1575	1579
Columbus	2476	2425	1847	1836



Dayton	2356	2490	1737	1901
Kingsville	1836	1968	1293	1458
Mansfield	1994	2149	1402	1601
Norwalk	2073	2117	1496	1583
Piketon	2615	2736	1945	2094
Toledo	2069	2113	1494	1583
Wooster	2212	2045	1602	1504
Youngstown	1895	1993	1315	1462

## Pest Phenology

Coming Event	Degree Day Accum. Base 50° F
Apple maggot flight peak	1387 - 1953
Obliquebanded leafroller 2 <sup>nd</sup> flight begins	1412 - 2076
Oriental fruit moth 3 <sup>rd</sup> flight begins	1448 - 3013
Peachtree borer flight subsiding	1497 - 2309
Spotted tentiform leafminer 3 <sup>rd</sup> flight begins	1537 - 2123
Oriental fruit moth 3 <sup>rd</sup> flight peak	1660 - 2402
San Jose scale 2 <sup>nd</sup> flight subsides	1662 - 2477
Redbanded leafroller 3 <sup>rd</sup> flight begins	1722 - 2209

Thanks to Art Agnello, Scaffolds Fruit Journal

## 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

Not available; will be included next week.

**Site: Medina, Wayne, & Holmes Counties**

Ron Becker, IPM Program Assistant Apple: 7/23 to 7/30/03

STLM:	Holmes: 1587 (up from 1213) Medina: 1458 (up from 175) Wayne: 150 (down from 186)
RBLR:	Holmes: 1.7 (down from 3.7) Medina: 1.3 (down from 1.8) Wayne: 0.3 (down from 1.3)
CM:	Holmes: 4.0 (up from 0.9) Medina: 1.6 (up from 0.6) Wayne: 10.1 (up from 1.2)
AM: (average of the sum of 3 traps per block)	Holmes: 4.7 (up from 2.0) Medina: 3.8 (up from 0.5) Wayne: 10 (first report)

**Peach: 7/23 to 7/30/03**

LPTB: Holmes: 3 (up from 0)  
Medina: 0 (same as last week)  
Wayne: 3 (up from 1)

OFM: Holmes: 0 (same as last week)  
Medina: 0 (same as last week)  
Wayne: 0 (down from 1)  
PTB: Holmes: 10 (up from 5)  
Medina: 0 (same as last week)  
Wayne: 11 (up from 10)

Beneficials: lacewing, lady bug, black hunter thrips, and fallacis mites. Peach and plum harvesting has started.

**Site: East District: Erie & Lorain Counties**  
Jim Mutchler, IPM Scout

**Apple:** 7/23 to 7/29/03

CM: 1.8 (up from 1.5)  
LAW: 21.5 (down from 23.2)  
OFM: 3.4 (same as last week)  
RBLR: 3.6 (down from 8.2)  
SJS: 353 (up from 115)  
STLM: 785 (down from 1031)

Other apple pests: green apple aphid, Japanese beetle, potato leafhopper, and white apple leafhopper.

Beneficials: green lacewing, orange maggot, native lady beetle, & brown lacewing.

**Peach:** 7/23 to 7/29/03

LPTB: 3.3 (up from 3.0)  
OFM: 4.7 (up from 2.7)  
PTB: 3.7 (up from 1.0)  
RBLR: 1.7 (down from 12.7)

Other pests: Japanese beetle, OFM strikes, and bacterial spot

Beneficials: green lacewing, lady beetle

**Site: West District: Huron, Ottawa, Richland, & Sandusky Counties** - Gene Horner, IPM Scout

**Apple:** 7/22 to 7/29/03

CM: 1.3 (up from 0.6)  
LAW: 0.8 (down from 3.5)  
OFM: 4.2 (down from 5.5)  
RBLR: 3.4 (down from 7.7)  
SJS: 8.4 (down from 8.6)  
STLM: 377 (up from 102)

Other apple pests: green apple aphid, Japanese beetle, and potato leafhopper

Beneficials: green lacewing, brown lacewing, orange maggot, and banded thrips

**Peach:** 7/22 to 7/29/03

LPTB: 0.8 (down from 1.6)

OFM: 0.6 (down from 1.9)

PTB: 2.3 (up from 1.2)

RBLR: 1.5 (down from 9.0)

Other peach pests: hail damage and Oriental fruit moth flagging

Beneficials: green lacewing and brown lacewing

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