Ohio
Fruit ICM News

Editor: Ted W. Gastier, Extension Educator, Agriculture
Ohio State University Extension, Huron County
180 Milan Avenue, Norwalk, OH 44857 419-668-8219
FAX: (419) 663-4233 E-mail: gastier.1@osu.edu

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In This Issue

Calendar

August 3: Grape-Wine Workshop, Vinoklet Winery, Cincinnati. See last two issues for details.

August 10: Grape-Wine Workshop, Firelands Winery, Sandusky. See last two issues for details.

August 19: Ohio Grape and Wine Day, Kingsville Grape Branch. See following article.

August 24: Grape-Wine Workshop, Raven's Glenn Winery, West Lafayette. See last two issues for details.

September 20-22: Farm Science Review, Molly Caren Agricultural Center, London, OH. Details at: <http://fsr.osu.edu>

October 14-15, 2005: Highbush Blueberry Council (USHBC) Fall Meeting, Amway Grand Plaza Hotel, 187 Monroe NW, Grand Rapids, Michigan. Contact: 616-885-2000 for information.

November 15: Ohio Ag and Hort Human Resource Managers' Forum, Hilliard, OH, 10:00 AM-2:30 PM. Registration and fee requested by November 8. Contact Mid American Ag and Hort Services at 614-246-8286, maahs@ofbf.org or visit <www.midamservices.org>and click on 'Events' for registration form and details.

December 6-8, 2005: Great Lakes Fruit, Vegetable, and Farm Market EXPO, DeVos Place Convention Center, Grand Rapids, Michigan. For additional information, visit <www.glexpo.com>.

New Miticide for Fruit Crops

Source: Celeste Welty, OSU Extension Entomologist

Envidor 2SC is now registered in Ohio for mite control on pome fruit, stone fruit, tree nuts, and grapes. Envidor is made by Bayer and contains the active ingredient spirodiclofen, formulated as a suspension concentrate. Target pests are European red mite, two-spotted spider mite, apple rust mite, pear rust mite, and peach silver mite.

Envidor is active by contact on mite eggs, nymphs, and adult females. The use rate is 16 to 18 fl oz per acre. The re-entry interval is 12 hours, and the pre-harvest interval is 7 days. There is a limit of one application per year.

The full label is available at: <http://www.bayercropscienceus.com/=file:Labels%20MSDS/11214378203199950ac83d1417696142/file>

Thank you, Celeste, for expediting the Ohio label for this new product.

Ohio Grape & Wine Day

By: Randi Espinoza, 419-207-9827, randiespinoza@yahoo.com; *Source: Greg Johns, 440-224-0273,* johns.1@osu.edu

Savor juicy research fresh from the vine. Visit Ohio Grape and Wine Day, Friday, August 19, in Kingsville and gain helpful management tips for increasing grape production and improving wine quality.

"This event will offer growers and winemakers the opportunity to interact with university and industry experts," said Greg Johns, manager of the Ohio Agricultural Research and Development Center's (OARDC) Ashtabula Agricultural Research Station, "and it will provide a hands-on learning experience of Ohio's grape and wine research efforts."

Sponsored by OARDC and Ohio State University Extension, the program is free and open to the public. Hours are 2:30-5:00 p.m. at the Ashtabula Agricultural Research Station, located west off state Route 193 at 2625 South Ridge East (state Route 84) in Kingsville.

Immediately after the field day will be a Twilight Tour of the Conneaut Creek area, South Ridge Vineyards, and Markko Vineyard. Dinner will be available at Markko Vineyard for a fee.

Field day topics and speakers:

- Insect situation update 2005: Roger N. Williams, Department of Entomology, OARDC.
- Cabernet Franc: Planting and trellis construction, training systems and clonal selections; Imed Dami and Dave Scurlock, Department of Horticulture and Crop Science, OARDC
- Pinot Noir: Crop load study, Anton Prajitna, Department of Horticulture and Crop Science, OARDC
- Pruning and leaf pulling: Dami and Mike Ellis, Department of Plant Pathology, OARDC and OSU Extension.
- Disease update: Ellis
- Winter injury update: Dami and Johns
- Demonstration of netting installation: Scurlock and Paul McMillen, Department of Horticulture and Crop Science, OARDC
- Traminette on seven different rootstocks: Dami
- Roundup safety for sucker control in vineyards: Doug Doohan, Department of Horticulture and Crop Science, OARDC and OSU Extension
- Yellow nutsedge control: Sandea, Doohan
- Wine research: Todd Steiner, Department of Horticulture and Crop Science, OSU Extension
- New this year are the station's Cabernet Franc and Traminette plantings, Johns said

Contact Greg Johns at 440-224-0273 or johns.1@osu.edu for more information. Call 440-576-9008 to make reservations for the Twilight Tour and dinner.

Flyby

Source: Harvey Reissig and Art Agnello Entomology, Geneva, Scaffolds Fruit Journal, Volume 14, Issue 19, July 25, 2005

We're in the traditional 'peak activity' window for apple maggot right now, and there are more than a few sites where adults have been gathering on traps in noticeable numbers around the state, so this primer on maggot control strategies bears repeating at this time:

The apple maggot (AM), *Rhagoletis pomonella* (Walsh), is a native insect that originally infested hawthorn trees throughout the northeastern United States and Canada. The AM has been a major pest of apples since they were introduced into North America.

In unsprayed habitats, it is not uncommon for nearly 100% of apple and hawthorn fruit to be infested by AM, because natural enemies do not reduce population levels of this pest in natural settings. Therefore, some type of control program will continue to be necessary to keep this pest at acceptable levels in commercial apple plantings for the foreseeable future.

Biology

The AM overwinters as a pupa in soil beneath apple trees. Adults emerge from the ground in late June or early July (first 2005 catch in selected locations: Highland, 7/5; Lafayette, 7/11; Sodus 7/12; Appleton 7/13; Chazy 7/14) and begin to lay eggs in the fruit after a 7-10 day pre-oviposition period.

Adults remain active during July and August, and a few adults remain active throughout September and even in October in seasons when the weather is mild. AM females lay eggs underneath the skin of apples. These eggs hatch in about a week and larvae begin to tunnel throughout the fruit.

Usually, particularly in cultivars with very hard fruit, larvae grow very slowly while the apple remains on the tree. Larvae usually complete their development after apples have dropped from the tree in the fall. Then they leave the fruit and tunnel into the soil to pupate, where they spend the winter.

General Management Principles

Organophosphate insecticides are very effective in controlling AM adults, and it is very rare to find detectable levels of AM injury in fruit sampled in commercial apple orchards in NY. Therefore, management programs for AM are based on the assumption that there are no indigenous populations of this pest inside orchards and are designed to prevent flies from immigrating into orchards from outside habitats.

Unfortunately, in NY there are usually numerous hosts (abandoned or uncultivated apple and hawthorn trees) that are chronically heavily infested with AM and relatively close to commercial orchards. Apple maggot flies are capable of moving at least several hundred yards to infest other hosts and at least a few flies will always move longer distances of up to one mile.

Extensive research has been done to compare the biology and host preferences of AM reared from apple fruit and various species of hawthorn fruit. Populations living in these two different hosts are considered to be somewhat distinct and are called "host races." There is some disagreement among various authorities about whether or not flies infesting hawthorns will immigrate into commercial apple orchards and oviposit in apples.

For all practical purposes, heavily infested hawthorn trees near apple orchards should be considered just as much a potential threat as heavily infested wild apple trees.

Elimination of Wild Hosts and Cultivar Differences

Since wild hosts (apples and hawthorns) in close proximity to commercial orchards are considered to be the only sources of potential infestations of AM flies, it is a sensible strategy to eliminate as many of these pest sources as possible.

Obviously, it is desirable to create as large a "host-free" area around orchards as possible, but most authorities recommend removing alternate hosts for a distance of at least 100 meters from the borders of commercial orchards. It is best to survey wooded areas surrounding apple orchards in the early spring when apples are in bloom because they are easier to detect at this time.

AM prefer to oviposit in certain cultivars of apples, and larvae survive better in some varieties of fruit than others. Early ripening, soft cultivars such as Wealthy, Cortland, and Early McIntosh are generally more favored for AM oviposition and larval survival than harder, later-ripening cultivars such as Rome, Delicious, and Idared. Northern Spy, which is a cultivar with hard, late-ripening fruit, appears to be one exception to this general rule, because it is reported to be a favorite cultivar for AM infestation. Although no commercially produced cultivars are immune to AM infestation, management strategies can be relaxed somewhat in less preferred, harder varieties.

Conventional Protective Control of AM Flies

This program does not require monitoring of specific orchard blocks. Whenever it is determined that AM flies have first emerged in an unsprayed habitat (preferably in close proximity to the targeted orchard) the entire orchard should be sprayed initially with an organophosphate insecticide 7-10 days (their pre-oviposition period) later. Additional sprays should be applied at 10-14-day intervals until about the middle of August. Since flies emerge in late June to early July in NY, this protective program will usually require about 4 sprays annually. Usually this type of program is only necessary in blocks in which detectable levels of AM-infested fruit have been found, or in orchards located adjacent to many heavily-infested wild hosts.

Reduced Protective Spray Schedule for AM Control

This program also does not require monitoring of specific orchard blocks and is very similar to the conventional program, except that the first spray is applied on a calendar basis on July 15. Then two more sprays will be applied, on August 1 and August 15.

The delay of the first spray for AM control is based on the principle that extensive monitoring studies conducted in NY have shown that flies usually do not begin to immigrate into commercial apple orchards from wild habitats until about the middle of July. This type of program usually is quite effective unless environmental conditions result in a shortage of fruit on wild hosts outside of orchards. Then AM flies may alter their usual behavior of initially ovipositing in fruit on wild host trees close to their emergence site and may immediately begin to disperse to find suitable oviposition hosts in commercial apple orchards.

Conventional AM Monitoring Program

This program is described in detail in the Apple IPM Scouting Manual, IPM Pub. No. 207, *Apple IPM: A guide for sampling and managing major apple pests in New York State* and is based on the idea that it is not necessary to spray an orchard unless a certain population level of flies (monitored by red sticky spheres) is detected immigrating into a monitored block. This technique has been used quite successfully by many growers in NY in "typical" orchards, and the average orchard monitored by this strategy will usually require 1-2 sprays annually for control of AM.

Although many growers in NY use apple maggot traps hung along the edges of commercial orchards as a general indication of when to start spraying for AM, most do not adhere strictly to the formal recommendations described for the monitoring program. Some of the most common deviations from the protocol are:

- Many growers use apple maggot traps only to determine when the first AM spray should be applied and then spray at 14-day intervals thereafter, regardless of subsequent trap catches.

- Growers often monitor for apple maggots in one or two blocks and then spray the remainder of their orchards based on trap catches in the monitored blocks.

- Many growers simply apply sprays whenever any flies are captured and ignore the recommended threshold level of 5 flies/trap.

Growers and consultants using an AM monitoring program often are concerned about late season catches of flies on traps during September and October in commercial apple orchards. Studies conducted in NY have not shown that there is any need to apply control sprays after the middle of August, even though flies can still be captured on traps after the estimated period of residual effectiveness of the last spray. Apparently, female AM active late in the season in apple orchards do not oviposit in fruit, even though most of them have completely developed eggs in their ovaries. This monitoring program should not be used in "high risk" blocks that are adjacent to extensive sources of AM infestations from wild hosts.

Using this program in such blocks will not only result in a potential risk of low levels of AM injury, but will also not result in any reduction of pesticide use because experience has shown that in such blocks the traps will simply indicate that a spray is needed every 10-14 days throughout the season after the traps are deployed.

Although there have never been any formal recommendations presented on exactly how many AM traps should be deployed to completely monitor a grower's entire acreage of apples, it should be noted that AM traps, in contrast to pheromone traps for moths, have a very short range of attraction (10-25 yards). Therefore, it is clearly unreasonable to expect that trap catches in any one particular block can be used to monitor fly immigration into another orchard one to two miles away!

Also, there is some margin of safety built into the monitoring recommendations. The monitoring directions assume that the protective residue from an organophosphate spray will last 10-14 days before another spray is needed. Obviously, residues from organophosphate sprays gradually degrade and become less effective, so that the residual effectiveness in killing flies does not decline abruptly on the 14th day after a spray to become completely ineffective.

AM Monitoring, Border Spray Program

This strategy is similar to the standard recommended monitoring program, except that whenever trap catches indicate a need for an AM control spray, only the 3-4 border rows of the monitored block and the ends of rows are sprayed.

This program is based on the principles that there are no indigenous populations of AM flies inside monitored orchards, and that AM flies immigrating into orchards from outside sources will be killed by residues on treated border rows trees before they can move into the interior of the orchard.

Although some growers and consultants have reported excellent success using border sprays for AM control, very little research has been done in NY to formally test the effectiveness of this type of program. Therefore, growers should be cautious in using this strategy.

This program should probably be used only in "low risk" blocks that are not near sources of potential outside AM infestations and are planted to cultivars which are not favored for AM oviposition or larval survival.

New Insecticides and Tactics for AM Control

Organophosphate insecticides offer many advantages to growers for AM control. They are very effective, relatively inexpensive, generally not toxic to predaceous mites, provide good residual control, and there is no evidence to suggest that flies are becoming resistant to these compounds.

However, changing pesticide regulations are resulting in either the loss of registration of some of these compounds or changes in the re-entry or pre-harvest intervals, which may adversely affect using these materials, particularly for late season control of AM.

Recent laboratory and field tests have shown that newer "reduced risk" compounds, such as SpinTor, Actara, Assail, and Provado, have activity against the AM. When these materials were tested in NY, they provided comparable control to a standard treatment of Guthion, but weekly sprays were necessary for SpinTor because of its short residual effectiveness. These materials, particularly Provado, have very little contact activity and must be ingested by the flies to be effective.

Laboratory trials have shown that the effectiveness of Provado against AM can be increased by adding sugar as a feeding stimulant, but these same effects have not been demonstrated in the field. Ongoing work is being conducted on an improved feeding stimulant bait that can be mixed with these types of new insecticides to increase their effectiveness.

Additional trials of other new materials are being tested in the laboratory and field against AM, including: Calypso, and Spintor+sugar-baited spheres.

Kaolin clay (Surround) has also shown good potential for use against AM, although application frequency and rate are key factors in its efficacy for this purpose.

Post Harvest Pruning in Cherries

Source: Jim Nugent, MSU Extension, Jim Flore, Horticulture, Fruit Crop Advisory Team Alert, Volume 20, No. 14, July 26, 2005

For over a decade the cherry industry has been doing more and more pruning of bearing trees between cherry and apple harvest. This is a time of year when we have labor available and don't have to fight the inefficiencies inherent with dormant pruning in the snow and cold.

To date we have observed no negative impact on winter hardiness of trees, nor any effect on spring flower bud hardiness. However, because of the concern for potential increased susceptibility to winter injury, and possible influence on next season's growth, we suggest the following precautions:

- Do not prune after mid September.
- Avoid exceptionally heavy pruning, particularly of sweet cherries, at this time.
- Do not prune young tart or sweet cherries that have not filled their space in late summer.

Having said that extra heavy pruning should be avoided in late summer, we want to comment that many sweet and tart orchards need exactly that! Too many orchards are getting too tall for the spacings at which they are planted.

The result is excessive shading in the lower canopy, which results in loss of lower fruiting wood, trees too tall to get adequate spray coverage for controlling cherry leaf spot and brown rot, and a large drop for cherries onto the harvester, which will increase fruit bruising and softening.

In 2004, we conducted a preliminary study to evaluate the effect of drop height on soft fruit problems in tarts. While this preliminary study was very limited in scope, the data show a strong trend towards increased damage as the drop height increases. For all of these reasons, it is very important that tree height be limited!

Some suggestions for tree height to optimize light reception:

For triangular shaped trees, the height of the bearing area of the tree should be no more than three times the clear alleyway width. The clear alleyway is the distance between the branches of the trees from row to row, not the plant distances between rows. For example, a six-foot clear alleyway would imply the tree height could be up to 3 x 6 ft., or 18 feet plus about four feet from the ground to the base of the desired fruiting area, for a total height of about 22 feet.

For a rectangular shaped tree, the height of the bearing surface should be twice the drive alleyway distance. For example, again assuming a six foot clear alleyway implies a height of 2 x 6 ft., or 12 feet plus four feet from the ground to the desired base of the fruiting area, for a total height of 16 feet.

These formulas address light only. You need also to consider the capability of your sprayer to adequately cover tops of trees and possibly the propensity of the block to have soft fruit problems.

Controlling Japanese Beetles

Source: Rufus Isaacs and John Wise, Entomology, Fruit Crop Advisory Team Alert, Volume 20, No. 14, July 26, 2005

Japanese beetles have been causing headaches for many fruit growers over the past month since their early July emergence. Although this species has only one generation per year, the beetles emerge over a long period, and they live for over 30 days. This article provides information on insecticide options, based on tests over the past few years conducted at the Trevor Nichols Research Complex and at growers' farms.

Broad-spectrum options

The organophosphates Guthion and Imidan (buffer to pH 6.0) provide excellent lethal activity on adult beetles, although it can take a few days for their effects on Japanese beetles to be seen as the beetles take up the insecticide. They provide 10 to 14 days of activity with five- to 21-day PHI depending on the crop.

The carbamates Sevin and Lannate provide some immediate kill of beetles, and they are also stomach poisons, so if beetles eat treated foliage they will also receive a higher dose. This can be a good property for Japanese beetles, since they eat so much that a strong dose of insecticide is taken up. Lannate has a short residual activity of a few days, whereas Sevin provides a week or more of protection. Sevin has a three- or seven-day PHI depending on the crop and Lannate ranges from three to 14 days.

The pyrethroids Danitol, Asana, and Capture give instant knockdown and mortality of adult beetles with seven to 10 days of activity. It is important to remember that pyrethroids break down faster under hot, sunny conditions, so performance in midsummer will be less than that expected in the spring. Toward the end of the residual activity of pyrethroid applications, beetles may also be repelled from treated bushes. PHI's for this class vary widely, so check the label before use.

Selective insecticides

The labeling of Provado for some fruit crops provides a selective option for Japanese beetle management. Provado provides two to three days of lethal activity from the surface residues before it is absorbed into the foliage. Thereafter, beetles must eat treated foliage to get a dose of the insecticide. During this period, however, Provado is rainfast and provides significant sub-lethal effects of repellency and knockdown activity, but with much less direct mortality from the residues.

This neonicotinoid will also control aphids and leafhoppers. It has a zero- to seven-day PHI depending on the fruit crop. Another member of this chemical class, Assail, can provide some protection of foliage from feeding by Japanese beetles, although the level of beetle mortality may be lower than expected from the broad-spectrum options. The rate allowed in different crops will have a big impact on the effectiveness of Assail.

Short PHI and organic options

For growers looking for beetle control immediately before harvest, some selective insecticides with zero-day PHI's can provide a tool to repel beetles and help achieve beetle-free fruit during harvest. Compounds containing neem (Azadirect, Ecozin, Neemix etc.) have a zero-day PHI and pyrethrum (Pyganic) has a 12 hour PHI. These compounds are labeled for organic use and have a short but effective impact on adult Japanese beetles with some mortality, some knockdown off the crop, and some repellent activity.

Typically there is only one to two days of activity against beetles because the residues do not remain active for long. The non-organic form of Pyganic, called Evergreen, also has a 12 hour PHI, but is much more effective against Japanese beetle than Pyganic, due to the addition of a chemical that inhibits the beetle's ability to break down the insecticide.

Controlling Mid-Season Grape Berry Moth

Source: Rufus Isaacs, MSUE Entomology, Fruit Crop Advisory Team Alert, Volume 20, No. 14, July 26, 2005

The third week of July is a good time to scout vineyards for the effectiveness of post-bloom insecticides and to decide whether another insecticide application in early August is needed. For many vineyards, the post-bloom spray will have been sufficient to control this pest. For other vineyards where grape berry moth (GBM) is usually a problem late in the season, and particularly where the crop was heavily infested with berry moth last year, this generation will require active management to keep the population under control.

In our research vineyards in southwest Michigan, we have just started to see a slight increase in egg laying by grape berry moth, suggesting the next generation is beginning. However, the majority of larvae are mature and in the berries and will be developing into moths in the next week to 10 days. This means that an early August insecticide applied to vineyards with high GBM pressure would be appropriate to prevent larvae of the next generation from entering berries.

The best way to determine the stage of your own grape berry moth population is to look directly on the clusters and try to find a sample of larvae. Mature larvae are dark purple, 1 cm long and will soon pupate into adult moths. From mature larva to an adult laying eggs takes approximately 8 to 10 days. Within a few days of eggs being laid, the young larvae will hatch from the eggs and bore into the berries.

By scouting now, an informed decision can be made as to whether to spend time and money on berry moth control at this time or wait until later in the year. At the same time, looking closely at the vines can detect the level of leafhopper and beetle infestation. If GBM infestation is detected near harvest, it is often too late to get it under control because of pre-harvest interval restrictions. Because of this, proactive scouting and management now are key to protecting the fruit.

Berry moth can often be a problem only at the vineyard edges, and scouting also allows growers to decide whether a border spray would be sufficient to control the infestation. This strategy can help reduce costs while preventing development of berry moth populations. Take a close look at grape clusters on the vineyard borders and also in the vineyard interior to determine how much cluster infestation is present. Sampling 25 clusters at two positions at the border and two in the inside is recommended, for a total of 100 clusters.

If damage is above the threshold of 6 percent infested clusters (one to two clusters in each 25 cluster sample), the decision to treat with an effective insecticide should be made. About one week of activity can be provided by broad-spectrum insecticides Imidan (use pH 6.0 spray water) and Sevin. A little longer activity can be provided by the pyrethroids Danitol and Capture, but at the current high temperatures and UV conditions, pyrethroids are likely to break down more quickly.

SpinTor is a new class of insecticide that has some contact activity and works best when eaten by the insect. It has about a week of activity but is susceptible to wash-off. The previously-listed chemicals may be active on other co-occurring insects and can provide varying levels of control of leafhoppers and Japanese beetles.

One highly selective insecticide that has shown good performance against grape berry moth is Intrepid. This acts by disrupting molting of the larvae, and so it has to be applied in enough water to get excellent coverage of the grape clusters. Once on the clusters, it has 14 days of activity and is highly resistant to being washed off. A spreader-sticker can help get cluster coverage with this product. Check on the pre-harvest interval if you choose an insecticide, as some of these products have a 30 day PHI.

Achieving control of grape berry moth with any product requires good cluster coverage, so it's a good idea to focus sprays on the fruiting zone if targeting cluster pests only. The insecticide must get past the leaves to the clusters, and cover them, to be effective. Use of more water (50 gallons per acre is recommended for a full canopy), driving more slowly, and spraying every row will all help improve efficacy.

Pesticide longevity is also very important because recent research has shown that egglaying by second generation GBM is very spread out. Choose an effective insecticide with enough residual activity that eggs and young larvae are controlled as they develop on the cluster. Short-acting products will be immediately effective but will leave the fruit at risk during the long period of egg laying if they are not reapplied. Finally, remember resistance management: Change the class of insecticide from whichever was used earlier in the season. This will help prevent grape berry moth becoming insensitive to the currently effective tools that are available.

Taking the time to scout vineyards during the next month to determine infestation and see how well the spray program is working will reduce the chance of "late season surprises." Because vineyards can vary greatly in their level of infestation, this scouting should be done in as many different vineyards as possible. Most growers know the hot-spots in their farm, and can focus this sampling there to determine the need for sprays against second generation grape berry moth.

Grape Disease Update

Source: Annemiek Schilder, Plant Pathology, Fruit Crop Advisory Team Alert, Volume 20, No. 14, July 26, 2005

The dry weather has generally delayed the onset of a number of diseases, but eventually some symptoms have started to appear. Downy mildew was noted in a table grape vineyard in Onondaga, Michigan, as well as on wild grapes in several locations in East Lansing. Granted, this area received more precipitation than the western parts of the state. However, it is an indication that we should be monitoring more intensively for this disease.

Late-season fungicide options include strobilurins (Abound, Sovran and Pristine) (all 14-day PHI; do not apply Pristine to Labrusca-type grapes), Ziram (21-day PHI) as well as copper (on non-sensitive varieties: 0-day PHI) and phosphorous acid products (ProPhyt, Phostrol: 0-day PHI). Ziram and copper are strictly protectants; the strobilurins have limited post-infection activity (about one to two days) but good protective activity (about 14 days); and the phosphorous acid products have good post-infection activity (about four days) and more limited protective activity (about seven days).

Black rot symptoms are coming on strong now in unsprayed vineyards and plots. Symptoms on berries are brown areas, some of which have cream-colored spots in the center; the lesions are quickly advancing, resulting in clear delineations and "growth rings" on the berries.

Fungicides should have been sprayed between bloom and about five to six weeks after bloom. At this point, it is mostly too late to do anything about the disease. Some wine grape berries may still be susceptible (up to about eight weeks after bloom) and may need protection. Sterol inhibitors (Elite, Nova, etc.) or strobilurins (Sovran, Abound) are good options.

Powdery mildew has been seen on Concord berries at trace levels and mostly on clusters that are tucked away well in the canopy where humidity is highest. Since older berries are now fairly resistant and levels of disease are generally low, I don't think this is of much concern. Despite the hot, humid weather, disease incidence has been low so far.

To protect immature fruit and foliage from infection, sterol inhibitors (Elite, Nova, etc.) or strobilurins (Flint, Sovran, Abound, Pristine) are good options. Once disease has started, powdery mildew colonies can also be killed or incapacitated with JMS Stylet Oil (paraffinic oil), Armicarb or Kaligreen (both potassium bicarbonate), and even Oxidate (peroxide). However, applications have to be made frequently to be effective (every 7 to 10 days).

Phomopsis lesions are mostly visible on leaves and canes at this point, although a few infected berries have been found. Mostly, berry rot occurring right now is related to grape berry moth infestation. Full disease symptoms are not expected until several weeks before harvest.

In most years, spore release peters out after bunch closure, so disease risk should be limited at this time and sprays no more needed. If you still wish to maintain some fruit protection, the best fungicide options are ProPhyt, Phostrol, Abound, Pristine, or Ziram, all of which also provide downy mildew control.

Botrytis bunch rot has not reared its ugly head yet because basically it is too early in the season. However, the fungus was isolated from the small dead tips of grape clusters and from a rotten berry found in a grape cluster, so the potential for disease development is there. Sprays are advised at veraison and about two weeks before harvest, especially in tight-clustered varieties like the Pinots.

Good fungicide options are Vangard, Elevate, and Scala. Please note the pre-harvest intervals (zero days for Elevate and seven days for Vangard and Scala). Leaf removal is another method for reducing humidity around the clusters and consequently disease development. Be careful not to remove too many leaves, since hot weather with lots of sunshine can scald the berries. Sun-scalding has been observed in some wine grapes already

That's A Berry Good Question!!!

Source: Kathy Demchak, Penn State Small Fruit Specialist, Fruit Times, Volume 24, No. 7, July 26, 2005

Question: "Usually I use ammonium nitrate for fertilizing strawberries at renovation and in late summer. This year, I'm finding it more difficult to find a supplier of ammonium nitrate. What's the preferred source of nitrogen for summer applications? Any suggestions on what I should use as a substitute?

Answer: Ammonium nitrate is/was a good source because it contains both nitrate-nitrogen, which can be absorbed immediately by strawberry plants (but can leach from the soil), and ammonium-nitrogen, which becomes available over the longer haul. Ammonium nitrate contains these two nitrogen forms in roughly equal proportions. This combination gives the plants a relatively steady source of nitrogen for a couple of months (more or less, depending on soil conditions).

Due to ammonium nitrate's past and potential use in explosives, early in July of this year, the "Secure Handling of Ammonium Nitrate Act of 2005" bill was introduced in the U.S. House of Representatives, and a similar bill was introduced in the Senate.

Whether a law regarding this issue is passed or not (passage is almost definite), most agree that collection of information to track ammonium nitrate custody and handling is needed. Some fertilizer dealers are not selling ammonium nitrate, because of either paperwork, or because of security concerns in general, so some growers are encountering this problem.

So, what other nitrogen sources are the best options? One product that many distributors are handling (or can obtain - you may want to check ahead of time) is calcium ammonium nitrate (CAN). This is a granular fertilizer that is a mixture of calcium carbonate and ammonium nitrate. It contains 27% N, in the same proportions of nitrate-N and ammonium-N as "straight-up" ammonium nitrate. In the western U.S., a liquid calcium ammonium nitrate is sold, not to be confused with the granular formulation to which I'm referring.

Urea and calcium nitrate are also options. Urea contains only ammonium-N, which needs to be converted to nitrate-N for use by the plants. While this is taking place, however, some of the nitrogen can be lost as ammonia through volatilization. This is less of a problem if you get a good rain after you apply it.

If you get a little shower or heavy dew - just enough to wet the fertilizer, but not enough to wash it in, and temperatures are high, you can get enough volatilization to cause some blackened leaves. Calcium nitrate could be used, but it should probably be split-applied, because it could be gone rather quickly.

Pest Phenology

Coming Events	Degree Day Accum. Base 50°F
Codling moth 2nd flight peak	1337-1977
Apple maggot flight peak	1458-1770
San Jose scale 2nd flight peak	1459-1805
Obliquebanded leafroller 2nd flight begins	1528-1842
Spotted tentiform leafminer 3rd flight begins	1532-1872
Lesser appleworm 2nd flight peak	1554-2292
Oriental fruit moth 3rd flight begins	1613-1901
Oriental fruit moth 3rd flight peak	1821-2257

Revised thanks to *Scaffolds Fruit Journal* (Art Agnello)

Degree Day Accumulations for Ohio Sites

July 27, 2005

Ohio Location	Degree Day Accumulations Base 50°	
	Actual	Normal
Akron-Canton	1661	1562
Cincinnati	2106	2083
Cleveland	1719	1523
Columbus	1974	1775
Dayton	1840	1839
Kingsville	1522	1405
Mansfield	1608	1545
Norwalk	1740	1528
Piketon	1999	2023
Toledo	1763	1527
Wooster	1706	1451
Youngstown	1508	1410

Site: Waterman Lab, Columbus
Dr. Celeste Welty, OSU Extension Entomologist, and Gretchen Sutton, Graduate Assistant

Apple: 7/21 to 7/27/05	
Redbanded leafroller	12 up from 0
Spotted tentiform leafminer	398 down from 802
San José scale	10 down from 19
Codling moth (3 trap mean)	4.3 up from 2.3
Lesser appleworm	14 down from 29
Tufted apple budmoth	6 up from 2
Variegated leafroller	21 up from 0
Obliquebanded leafroller	14 up from 5
Apple maggot (sum of 3 traps)	no new report, 1 last wk.

Site: East District; Erie and Lorain Counties
Jim Mutchler, IPM Scout/Technician

Apple: 7/19 to 7/26/05	
Codling moth (3 trap mean)	2.7 up from 0.6
Oriental fruit moth	1.9 down from 4.4
Redbanded leafroller	2.9 down from 3.3
San Jose scale	139 up from 46.1
Lesser appleworm	4.0 down from 21.5
Apple maggot (sum of 3 traps)	0.8 down from 2.0

Beneficials found: lacewings, native lady beetles, brown lacewings, *Stethorus pinctum*

Peach: 7/19 to 7/26/05	
Redbanded leafroller	2.3 down from 2.7
Oriental fruit moth	0.8 up from 0.3
Lesser peachtree borer	2.5 up from 1.0
Peachtree borer	2.1 up from 2.0

Beneficials found: lacewing eggs and adults

Site: West District: Huron, Ottawa, Richland, and Sandusky Counties
Lowell Kreager, IPM Scout/Technician

Apple: 7/18 to 7/25/05	
Codling moth	0.4 up from 0.1
Oriental fruit moth	2.0 down from 2.3
Redbanded leafroller	1.4 down from 4.4
San Jose scale	0.0 same as last week
Spotted tentiform leafminer	454 up from 235
Lesser appleworm	4.5 down from 5.2
Apple maggot (sum of 3 traps)	0.0 same as last week

Beneficials found: lacewings, brown lacewings

Peach: 7/18 to 7/25/05	
Redbanded leafroller	3.0 up from 0.0
Oriental fruit moth	0.7 down from 4.1
Lesser peachtree borer	4.5 up from 1.3
Peachtree borer	0.5 same as last week

Site: Holmes, Medina, and Wayne Counties
Ron Becker, IPM Program Assistant

I think the heat has sent all the bugs packing, because we sure aren't finding much activity in the apples. After bottoming out for the last few weeks, codling moth numbers are starting to edge back up, with most blocks averaging less than 3 moths per trap. One block went to 7.3 per trap and will be sprayed for codling moths in 10 -14 days. Un-baited apple maggot traps are averaging .3 per set of 3 traps. Where aphids are present, orange maggots and ladybug larvae seem to be keeping them in check. Several blocks that had to be sprayed last week for European red mite are now clean. The only other insects being found are very light populations of white apple leafhopper and Japanese beetles.