FINGER LAKES
VINEYARD NOTES

Newsletter #4 May 9th, 2003

Cornell Cooperative Extension

Finger Lakes Grape Program

IN THIS ISSUE . . .

Meet Bill Wilsey

Timothy E. Martinson

Area Viticulture Extension Specialist
Finger Lakes Grape Program

I'm pleased to announce that we have hired **Bill Wilsey** as Program Assistant for the Finger Lakes Grape Program. Bill will be working on a variety of projects while he is here and also will be the one that makes sure that newsletters, Vineyard Update e-mails, and field meetings reach you in a timely manner this summer.

Bill comes to the program with a solid 30 years experience as a research technician at the Experiment Station in Geneva where he worked in the vegetable entomology program. He has numerous years experience working with field trials and New York growers and also has numerous technical publications and presentations to his credit. He has worked extensively with other researchers in Horticulture and Food Science and knows his way around the Station and Cornell.

As many of you know, I'll be on leave during the summer months as my wife and I complete our adoption of a daughter in China. Bill will keep the activities that you expect from the grape program going, will maintain field research and demonstration plots that are underway, and will field phone calls and find the answers for you (or refer you to someone who can). Please feel free to contact him with questions or ask him for a farm visit. Bill will be backed up by my colleagues in Fredonia (Tim Weigle, Hans Walter-Peterson) and by faculty programs at Geneva.

Bill lives near Kashong, on Rte 14 a few miles from Geneva, with his wife (Luann, who works with Thomas Henick-Kling's enology program at Geneva) and two daughters. Please join me in welcoming Bill to the program. I'm thrilled to have someone with his expertise and experience on board.

Spring Pest Management Meeting at Dresden
May 28th

Timothy E. Martinson

Please join us for our annual Finger Lakes Grape Program **Spring Pest Management Field Day**, to be Held **May 28** from 3-6:00 PM at the Canandaigua Dresden Vineyards Shop. The meeting will feature university and industry updates on pest management topics. It will be followed by a barbecue, prepared by the Constellation Executive Barbecue Task Force (AKA Tim Moore and Matt Doyle), who are giving the Bluff Point Benevolent Barbecue Association a rest this year.

Preregistration is required. *Please call our office at 315-536-5134 or email Brian Hefler (bjh38@cornell.edu) to preregister.* We need to know the names of **all** persons attending, because Pesticide recertification certificates will be made up in advance. Pesticide recertification credits will be offered. Tim Weigle will host.

Program Schedule:

2:45-3:00 *Sign Up for Pesticide Credits.*

3:00-3:20 *Weed and Floor Management update, and whats's new in the NY and PA grape pest management guidelines.*
Rick Dunst, Research Support Specialist and Superintendent, Vineyard Laboratory, Fredonia, NY

3:20-3:40 *Grape Disease Management Update.*
Wayne Wilcox, Dept. Plant Pathology, NYS AES, Geneva, NY

3:40-4:00 *Insect Management Update.*
Greg English-Loeb, Dept. Entomol. NYSAES.

4:00-5:00 *"Doughnuts and Deposition" Spray Technology and Sprayer Demonstration.*
Andrew Landers, Senior Extension Associate, Dept. Agricultural and Biological Engineering. NYSAES, Geneva, NY

5:00- 5:15 *Update on DEC regulations,*
Ed Hanbach and **Chris Wainwright,** New York State Department of Environmental Conservation

5:15 - 6:00 *Industry representative updates on label changes and new products.*
Technical representatives from chemical companies will speak about label changes and product updates.

6:00 *Barbecue*
Sponsored by **industry representatives**, food cooked by *Canandaigua Executive Barbecue Task Force.* Certificates will be distributed at this time.

Directions: Canandaigua's Dresden Shop is located on Ridge Rd, which runs parallel to Rte 14, North of Dresden and N of Rte 54. From Rte 14, turn west at Nutt Rd or Larzellere Rd. The shop is between those two roads.

Management of Grape Insect and Mite Pests-2003

Greg English-Loeb
Department of Entomology
NYSAES - Geneva

Following in the footsteps of Wayne Wilcox (Plant Pathology, Cornell), I would like to start a new tradition for entomology of reviewing new developments in arthropod pest management during the spring. Wayne sometimes refers to his annual review as his Magnum Opus. My article, at least in its inaugural year, will be less ambitious (maybe a Minimus Opus). Below I first provide an update on insecticide and miticide news and then go on to review the major arthropod pests of grapes, providing a brief summary of their biology and the damage they cause and then a discussion of control options. The material I present here is based on the work of many people at Cornell and elsewhere. I would like to especially acknowledge the contributions of Rick Dunst and Ted Taft and the rest of the crew at the Vineyard Lab at Fredonia, Tim Weigle of the NY IPM Program, Tim Martinson and Alice Wise from Cornell Cooperative Extension, Steve Hesler (my research support specialist here at Geneva), and Jan Nyrop (Entomology faculty at Geneva).

Insecticide and Miticide News

There have not been many changes in insecticide and miticide availability in the last few years, although there are few interesting compounds that may be available in the near future (although probably not this year). One new miticide [Acramite bifenazate] has been labeled for grapes in New York. Acramite currently has two-spotted spider mite on the grape label (a minor mite pest for grapes in our area) but not European red mite (a significant grape pest, especially on Long Island and in the Finger Lakes). However, a FIFRA 2(ee) exemption has been approved to add red mite to the Acramite label. Acramite is available for use on Long Island and efficacy trials conducted by Dan Gilrein and Alice Wise indicate it is effective against red mite on grapes.

The Food Quality Protection Act (FQPA) was passed in 1996 and since that time EPA has been reviewing the status of a number of older generation pesticides. This process is starting to have an impact on pesticide availability for grapes. Several years ago the organophosphate Penncap-M [methyl parathion] was cancelled for use on grapes and many other crops. Several other organophosphate insecticides are still under review. Although no final decisions have been made (and are not likely to be made before next year), there is discussion to remove grapes from the Guthion [azinphosmethyl] label and to increase the re-entry interval for Imidan [phosmet]. The carbamate insecticide carbaryl [Sevin] is also under review with discussions focused on increasing re-entry intervals.

With the loss or restricted use of some of our older materials, do we have new alternatives coming along? The answer is a qualified yes, although when it will happen is always a big question. The insect growth regulator Intrepid [methoxyfenozide] is closest to registration in New York. It already has a federal label for grapes and is under review by DEC. Intrepid is a selective insecticide, disrupting development of lepidopteran (moths and butterflies) larvae. Efficacy trials in Michigan indicate it is effective against grape berry moth. We will be testing it against grape berry moth this year in New York vineyards. Further down the time line, there are several companies testing neonicitinoid insecticides for use in grapes. Provado [imidacloprid] is an example of this class of insecticide that is already labeled for grapes in New York. Neonicitinoids are particularly effective against sucking insects like leafhoppers although specific products vary in spectrum of insects affected. Currently Provado is fairly expensive to use relative to some of the broad-spectrum alternatives (Sevin and Danitol [fenpropathrin]) but perhaps costs will come down when additional neonicitinoids become registered. Finally, Dupont Company is exploring the possibility of labeling their new product, Avaunt [indoxicarb], for grapes. Avaunt is in a new chemical class of insecticide and shows fairly broad-spectrum activity against sucking insects and lepidoptera. It is fairly easy on beneficials, however. In our trials Avaunt has provided good control of grape leafhopper and grape berry moth.

Review of Key Arthropod Pests

There are over 20 insect and mite pests that attack grapes in New York, although many of these are rarely abundant enough to be of economic concern. In this review I will focus on the key grape pests that have a moderate to large pest potential. I will briefly go over basic biology and symptoms of damage and then discuss some of the control

options available. More details can be found in the New York and Pennsylvania Pest Management Guidelines for Grapes: 2003 now available in print from your Regional Grape Program or on line [http://lenewa.netsync.net/public/Guidelines%202003/Home.htm]. I will present these pests in the order they tend to show up in the vineyard during the season (bud break, pre bloom, post bloom, and mid-season).

As a caveat before proceeding, note that an important distinction exists between control of diseases and arthropods. Because of the small size of plant pathogens and their capacity to increase rapidly under suitable growing conditions, you often need to make chemical control decisions well before obvious symptoms are visible. Most fungicides act to protect foliage or fruit before infection, rather than to eradicate the disease. Arthropods, on the other hand, are generally detectable in the field before they cause economic injury, and insecticides and miticides mostly work as eradicants. Hence, for arthropods its possible, and generally advisable, to monitor pest numbers and only apply control measures when economically justified.

Bud Swell to Bloom

Steely Beetle (grape flea beetle). These shiny black beetles overwinter as adults and become active as temperatures increase in the spring. They feed on swollen buds prior to bud break with the potential of causing considerable damage under the right conditions. After bud break, the adults do not cause additional injury. Later in the season the beetles lay eggs that hatch into larvae that do feed on grape leaves, but this damage is not economically important. We tend to experience the most problems with steely beetle when there is a prolonged period of bud swell (cool temperatures during the bud swell phase).

Monitor for beetle activity and bud damage along the edge of vineyards, especially near woods or hedgerows. If you observe more than about 2% bud damage, chemical control is warranted. There are several effective, broad-spectrum, insecticides labeled for steely beetle in grapes including Sevin, Imidan, and Danitol. If you have rows running parallel to woods, you might consider only treating the first 4 to 6 rows where most of the injury is typically concentrated. Note that the 2% threshold probably holds for hybrid and *V. vinifera*. Since many Concord growers leave more buds than when the threshold was originally developed, I suggest growers take a look at the ratio of damaged buds and good buds. In some years, steely beetle is just Mother Nature's way of early thinning for those vines with too many buds.

Banded Grape Bug and Lygocoris Bug. As growers have reduced insecticides over the past 15 years we have observed more of these plant bugs in vineyards. Both species overwinter as eggs in grape canes, emerging as nymphs shortly after bud break to 5 inch shoot growth. The banded grape bug (BGB) nymph is greenish to brown in color with black and white banded antennae. Nymphs of *Lygocoris* are pale green with thin antennae and about half the size of BGB. Nymphs of both species can cause economic damage by feeding on young clusters (buds, pedicel and rachis) prior to flowering. Adults, which appear around bloom, do not cause economic damage. For at least one of these insects, adults feed on other insects as predators. There is only one generation per season.

Monitor for nymphs during the 5 to 10 inch shoot stage by examining clusters on approximately 100 shoots along the edge and interior of vineyard blocks. These plant bugs appear sporadically from year to year and from vineyard to vineyard; most vineyards will not require treatment. But if present at sufficient numbers (1 nymph per 10 shoots), they can cause significant yield reductions. For this reason, it is worth taking the time to check. Pay particular attention to vineyard edges. Several broad-spectrum insecticides are labeled for use against plant bugs (Sevin, Imidan, Danitol). All three compounds are equally effective although Imidan and Sevin are somewhat less disruptive of predatory mites.

Grape Plume Moth. This is another potential pest of grapes that overwinters as eggs in canes and emerges shortly after bud break. Larvae typically web together young leaves or shoot tips and leaves to form a protective chamber from which they feed. Sometimes the grape cluster gets caught up in the webbing and gets fed upon. This is where the potential for economic damage occurs.

New research indicates 1) that damage tends to be concentrated on the vineyard edge near woods and 2) that it takes quite a few plume moth larvae to cause economic damage. For Niagara grapes we were unable to detect a **statistical effect** on vines with 20% infested shoots compared to control vines where plume moth was killed with an insecticide.

Nevertheless, the trend was for reduced yield associated with high plume moth infestations (>20%). For higher value cultivars a somewhat lower threshold would be appropriate. Treatment of plume moth can be tricky for several reasons. First, the larvae develop very quickly and often have reached the pupal stage before you even recognize there is a problem. Second, larvae inside their leaf shelters are protected from insecticides. For these reasons, its important to monitor and treat for plume moth early in the season (before the 10 inch shoot stage) using sufficient water to achieve good coverage. Sevin Danitol, and Dipel (*Bacillis thuringiensis* or Bt) are labeled for use against grape plume moth.

Grape Cane Borer. In the fall the adults of this beetle bore tunnels into 1 and 2 year old canes to create a place to spend the winter. Although this damage doesn't generally kill canes, they may be weakened and break while workers are tying. We do not fully understand its economic impact, but we suspect that it may be rather insignificant except at high populations. In many cases damaged canes can be removed at pruning, although this adds time to the process. The larva of this beetle develops in dead wood and does not cause economic damage. However, since larvae grow into adults it makes sense to try and limit reproduction. One study in Italy found that by thoroughly removing and destroying pruned wood from the vineyard they were able to reduce adult populations and damage. Indeed, at one Seneca Lake vineyard Tim Martinson found an increasing amount of damage to canes the closer the vines were to a large brush pile. The brush pile was at least two years old. Cane borers have traditionally caused the most problem for growers near Keuka Lake. More recently, however, we have been observing more beetles and damage around Seneca Lake and the southeastern area of the Lake Erie Region.

So if you have a chronic problem with cane borer damage, what can be done about it? I must be honest here and say that we really do not know the answer yet. Anecdotal evidence suggests an application of insecticide after temperatures warm up in the spring (3 to 5 inch shoot growth) reduces damage the next year. We think adults are particularly active on warm spring evenings. Last year (2002) Tim Martinson and I treated vines either once or twice with insecticide during the spring at two vineyards with a history of cane borer. This spring (2003) we found lots of cane borer damage at one of the vineyards but no differences between treated and untreated vines and at the other vineyard we did not find any cane borer damage. So we are uncertain as to the best management strategy. Certainly it would be prudent to keep the vineyard as free of old pruning material as possible and to destroy (burn) brush piles each year. As for pesticides, Imidan is labeled for grape cane borer. A spring application on a warm evening with temperatures remaining in the high 60s or 70s (F) may be effective. This season we hope to get a better sense of when adults from eggs of the year appear in the vineyard and when they start making tunnels. This information may help us establish an appropriate timing for a late summer or fall insecticide applications.

Bloom to Mid-Season

Grape Berry Moth. Grape berry moth is familiar to most grape growers in New York. It is considered our most important arthropod pest and much of our current IPM strategy centers around its control. Grape berry moths (GBM) overwinter as pupae in the leaf litter, emerging as adults in May and June to initiate the first generation of larvae that feed directly on young fruit clusters of wild and cultivated grapes. Depending on temperature, there can be one to three additional generations produced during the season. The larvae cause damage in three ways. First, they can reduce yield. How? By directly feeding on the flower clusters, hollowing out the grape berry by feeding and causing premature berry drop due to feeding. Second, they contaminate the juice that can lead to rejection of entire loads at the processors. This is a particularly serious problem for native grapes grown for sweet juice. Third, their feeding activity can help initiate the development of bunch rots. This is particularly a serious problem for wine grapes.

GBM has been effectively managed over the past 15 years, with reduced overall pesticide use, through: 1) the recognition that vineyards vary in risk to GBM, 2) the use of a reliable monitoring plan, and 3) judicious use of broad-spectrum insecticides. More recently, however, we have observed increasing amounts of GBM damage at harvest, especially in the Lake Erie area, indicating emerging problems with our current management scheme. Four factors seem to be involved: 1) loss of some broad-spectrum insecticides through government regulation (Penncap-M), 2) beginnings of insecticide resistance (Sevin), 3) warmer than average winters and summers allowing increased berry moth populations, and 4) poor spray coverage

on fruit, especially for more selective materials such as Dipel or insect growth regulators (Confirm) that only affect Lepidoptera and require ingestion of the material through feeding to be effective.

As a consequence of some of these factors, we are in the process of reevaluating our GBM management program. In the meantime, here are some things to keep in mind. First, it still makes sense to manage vineyard blocks based on risk assessment. High Risk vineyard blocks (vineyards with at least one side bordered by woods, prone to heavy snow accumulation, history of GBM, and/or contain premium wine or table grapes) should be treated with insecticides shortly after bloom (first generation larvae) and in late July (second generation). They should be scouted for GBM damage in late August to see if a third insecticide application is required. Note that much of the recent problems with GBM have come from late-season egg laying. Too often growers put their sprayers away after early August and do not check for GBM. Pay attention to email crop updates for alerts on GBM (and other pests). For Low Risk vineyard blocks (lack of woods, low amounts of snow, little history of GBM problems) you can probably safely ignore GBM for the first generation but remember to scout in late July and it may even make sense to scout in late August as well. For vineyard blocks that fall in between high and low risk (Intermediate Risk) we recommend an insecticide treatment for first generation (immediate post bloom) and scout for GBM at the end of July and end of August. The current thresholds are 6% cluster damage for late-July and 15% at the end of August. Note, though, that these thresholds are best suited for native grapes grown for sweet juice. Thresholds for *V. vinifera* should probably be lower because of the additional risk of bunch rot associated with GBM feeding injury. Also, we are in the process of re-evaluating monitoring and threshold guidelines for native grapes and current recommendations are likely to change.

There are several options available for chemical control of GBM. The most commonly used product is Sevin, although Danitol and Imidan are also effective broad-spectrum materials. Note, though, that Imidan is not quite as effective against leafhoppers as the other two. There has been some evidence of control failures with Sevin in the Lake Erie area due to resistance. Although such problems have not been documented in the Finger Lakes or Long Island, it's something to be aware of. Rotation among pesticides is usually a good idea. More and more growers are turning to Danitol for control of several different arthropod pests, including spider mites. Danitol is a good material but I have concerns that its overuse may lead to spider mite problems. Right now spider mites are killed by Danitol, but over reliance could lead to resistance. Both Sevin and Imidan are easier on predatory mites than Danitol.

There are some additional, more narrow-spectrum, materials registered for use against GBM. Dipel is one option that has been around for a number of years. The toxin produced by the *Bacillis thuringiensis* bacteria is specific to Lepidoptera. In our trials it has been less effective than the broad-spectrum insecticides, but has the advantage that it conserves predators and parasitoids in the system. We have found that 2 applications of Dipel per GBM generation (immediate post bloom and mid-July), improves efficacy. Use sufficient water to achieve good coverage of fruit since the larvae must consume the Dipel as they enter the berry for it to be effective. Good coverage is an issue for all the GBM materials and we are working with Dr. Andrew Landers to determine ways to improve canopy penetration. Mating disruption, with the GBM sex pheromone, is another control option to consider. The idea is to prevent mating by artificially releasing o much sex pheromone that males have difficulty locating the female moths. This technique has been around for a number of years and is being used by a small percentage of growers. It's probably most effective for intermediate and low risk vineyards or in years where berry moth densities are low. However, these are the areas that often times do not require an insecticide application for GBM every year. There are two ways to apply the synthetic pheromone: plastic twist ties (Pacific Biocontrol Isomate) or sprayable microcapsules (3M company). Twist ties continually release pheromone for about 60 days, hence may need to be applied twice during the season. The current formulation of microencapsulated pheromone stays active for about 2 weeks (they are working on extending this time) so needs to be applied twice per generation. Finally, as mentioned under pesticide news, the insect growth regulator Intrepid from Dow Corporation will hopefully be labeled for use in grapes in New York by next season. This is a selective material active against the larvae and eggs of many species of Lepidoptera including GBM. We are still learning how to best use this new material but it seems it needs to be applied a bit earlier than other insecticides (bloom instead of

immediate post bloom, for example). By next year I hope to have more information for you.

Grape Leafhoppers. There is actually a suite of leafhoppers that feed on grapes. The Eastern grape leafhopper *Erythroneura comes* (pale white in summer) mainly feeds mainly on native Labrusca cultivars like Concord while several additional species feed on *V. vinifera* and hybrids including *E. bistrata/vitifex*, *E. vitis*, *E. vulnerata*, and *E. tricinta*. All these *Erythroneura* leafhoppers have similar life cycles. They overwinter as adults and become active as temperatures warm up in the spring. They move on to grapes after bud break, mate and begin laying eggs around bloom. There is one full generation during the summer and a partial second. In warm years there is a potential for a nearly full second generation of nymphs and adults. Both nymphs and adults cause similar damage; using their sucking mouthparts by removal of leaf cell contents. Hence, moderate densities can reduce photosynthesis, ripening and yields. Severity of damage is increased in dry years, assuming irrigation is not available.

Sampling for leafhoppers corresponds to sampling for grape berry moth. At the immediate post bloom period sucker shoots should be examined for evidence of stippling (white dots on leaves caused by leafhopper feeding). If you see stippling throughout the vineyard block an insecticide treatment is recommended. Note that for vineyards at high or intermediate risk of GBM damage, you would probably already be applying an insecticide at this time. If you use a broad-spectrum material such as Sevin or Danitol you will also control leafhoppers. Thus, sampling for leafhoppers at immediate post bloom is only necessary for low risk vineyards. The next sampling period for leafhoppers is mid to late July and focuses on abundance of first generation nymphs. Monitoring for leafhoppers is only necessary for low and intermediate risk vineyards, assuming a broad-spectrum material is used to control GBM in high-risk vineyards. At this time check leaves at the basal part of shoots (leaves 3 through 7) for leafhopper nymphs or damage, on multiple shoots and multiple vines located in the exterior and interior of the vineyard. Use a threshold of 5 nymphs per leaf or 10% of leaves with at least moderate stippling to determine need for treatment. The third time for sampling for leafhoppers is late August, when second generation nymphs are present. Follow a similar sampling protocol as used at the end of July, using a threshold of 10 nymphs per leaf. Note if you have made previous applications of insecticides for leafhopper or GBM it is very unlikely that it will be necessary to treat for leafhoppers in late August. If you don't see much stippling it is not necessary to more carefully sample for leafhopper nymphs.

There are several choices of pesticides to use against leafhoppers. The carbamate Sevin has been a standard for many years and is still effective except in isolated pockets of Concord and other native grapes around the Finger Lakes where we have observed control failures suggesting emergence of resistance. There are several effective alternatives to Sevin including Danitol, Lannate [methomyl], and Provado [imidacloprid]. Lannate is in the same chemical class as Sevin so there is potential for cross-resistance. Both Lannate and Danitol are hard on predatory mites. The neonicitinoid Provado is mainly effective against sucking insects like leafhoppers and not as hard on natural enemies as the broad-spectrum insecticides. Price is a draw back with Provado, however. Note though, that a half label rate of Provado (0.5 oz.) was as effective as the full (1 oz.) rate in controlling leafhoppers in our trials.

Potato Leafhopper. The potato leafhopper is quite distinct from grape leafhoppers. One big difference is that potato leafhopper originates each year from the southeastern US (it can not successfully overwinter in upstate NY) while grape leafhoppers are indigenous to our area. The overwintered, winged adults ride northbound warm fronts and usually arrive in our area sometime after bloom. When and where they arrive is not very predictable. Some years are worse than others. Alfalfa is a preferred host, so vineyards adjacent to alfalfa sometimes get heavy infestations of potato leafhopper right after the alfalfa is cut. The adult potato leafhopper is iridescent green and wedge-shaped. The nymph (immature stage) is bright green and moves sideways in a unique manner when disturbed. Instead of feeding on cell contents of leaves like grape leafhoppers, potato leafhopper adults and nymphs uses their sucking mouthparts to tap into the phloem vessels (the tubes used by plants to transport products of photosynthesis). In the process of feeding, they introduce saliva into the plant that causes, distorted leaf and shoot development. Some cultivars of *V. vinifera* grapes seem particularly sensitive as does the French-American hybrid Cayuga White, but *Labrusca* cultivars also show symptoms. Feeding symptoms in grapes include leaves with yellow margins (more

reddish for red *Vinifera* grapes) that cup downward. Often these symptoms are noticed before the leafhoppers themselves are.

Potato leafhopper is a sporadic pest, although it can be serious in some places and some years. Long Island seems particularly hard hit. We currently do not have good estimates for an economic threshold. We do know that shoots will recover from feeding damage once the leafhoppers are removed. Several insecticides are registered for its control in grapes including Sevin, Danitol, Lannate, and Provado. Potato leafhopper is fairly mobile and it may require several treatments over the season as new infestations occur.

European Red Mite. There are actually two species of spider mites that attack grapes, two-spotted spider mite and European red mite (ERM). ERM presents the more common threat. Problems with ERM on grapes in New York have historically been concentrated on Long Island where the longer season and dryer climate are more conducive to population growth. However, in the last 5 to 10 years we have been observing more problems with ERM in the Finger Lakes. ERM overwinters as eggs on one-year and older wood. Around bud break eggs hatch and larval mites move to young leaves. The immature and adult mites feed on cell contents causing stippling of leaves and (when abundant), leaf bronzing. The eggs of ERM are red to brown red in color, the immatures and adults are pale brown to red. ERM are very small in size (a fraction of an inch) and best observed with a 10 to 15X hand lens. Under the right conditions (hot and dry, lack of natural enemies), they can reach high populations and cause serious injury to grapes. *V. vinifera* cultivars and French-American hybrids appear most susceptible but native varieties can also develop large populations. With rare exception, ERM typically does not become a problem until mid-summer when conditions are most favorable for population growth and shoot growth has slowed down. Look for immature and adult mites on the top and bottom of leaves in the middle of shoots. The current economic threshold is about 7-10 mites per leaf, or 50% of the leaves infested. However, this threshold may be conservative (too low) and research is ongoing to develop a better estimate for our area.

Spider Mites, Predators and EBDC's. Spider mites are often thought of as a secondary pest. In other words, they become pests ONLY when natural biological control is disrupted. ERM has a very effective natural enemy called *Typhlodromus* pyri.. This predatory mite is native to New York vineyards, and when present provides natural control of ERM. Pesticides, that differentially harm predators but not spider mites can disrupt biological control and lead to ERM outbreaks. This seems to be the case for grapes in New York. We have been looking at this issue in NY vineyards for several years now and some tentative conclusions can be made. First, mancozeb and other EBDC fungicides (maneb and related products, ziram and ferbam) can suppress predatory mite numbers.. Repeated use of a mancozeb may promote outbreaks of ERM. In some situations, however, (predatory mite populations are sufficiently high and/or conditions for ERM population growth are insufficient), outbreaks do not occur even with repeated use of a mancozeb product. Jan Nyrop and Wayne Wilcox have recently shown that one early-season application of Dithane had little effect on a well-established population of predatory mites. Several insecticides used in grapes, including Lannate and Danitol, can also suppress predatory mites. Danitol is also a miticide, so at present its use does not create an ERM problem. However, spider mites have a history of quickly developing resistance to frequent use of pyrethroids like Danitol. This may or may not happen with Danitol but it's worth keeping in mind. One of the first things to watch out for is initial good suppression of mites followed by a resurgence indicating the spider mites recovered more quickly than the predatory mites. Overall, paying attention to conserving predatory mites can pay economic dividends. Miticides are expensive, and biological control with predatory mites is free!.

We now have several chemical options for mite control in New York: Kelthane [dicofol], Vendex [fenbutatin-oxide], Agri-Mek [abamectin], Pyramite [pyridaben], Acramite, JMS Stylet Oil [aliphatic petroleum distillate], and Danitol. Note that Pyramite is not allowed on Long Island. Kelthane and Vendex are the old standards that have been relied upon for a number of years. Kelthane is fairly hard on predatory mites while Vendex is not. My experience with Vendex is that it takes a bit longer to have an impact than Kelthane. Trials conducted by Tim Martinson a few years ago demonstrated that 3 early-season applications of JMS Stylet Oil, (used primarily for powdery mildew), also reduced ERM populations by about 50%. JMS Stylet Oil is relatively benign to predatory mites. Read the label carefully since JMS Stylet Oil is not compatible with a number of

other products including Captan, Vendex, and sulfur. Although Stylet Oil can help with ERM problems, it is not likely to provide complete control in problem vineyards. Pyramite has been registered for use on grapes in New York (but not on Long Island) for a couple of years. It's very effective against ERM but higher rates may be necessary to control two-spotted spider mites. Pyramite is pretty soft on predatory mites except at high rates. It also provides partial control of leafhoppers. Agri-mek currently has two-spotted spider mite on the label but not ERM. The Agri-Mek label recommends the use of a nonionic surfactant to improve wetting. Acramite, as indicated earlier, has recently received DEC approval for use in New York, including Long Island. A 2(ee) label change has been granted to include ERM. The Acramite label recommends use of an organosilicone adjuvant to aid wetting. Also, use a buffering adjuvant to reduce the pH to a neutral/acidic range. Acramite and Agri-Mek are relatively soft on beneficial arthropods. Note the different miticides vary in their re-entry interval and days to harvest requirements.

Some Final Comments

There are a large number of potential arthropods pests of grapes and it is possible to get overwhelmed with information on biology, symptoms, control options, etc. Here are a few points to keep in mind to help simply things.

1. Although there are a large number of potential pests, relatively few consistently represent a major threat (grape berry moth, leafhoppers, mites, and a few others). And of those that can cause significant injury, they may not be present in damaging numbers at a particular vineyard or year.
2. With insect and mite pests you often have time to make management decisions based on what is present in the vineyard rather than using a preventative approach.
3. There is a distinct time in the growing season when particular pests may turn up in your vineyard. Focus your scouting on a limited number of pests at a given vine phenology (developmental stage). Look for steely beetles and climbing cutworm at bud swell; plant bugs and plume moths when shoots are between 5 and 10 inches; grape rootworm, rose chafer around bloom; grape berry moth, leafhoppers, leaf phylloxera, Japanese beetle, and spider mites between bloom and late August;
4. Don't put your sprayer away too early in the season. Watch out for late-season damage from grape berry moth. Read extension pest alerts available through the Finger Lakes and Lake Erie regional grape programs. If you don't have access to email, see if you can get someone who does to makes copies for you. (To sign up for either of the electronic newsletters, Tim Martinson's *Finger Lakes Vineyard Update* or The Lake Erie Regional Grape Program's *Crop Update*, please contact either program directly).
5. Although the FQPA review process is starting to limit the use of some materials, for the most part, we still have good chemical control options available. Be smart about using them. Pay attention to label restrictions and review recommendations in the pest management guidelines. Be aware of the potential for grape berry moth and grape leafhopper resistance to Sevin. Rotate among materials to reduce development of resistance. Be aware of consequences for natural enemies. The cheapest material to apply on a per acre basis may not always result in the lowest cost because of unintended consequences. Most important, only use pesticides or other control options when it makes economic sense to do so (economic threshold: the cost of control is roughly the same or less than costs of damage).

UPCOMING EVENTS

May 28, *Spring Pest Management Field Day and Barbecue,* 3-6:00 PM, Canandaigua Dresden Vineyards, Ridge Rd, Penn Yan. Our annual pest management update will feature talks by Wayne Wilcox, Rick Dunst, Greg English-Loeb, and a sprayer demonstration entitled "Doughnuts and Deposition" by Andrew Landers. A barbecue will follow. Pesticide credits will be offered. Details to Follow. **Pre-register** with our office at 315-536-5134, or by sending an e-mail to Brian Hefler (bjh38@cornell.edu) Please include names of all who will be attending, as we will be making out certificates in advance of the meeting Preregistration required.

June 6, *"Cabernet Franc Wines: Making the Whole Greater Than the Sum of its Parts,"* at the Holiday Inn, Waterloo, NY. A one-day seminar on how to add consumer value, flavor and profit to eastern cabernet franc-based wines. Seminar produced by *Vineyard & Winery Management*, program developed and moderated by Dr. Tom Cottrell of the Small winery action Team. Focus on enology with some viticulture and marketing topics; included comparative tasting. For information and registration, visit www.vwm-online.com or call: 800-535-5670. For hotel reservations, call 315-539-5011.

June 10. *New Grower Seminar,* Lancaster, PA, 8:00 to 5:00 PM. Sponsored by Penn State Cooperative Extension. Dr. Tony Wolf (Virginia Tech), Dr. Joe Fiola (Univ of Maryland) and Mark Chien (Penn State) are offering a seminar for beginner and new grape growers in Lancaster, PA on June 10. This course offers a broad overview of commercial vineyard development into the third year including economics and marketing information, equipment and supply requirements as well as all the basics from site selection and preparation to planting and tending your vines through their third year of growth. Drs. Wolf and Fiola have over 30 years of extension and research experience in eastern viticulture between them. Mark Chien offers a commercial grape growing perspective. The cost of the seminar is $60, and includes lunch, drinks and handouts. Pre-registration is required. The deadline for registration is June 2. For more information, please contact Mark Chien at 717 394-6851 or mlc12@psu.edu.

July 9-11, *ASEV-Eastern Section annual meeting and seminar.* Corning NY. The annual American Society of Enology and Viticulture Eastern Section meeting is LOCAL this year... The meeting will start with a 1.5 day seminar entitled *Wine Closures: Put a Cork in It?* (July 9-10). Program Chair Roland Riesen has put together an excellent program on corks and alternative wine closures, with a prominent list of speakers. If you are a winemaker or winery owner, don't miss it! The *ASEV-ES Technical Sessions* will follow on July 10-11, featuring presentations on a broad range of enology and viticulture topics. For more information:
http://www.nysaes.cornell.edu/fst/asev/

June 19, *Richard Smart Canopy Management Seminar. Wagner Winery and Vineyards. Ginny Lee Cafe. 9:00 AM to 5:00 PM.* Richard Smart**,** graduate of Cornell University, author of 'Sunlight Into Wine' and renown viticulture consultant and canopy management expert will be in the Finger Lakes on the 18th - 20th of June. He will present a day long seminar (1/2 in field and 1/2 in the classroom) on principles and practice of canopy management and training systems. Morning will be seminar style, afternoon will be outside in the vineyard. He will be also be available to growers for private consulting on 18 June and 20 June. Dr. Smart's visit and seminar is sponsored by the New York State Wine Grape Growers. Registration is $75 for the general public and $60 for CCE grape program enrollees OR Members of the NYS Wine Grape Growers. A registration form is posted at my web site:
http://www.cce.cornell.edu/programs/finger-lakes-grape/ or call our office at 315-536-5134.

[Note: If you are interested in a private consulting visit by Dr. Smart, please call us, or send a return e-mail with your name, phone number, and e-mail (if applicable). Indicate which date you prefer, (18th for east Seneca Lake, Cayuga Lake, and east (e.g. Skaneatles); 20th for West side Seneca, Keuka, and west (or N). Its permissible (and possibly desireable) for small groups of growers to jointly sign up for consulting time.]

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Cooperative Extension

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Area Extension Educator

Building Strong and Vibrant New York Communities

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