

FINGER LAKES VINEYARD NOTES



Newsletter 4

May 10, 2005

Cornell Cooperative Extension

Finger Lakes Grape Program

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SPRING PEST MANAGEMENT FIELD DAY AT HERON HILL WINERY

Thursday May 19. 3-6 PM. *Spring Pest Management Field Day.* Heron Hill Winery, Co. Rd. #76, 4 Mi. N of Hammondsport. Please join us for the annual pest management update, featuring talks on DEC regulations, University pest management updates, spray technology update and demonstration, and updates by industry representatives. The meeting will be followed by a barbecue under Heron Hill's tent, adjacent to the winery. Heron Hill staff will cater and serve the event, including wine donated by Heron Hill and previously-donated wine (grape convention) from other wineries. Same type of program, different location than last year. There is no charge for this meeting, but **please preregister by Friday May 13 by calling our office at 315-536-5134, or by e-mail at bjh38@cornell.edu**

The DEC has awarded 3 pesticide recertification credits (categories 1A, 10, 22) for this meeting. Please bring your DEC certification number to this meeting and sign the roster prior to the session's start.

Schedule:

2:45 **Sign up for pesticide recertification credits**

3:00 **DEC and Pesticide Management and Education Program Update**

Focus on Worker Protection Standard, Compliance with same, and Pesticide Storage. Ed Hanbach, NYS DEC Bath, George Good, director Cornell PMEP program, and Ron Gardner, Senior Extension Associate, Cornell PMEP program

3:45 **Cornell Pest Management Updates**

Diseases-Wayne Wilcox, Professor, Plant Pathology
Weeds - Rick Dunst, Research Support Specialist, Vineyard Lab
Insects-Greg English-Loeb, Assoc. Professor, Entomology
Trac-Grape - Juliet Carroll, Senior Extension Associate, IPM
IPM Update - Tim Weigle, Statewide Grape IPM Specialist

4:45 **Spray Technology Demonstration**

"A new lease of Life" or "Facelift Uplift"
Andrew Landers, Spray Technology Specialist, Entomology and Biological and Environmental Engineering

5:15 **Industry Updates – New Products and Label Changes**

Commercial suppliers.

6:00 **Barbecue Heron Hill Winery.**

Our thanks to Heron Hill for hosting the meeting this year, to all the speakers for their presentations, to all the industry sponsors for helping defray the cost of the barbecue.

MANAGEMENT OF GRAPE INSECT AND MITE PESTS – 2005

Greg English-Loeb
Dept. Entomology NYSAES

The 2004 growing season was a pretty good year as far as insect and mite pests, from the perspective of the grower. Some vineyards experienced significant berry moth or leafhopper injury, but overall, it was a light year. Its tempting to assume that the cold winter of 2003/04 was hard on overwintering insects and this resulted in lower populations during the 2004 growing season. Although this may have played a role, I believe the most important factor determining population levels and damage during the growing season is weather conditions during spring and early summer.

When we have wet and cool spring temperatures the insects get off to a slow start and they never quite recover, even when temperatures run above average in August and September. Grape berry moth eggs laid after about August 1 will reach the pupal stage and then enter diapause (non-reproductive stage for overwintering). Similarly, by this date leafhoppers that are still in the nymph stage (immature) enter diapause and don't reproduce until after winter. When we have below-average temperatures in May and June, pests like berry moth and leafhoppers do not develop quickly enough to produce an additional generation. Conversely, when May and June temperatures are above average the potential for leafhoppers and berry moth to get through an extra generation is greater, which leads to higher populations.

In this article I will review the major insect and mite pests of grapes, providing a brief summary of their biology and the damage they cause followed by 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, Alice Wise, and Dan Gilrein from Cornell Cooperative Extension, Andy Muza from Penn State Cooperative Extension and Steve Hesler (my research support specialist here at Geneva), and Jan Nyrop (entomology faculty at Geneva).

Insecticide and Miticide News. The DEC has decided to classify the neonicotinoid insecticide Provado (imidacloprid) as a restricted use compound due to

concerns regarding ground water contamination. Thus, the use of this product is limited to persons who are certified applicators. Provado is very effective against sucking insects like leafhoppers. Note that another neonicotinoid, Assail, was labeled for use in New York last year. Assail is not a restricted use insecticide. Two additional insecticides in this chemical class, clothianidin (Clutch) and dinotefuran (Venom), are on the road toward registration. All of these neonicotinoids appear to be quite effective against sucking insects, but they vary to some degree in their effectiveness against lepidopteran pests such as grape berry moth.

Use of pyrethroids for insect control in grapes has increased in New York and Pennsylvania over the past few years since Danitol 2EC (fenprothrin) was labeled. There now is a second pyrethroid, Capture 2EC (bifenthrin), labeled for use against eastern grape leafhopper. In addition, a 2(ee) recommendation has been approved for Pennsylvania and some other states (but not New York) for use against grape berry moth, cutworms, and Japanese beetle adults. This season we will work toward obtaining a similar recommendation for New York. Both Danitol and Capture appear effective against a number of arthropod pests, including spider mites. One concern I have about the extensive use of these broad-spectrum products, however, is that spider mites may develop resistance. Predatory mites, that generally do a good job of keeping spider mites under control, are very sensitive to pyrethroids.

Last year I noted that a new miticide, Acramite [bifenazate], had been labeled for grapes in New York. Initially Acramite only had 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). The new label does include European red mite. Speaking of red mites, note that the trade name for the miticide pyridaben has been changed from Pyramite to Nexter.

With the loss or restricted use of some of our older materials, are there alternatives coming along in the registration process? The answer is a qualified yes, although when it will happen is always a big question. The insect growth regulator Intrepid [methoxyfenozide] has not yet received approval for use in New York on grapes (although it got approval for apples this year). Intrepid is a selective insecticide, disrupting development of lepidopteran (moths and butterflies) larvae. Efficacy trials in Michigan and New York indicate it is effective against grape berry moth. Note,

however, that Intrepid seems most effective when applied at the start of egg laying. Hence, applying Intrepid at or shortly after bloom appears to be more effective than waiting until the more traditional timing of 10 days post-bloom. As noted above, there are several companies testing neonicotinoid insecticides for use in grapes. Finally, Dupont Company is still exploring the possibility of labeling their new product, Avaunt [indoxicarb], for grapes. Avaunt is in a new chemical class of insecticide that shows fairly broad-spectrum activity against sucking insects and lepidoptera. It is fairly easy on beneficial insects and mites, however. In our trials Avaunt has provided good control of grape leafhopper and grape berry moth.

Review of key insect and mite pests. Over 20 arthropod pests attack grapes in New York, although many of these are rarely abundant enough to be of economic concern. (*Arthropod* is a broader category that includes insects and mites, which aren't insects.) Here I 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: 2005 now available in print from your Regional Grape Program or online (linked at www.fruit.cornell.edu). I will present these pests in the order they tend to show up in the vineyard during the season (budbreak, 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. In addition, most fungicides act to protect foliage or fruit before infection rather than 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 it's possible – and generally advisable – to monitor pest numbers and only apply control measures when they are economically justified by presence and numbers of the pest.

Bud swell to bloom. *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 during the growing season. At this time we do not fully understand its economic impact. It may be rather insignificant except at high numbers per vine. In many cases damaged canes can be removed at pruning, although this adds time to the pruning process. The larva of grape cane borer (GCB) develops in dead wood and does not cause economic damage. However, since larvae grow into adults it makes sense to try and limit their reproduction.

Because of the amount of winter injury over the last few years, there may be a fair amount of dead wood in the grape canopy, on the vineyard floor, or in burn piles. These are all good food sources for GCB larvae. My sense is that destroying as much of this dead wood as possible before larvae have a chance to mature (end of July) would help reduce GCB adult populations in the fall, although we do not have a lot of data yet to back this up. One study in Italy, however, did find that by thoroughly removing and destroying pruned wood from the vineyard, they reduced adult populations and damage. Egg laying gets started around budbreak. In an insecticide trial last year we found that three applications of Imidan 70W, starting at around budbreak and repeated about every 10 days, significantly reduced damage from adults in the fall. We plan to repeat this experiment this year, but these results are encouraging. We are also trying to determine if fall activity of adults is synchronized enough to make it possible to treat them in the fall.

As of now Imidan is the only insecticide that is specifically labeled for use against grape cane borer.

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 budbreak with the potential of causing considerable damage under the right conditions – in particular when we get a prolonged swollen bud stage. Pay attention for damage from steely beetle along the edges of the vineyard. Use about 2% bud damage as a threshold for treatment. Some hybrids with fruitful secondary buds that tend to overcrop can probably handle higher damage levels. Note that after budbreak, 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.

There are several effective, broad-spectrum, insecticides labeled for steely beetle in grapes including Sevin, Imidan, and Danitol.

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 from shortly after budbreak 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) before bloom. Adults, which appear close to bloom, do not cause economic damage – and for at least one of the species – become predaceous. 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 are sporadic 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 and hence it is worth the time to check. Pay particular attention to vineyard edges.

There are several broad-spectrum insecticides labeled for use against plant bugs (Sevin, Imidan, Danitol).

Grape Plume Moth. This potential pest overwinters as eggs in canes and emerges shortly after budbreak. 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. Research indicates that: 1) that damage tends to be concentrated on the vineyard edge near woods and 2) it takes quite a few plume moth larvae to cause economic damage. For Niagara grapes we were unable to detect a statistical effect on yield of vines with 20% infested shoots compared to 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 webbed leaves are protected from insecticides. For these reasons, it's important to monitor and treat for plume moth early in the season. Look for young plume

moth larvae between budburst and 1-3 inch shoot growth. If you already see webbed leaves, look inside for larvae before you treat.

Sevin, Danitol, and Dipel (*Bacillus thuringiensis* or Bt) are labeled for use against grape plume moth.

Bloom to Mid-season. *Grape Berry Moth.* Grape berry moth (GBM) is familiar to most grape growers in New York. It is considered our most important insect pest in Lake Erie and the Finger Lakes and much of our current IPM strategy centers around its control. It is less of a problem on Long Island. GBM overwinters as a pupa in 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 four ways. First, they can reduce yield by directly feeding on the flower clusters, hollowing out the grape berry, and causing premature berry drop. Second, their presence at harvest can lead to rejection of Concord or Niagara juice grapes by processors. 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, while at the same time reducing 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: loss of some broad-spectrum insecticides through government regulation (PennCap-M), beginnings of insecticide resistance (Sevin), warmer than average winters and summers allowing increased berry moth populations (though not in 2003 or 2004), and poor spray coverage on fruit.

Because of this, we are in the process of reevaluating our GBM management program. 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 in early August and do not check for GBM. 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. 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 scouting for GBM in both late July and late 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 juice grapes. Thresholds for *vinifera* may be lower due to the additional risk of bunch rots associated with GBM feeding injury.

Several options are available for chemical control of GBM. The most commonly used product is Sevin, but Danitol and Imidan are also effective broad-spectrum materials. Note, though, that Imidan is not quite as effective against leafhoppers as the other two. Some control failures have been reported 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 is something to pay attention to. Rotation among pesticides in different chemical classes is recommended. More and more growers are turning to Danitol for control of several different pests, including spider mites. Also, as noted above, Capture (another pyrethroid like Danitol), has recently been labeled for grapes. Pennsylvania includes GBM on its label. While Danitol and Capture are effective, I have concerns that their overuse could lead to spider mite resistance, creating a new problem in the future.

Additionally, some narrow-spectrum materials are registered for use against GBM. Dipel is one option that has been around for a number of years. The toxin produced by the *Bacillus thuringiensis* bacteria is specific to Lepidoptera such as GBM. In our trials it has been less effective than the broad-spectrum insecticides, but has the advantage that it conserves predators and parasitoids (biological control organisms). We have found that 2 applications of Dipel per GBM generation (immediate post bloom and mid-July), improves its efficacy. It's important to use sufficient water to achieve good coverage of fruit. GBM larvae must consume the Dipel as they enter the berry for it to be effective.

Mating disruption, using large releases of the GBM sex pheromone, is another control option to consider. The idea is to prevent mating by artificially releasing so 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 is probably most effective for intermediate and low risk vineyards or in years where berry moth populations 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 or sprayable microcapsules. The older version of Isomate GBM twist ties is no longer being sold. But a replacement product called Isomate-GBM Plus is available, and is supposed to last the entire growing season. (The older product was thought to run out of pheromone too early in some years, leaving the vineyard unprotected.) We have just started testing Isomate GBM Plus. Researchers and growers have had mixed experiences, so we are still evaluating it. Tim Weigle and I hope to conduct additional trials with GBM Plus next year with colleagues in PA and MI.

The other delivery method is a microencapsulated product that applied with a sprayer. The current formulation (made by 3M company) stays active for about 2 weeks (they are working on extending this time) so it needs to be applied twice per generation. However, I recently learned that 3M has decided to get out of the pheromone disruption business. Although some product is still available, I am not certain about its fate beyond this year.

Finally, as mentioned under pesticide news, the insect growth regulator Intrepid (from Dow Corporation) has a EPA label for use on grapes and is available in Pennsylvania. It has not received DEC approval for New York, and we don't expect it to happen this year. Intrepid 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).

Grape Leafhoppers. There is actually a suite of leafhoppers that feed on grapes. Eastern grape leafhopper *Erythroneura comes* (pale white in summer) mainly feeds on native cultivars like Concord, while several additional species feed on *V. vinifera* and hybrids including *E. bistrata/vitifex*, *E. vitis*, *E. vulnerata*, and *E. tricincta*. All these leafhopper species have similar

lifecycles. They overwinter as adults and become active as temperatures warm up in the spring. They move on to grapes after budbreak, mate and begin laying eggs around bloom. There is one full generation during the summer and a partial second generation. In warm years, leafhoppers can complete nearly a full second generation of nymphs and adults. Both nymphs and adults damage leaves by removing leaf cell contents using sucking mouthparts. Hence, moderate populations can reduce photosynthesis and delay ripening. In combination with drought stress, leafhopper damage can also reduce yield in the following year. The reduced photosynthesis from leafhopper feeding – in combination with drought stress – results in lower bud fruitfulness as a carryover effect. In the last few years we have seen low grape leafhopper numbers, probably due to cold winters and cool temperatures during spring and early summer.

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. At this time sampling focuses on abundance of first generation nymphs. Monitoring for leafhoppers is only necessary for low and intermediate risk vineyards (assuming you've sprayed for 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. Examine multiple shoots on many vines in both the exterior and interior portions 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 scouting period should occur in late August, when second-generation nymphs are present. Follow a similar sampling scheme as that outlined above for July, but use a threshold of 10 nymphs per leaf rather than 5. Note that if you have previously applied insecticides for leafhopper or GBM it is very unlikely that you will need to spray for them in late August. If you do not observe much stippling it is not necessary to more

carefully sample for leafhopper nymphs.

There are several choices of pesticides to use against leafhoppers. Sevin has been a standard for many years and is still effective in most areas. In Concord vineyards (and other native varieties) around the Finger Lakes, we have observed control failures suggesting emergence of resistance. There are several effective alternatives to Sevin including Danitol, Capture, Lannate [methomyl], and Provado [imidacloprid]. Lannate is in the same chemical class as Sevin (both are carbamates) so it may not work where there have been control failures with Sevin. Both Lannate and Danitol are hard on predatory mites. The neonicotinoid Provado is very effective against leafhoppers and not as hard on natural enemies as the broad-spectrum insecticides are. Note that a half label rate of Provado (0.5 oz.) was as effective as the full rate in controlling leafhoppers in our trials. Assail [acetamiprid], another neonicotinoid (mentioned previously) is also very effective against leafhoppers. Perhaps with this added competition, the price for these products will come down.

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 north on warm fronts and usually arrive in our area sometime after bloom. When and where they arrive is not very predictable, so some years are worse than others. They tend to arrive earliest (sometimes before bloom) on Long Island, and later in the Finger Lakes and Lake Erie region. Vineyards adjacent to alfalfa sometimes get an infestation of potato leafhopper right after the alfalfa is mowed. The adult potato leafhopper is iridescent green and wedge-shaped while the nymph is usually green and moves sideways in a unique manner when disturbed. Instead of feeding on leaf cell contents 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) of many different species of plants including grapes. In the process of feeding, they introduce saliva into the plant that causes distorted leaf and shoot development. Some *vinifera* cultivars seem particularly sensitive as does Cayuga White, but Labrusca cultivars (particularly Catawba) 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 observed.

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, Assail and Provado. Potato leafhopper is mobile and several treatments may be required over the season as new infestations occur.

European Red Mite. Two species of spider mites, two-spotted spider mite and European red mite (ERM) attack grapes, but ERM presents the more serious 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 budbreak 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* and French 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.

Scouting for ERM requires a hand lens or magnifying glass, because they are so small. 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.

Spider mites are often thought of as a secondary pest. In other words, something must happen in the vineyard that disrupts their natural control by predatory mites, before their populations can increase to damaging levels. The most typical cause of biocontrol disruption is pesticide applications that affect predators more than the spider mites. In New York we have been looking at this issue for several years now. Some tentative

conclusions can be made: 1) The use of certain fungicides, particularly products containing mancozeb, suppresses predatory mites. Repeated use of a mancozeb may promote outbreaks of ERM. In some situations, however, outbreaks do not occur even with repeated use of a mancozeb product (e.g. when predatory mites are abundant or conditions for ERM population growth are poor). 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. 2) 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, in the past, spider mites have been quick to develop resistance to frequent use of pyrethroids like Danitol. This may or may not happen with Danitol but it is 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 since miticides are quite expensive. Predatory mites are native to this area and quite common in the Finger Lakes.

We now have several chemical options available for mite control in New York: Kelthane [dicofol], Vendex [fenbutatin-oxide], Agri-Mek [abamectin], Nexter [pyridaben] (previously sold as Pyramite), Acramite, JMS Stylet Oil [aliphatic petroleum distillate], Danitol and Capture. Note that Nexter 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, being used primarily for control of grape 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. Also, although Stylet Oil can help with ERM problems, it is not likely to provide complete control in problem vineyards. Nexter has been registered for use on grapes in New York (but not on Long Island) for a couple of years. It is very effective against ERM but higher rates may be necessary for two-spotted spider mites. Nexter is pretty soft on predatory mites except at high rates. It also provides some 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, has recently received DEC approval for use in New York, including Long Island. The new label for Acramite includes both two-spotted mite and ERM. Acramite and Agri-Mek are relatively soft on beneficial arthropods. It is good news that we now have several miticides to choose from for control of ERM in grapes. It's a good idea to rotate materials to help reduce pressure for resistance.

Multicolored Asian Lady Beetle (MALB). MALB was introduced into the US from Asia to help control aphid pests. It has spread to many areas in the southern and eastern US and into Ontario, Canada and has generally been an effective biological control agent. However, it has the habit of moving into vineyards in the fall near harvest time. When disturbed, the adult MALB releases a defensive chemical that helps it ward off enemies. Unfortunately, the defensive chemical has a nasty taste and bad odor that gets carried into the juice and wine. Relatively low numbers of MALB (10 per grape lug) can cause off-flavors in juice and wine. MALB is sporadic both in where it shows up during a given year and from year to year. Vineyards in the Niagara Peninsula appear particularly vulnerable. Also, vineyards adjacent to soybeans in a year when soybean aphid is abundant may be more vulnerable to sudden movement of MALB into vineyards at harvest. I recommend that you scout your vineyards before harvest to see if MALB is present. Several different species of ladybugs in your vineyard but probably only MALB would be present on the clusters in high numbers.

You can recognize MALB by the black markings directly behind the head that look like an M or W depending on which direction you look from. The color or number of spots is variable. I would also pay attention to the crop updates to see if and when MALB is turning up in vineyards. If you do end up with a problem, there are a few chemical approaches you can try. Note that we have not yet developed a good estimate of the economic threshold for MALB nor field-tested potential chemical control options.

Three pesticides are labeled for MALB: Sevin [carbaryl], Danitol [fenprothrin], and Aza-Direct (active ingredient is azadiractin, a natural product extracted from the neem tree). To use Sevin and Danitol in New York for this purpose, you need to have the 2(ee) label or a copy of the 2005 NY and PA pest management guidelines. Sevin and Danitol are toxic to MALB based on laboratory trials conducted by Roger Williams at Ohio State University. Aza-Direct, appears to have a repellent effect on MALB, again based on laboratory trials by Roger. Pre-harvest intervals (PHIs) may limit your choices. Danitol has a 21day PHI, Sevin has a 7 days PHI, and Aza-Direct has a zero day PHI.

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 simplify things.

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). Of those that can cause significant injury, they may not be abundant enough to be considered pest at a particular site or in a particular year. Generally speaking, with arthropod (insect and mite) pests you have time to make management decisions based on problems you observe rather than before having to spray preventively before they develop. Particular pests predictably appear at distinct times of the season, so you can focus your scouting on a limited number of pests at a given vine growth stage.

Bud swell: Look for steely beetles and climbing cutworm.

Bud burst to 10 inch shoot growth: Scout for plant bugs and plume moths.

Bloom: Look for grape rootworm, and rose chafer.

Bloom to late August: Scout for grape berry moth, leafhoppers, leaf phylloxera, Japanese beetle, and spider mites.

Harvest: Scout for MALB lady beetles.

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 grape extension programs. If you don't have access to email, see if you can get someone who does to make copies for you.

Although the Food Quality Protection Act (FQPA) review process is starting to limit the use of some materials, for the most part we still have good chemical control options available. But 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). If you have questions or concerns please let me know at 315-787-2345 or gme1@cornell.edu.

CUTTING-EDGE CULTIVARS HIGHLIGHTED
AT 2005 ASEV/ES SYMPOSIUM

Anna Katharine Mansfield, University of Minnesota

Enologist

The American Society for Enology and Viticulture, Eastern Section, will conduct its annual technical meeting and symposium, entitled *Cutting-Edge Cultivars*, at the Millennium Hotel St. Louis, St. Louis, Missouri, July 13-16, 2005. In response to the increased interest in terroir-specific cultivar selection, this program will explore the viticultural and enological aspects of specific grape cultivars significant to eastern winegrowing. Half-day sessions will focus on Traminette, Pinot gris, and Norton, as well as a variety of new cold-climate hybrids from the Upper Midwest. Additional information is available at www.nysaes.cornell.edu/fst/asev/.

Traminette, released by Cornell University in 1996, has rapidly become one of the most widely-planted white cultivars in the East and Midwest. Vigorous, productive and relatively cold-hardy, it produces a floral, spicy wine reminiscent of its parent, Gewurztraminer. Winemaker John Brahm, who produces three styles of wine from Traminette at Arbor Hill Winery in Naples, NY, will share what he's learned from working with the cultivar in both winery and vineyard for over 15 years. University researchers from Virginia Tech and Purdue will also be on hand to discuss the results of training system and wine production trials conducted for the last five years. A selection of Traminette wines from across the region will be featured at the annual awards banquet held Friday, July 15th.

Pinot gris, well known for quality wine production in Italy and Oregon, has shown significant promise as a white cultivar in cooler areas of the eastern United States. Its high performance, coupled with increasing consumer demand for whites other than Chardonnay, has made Pinot gris a popular choice for growers in Ohio and Michigan. Todd Steiner and Imed Dami, both of Ohio State University, will highlight the effects of training systems and pressing methods specific to Pinot gris production in the eastern US. A panel of commercial producers will serve wines from throughout the region and discuss their methods of producing quality wine from this cultivar.

Norton, a native cultivar unique in its potential for high wine quality, has long been claimed as the state grape of both Virginia and Missouri. Known for its robust, fruity, lush red wine, Norton is also becoming a prime candidate for low-pesticide grape production because of its high disease resistance and outstanding winter hardiness. A collection of speakers from both Missouri, where Norton is undisputedly the top-planted red, and Virginia will lead a session of wine tasting and panel discussion on this variety. A tour of Hermann area wineries, held Wednesday, July 13th, will allow further discussion of Norton production.

Cold-Hardy Cultivars. The recent expansion of wine production in the Upper Midwest, New England and Quebec have been due, in part, to the introduction of several cold-hardy cultivars bred at the University of Minnesota. Frontenac, a cold hardy red, and whites La Crescent and Frontenac gris will be featured in the final cultivar section. Grape breeder Peter Hemstad and other researchers from the University Grape Breeding and Enology projects will discuss the vineyard performance, aroma profiles, and unusual chemistries of these varieties, and offer a tasting of various production styles. Cold hardy selections from cold-climate grape pioneer Elmer Swenson will also be featured.

The Cutting-Edge Cultivars program will also include technical presentations, including the Viticultural Consortium: East research summit; an industry trade show and wine reception; student paper competition; and the annual business meeting and banquet. It will be held in conjunction with the International Grape Genomics Symposium, July 12-14; for more information visit <http://mtngrv.smsu.edu/symposium> .

Cornell Cooperative Extension

Finger Lakes Grape Program

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