Cornell University
Cooperative Extension
Finger Lakes Grape Program

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Vineyard Notes

Grape Insect and Mite Pests– 2017 Field Season Abridged Edition

By: Greg Loeb, Department of Entomology, Cornell University, NYS Experiment Station, Geneva NY 14456

The annual spring grape insect and mite pest review is a bit late for 2017 for which I apologize. At the time of this writing (June 6) grapes in NY and PA are way past budbreak and are inching closer to bloom. As has been the case the last few years, it's been a cool spring following a pretty mild winter. It's also been particularly wet this year as I am sure you are all very aware. These conditions generally favor grape diseases and not so much insects, but there is still a lot of the season left for things to warm up and dry out. For the last ten years of so I have been keeping track of 50% bloom for a number of different grape cultivars and the riverbank grape *Vitis riparia* planted in a mixed cultivar/species trial that we have at NYSAES in Geneva. Over the last five years (2011-2016) the clone of *V. riparia* in this planting has reached 50% bloom on 1 June, 26 May, 29 May, 3 June, 30 May, and 2 June. I checked the *V. riparia* in our planting yesterday and it was at about 30% bloom. So we are a little delayed this year, but given the forecast of warm to hot weather over the next week, I suspect we will catch up pretty quickly.

Because I am late for this review, I decided to make this an abbreviated version of my usual entomology spring review, focusing on arthropod pests that seem to be causing problems for segments of the grape industry and/or update you on ongoing research. As always, I want to acknowledge and thank my Cornell colleagues and collaborators at Geneva, Portland, and Ithaca and the extension educators out in the grape growing regions of NY State.

Which arthropod pests are causing problems?

1. Reminder to scout for plant bugs

There are several species of plant bugs, but we are particularly concerned about banded grape bug and *Lygocoris inconspicuous*, that feed on flower buds causing shot berry and entire clusters to abort. It's the immature stage of the insect that does the damage. By bloom they have matured into adult bugs and no longer present a risk. Populations are usually low and scattered so in most years and at most sites they are not an economic concern. But it does not take many plant bugs to cause economic damage (low economic threshold) so it's worth scouting for them prior to bloom (right now). Look carefully at clusters (both sides). Banded grape bug is greenish brown with banded antennae and *Lygocoris* is pale green. Threshold for treatment is around 1 bug per 10 shoots. A video demonstrating scouting techniques for banded grape bug can be found at https://www.youtube.com/watch?v=FrEJ6IJB_is

2. Update on grape mealybugs and soft scale insects

Issues with grape mealybugs and soft scales are most relevant for vinifera grapes because they are vectors of grape leafroll disease. For various reasons, we do have a fair amount of grape leafroll disease in vinifera plantings in NY and surrounding areas and we know that even pretty low populations of grape mealybugs and soft scales (we have two species in our area, European fruit lecanium scale and cottony maple scale) can cause the disease to spread. We also have some data indicating that using an insecticide to control grape mealybug can slow the rate of spread, but it's unclear how effective controlling the vector is in stopping spread without also rogueing out symptomatic vines. We are testing this question at a vineyard in the Finger Lakes that has a low level of disease and a moderate population of mealybugs. We have four treatments (with replication): rogue out leafroll infected vines and the two neighbor vines on either side within a row, treat vines with insecticide (Lorsban Advanced at budbreak and Movento during the season), rogue and treat with insecticide, or do nothing (control). We will measure mealybug populations and virus status of every vine over several years. Stay tuned.

In the meantime, I do get questions from growers about chemical control of mealybugs and soft scale. There are actually multiple options labeled for use in NY for grape mealybug. Fewer options are labeled in NY for soft scale. See Grape Pest Management Guidelines for a full listing. For both pests, there are two times during the season where chemical control is potentially effective: in the spring at or just prior to budbreak targeting the overwintering stage of the insect and during the growing season right after egg hatch targeting the crawler stage (first instar immature). A delayed dormant oil application has been shown to be effective in controlling soft scale in other crops and I would expect it would work in grapes, though I have not specifically tested this. The oil smothers the soft scale, which are often out on the canes where they are exposed. Delayed dormant oil was not very effective against grape mealybug in our trials, however. We believe that is because the overwintering mealybug crawlers are protected under loose bark on the trunk. We are now testing Lorsban Advanced just prior to budbreak against overwintering crawlers.

During the growing season the systemic insecticide Movento [spirotetramat] has been very effective in controlling grape mealybug in our trials (2 applications, 6.25 fl oz/A per application, 30 days apart). Movento may provide some suppression of soft scales. Indeed, the newest label of Movento (July 2015 in NY) now includes suppression of European fruit lecanium scale. The neonicotinoid insecticides Admire Pro [imidacloprid] and Platinum [thiamethoxam] (not allowed on Long Island), when applied through a drip system and therefore systemic throughout the vine, are effective against grape mealybugs. Admire Pro also includes European fruit lecanium scale on the label when applied via drip to soil.

Other insecticides labeled for mealybugs or soft scale insects are not systemic and should target the crawlers (active stage after hatching). Since the crawlers actively move around the vine they are more likely to get exposed to the insecticide residue. The question is how to time egg hatch? Right now we don't have a validated degree-day model to predict this timing. A number of years ago, however, we did obtain some initial estimates and found egg hatch for grape mealybug occurred at around 800 DD (starting Jan 1, base 50 F) which that year was around July 1 while we observed the first crawlers of soft scale insects at around 650 DD (starting Jan 1, base 50 F) which that year was third week of June. If you do have soft scale insects or mealybugs in your vineyard, one thing you can do is check the status of eggs underneath soft scale (mostly on canes) or adult grape mealybug females (under loose bark on trunk wood). With a hand lens you should readily be able to see the eggs and crawlers if present.

3. We are seeing more severe damage from grape cane gallmaker

Grape cane gallmaker is a small, reddish brown weevil that has been considered a minor pest of grapes, generally not requiring control. It seems to be becoming a more consequential pest in some grape growing areas in NY, especially around Keuka Lake. The adult is active in the vineyard in the spring from mid-May through June. The female weevil hollows out a small cavity along the shoot just above a node and places a single egg. She fills the cavity with frass (poop) and then goes on to create additional cavities along the shoot (up to 14). More than one weevil can attack a shoot. In response to the adult weevil feeding damage, the vine forms a gall (swelling) around each of the cavities, which becomes red in red-fruited cultivars. There are a limited number of products labeled for grape cane gallmaker including Danitol, Baythroid, and Leverage. In severe situations, multiple applications, starting at 2-4 inch shoot growth, may be necessary to get things under control.

4. Grape rootworm re-emerging as significant pest in some areas

Since the sixties, broad-spectrum insecticides targeting grape berry moth greatly reduced the impact of grape rootworm. However, with the use of more selective materials and less use of insecticide overall in recent years, growers are observing more evidence of this pest, especially in the Lake Erie Region, but also in the Finger Lakes. Grape rootworm is a relatively large (5/16 – 3/8 inch in length), brown beetle in the Family Chrysomelidae (flea beetle family). The adult feeds on leaf material, creating characteristic chain like feeding damage. This damage is not economically significant, though it is useful to help diagnose their presence. The adults themselves are often hard to find unless populations are quite high. The adults emerge over the middle part of the season, starting around bloom and stretching into middle July to early August in some years. After an initial bout of leaf feeding, they mate and the females lay clusters of eggs on older canes, often under loose bark. The eggs hatch and the larvae drop to the ground where they work their way into the soil to find fine grape roots to feed on. Feeding damage by larger larvae cause reduced vine growth and vigor, increased vulnerability to stress, and reduced yields. We don't have a well-defined economic threshold for grape rootworm. Vines can tolerate some root feeding but if the vigor of the planting is in decline and you are seeing noticeable leaf feeding damage from adults, then grape rootworm is a likely cause.

There are five different insecticides labeled to control grape rootworm: Sevin, Sniper (2ee), Danitol 2.4 EC (2ee), Leverage 360 (2ee), and Admire Pro (2ee). Even though the adult stage does not cause significant damage to vines, it is the target of the insecticides to prevent egg laying and larval infestation. Adult female grape rootworm require a week or two of leaf feeding (pre-oviposition period) before they start to lay eggs. Hence, knowing when adults have emerged from the ground is critical to successful chemical control. We currently do not have any systemic insecticides labeled for use against grape rootworm.

5. Timing insecticide control of late-season grape berry moth

As most of you know, grape berry moth (GBM) is probably the most significant insect pest of cultivated grapes in the eastern US. The larvae of this smallish moth feed on grape clusters, ripening and ripe berries causing reduced yields and creating sites where fungal and bacterial diseases can develop. They are also a contaminant in juice grapes. The risk from GBM varies depending on year and site and also on the value of the crop with higher value wine grapes at greater risk. There are many grape plantings in NY and surrounding states at low risk that generally do not require any chemical control for GBM while there are other plantings that have a history of high populations and significant injury that are at high risk and require several insecticide treatments most years.

GBM has several flights during the growing season (2-4) starting around bloom and continuing, in some years, into September. A temperature-driven phenology model has been developed for GBM, using bloom date of wild grapes as the starting point for accumulating degree days (biofix), that helps predict timing of egg-laying associated with these flights. Knowing when most eggs are laid is important for effective chemical control since insecticides mostly target the young larvae before they have a chance to enter the berry where they are pretty protected. The GBM phenology model is available to growers through the Network for Environment and Weather Applications (**NEWA**) web site (http://newa.cornell.edu/) along with management guidelines. The model is most useful for timing the second and third flights of the season, but less helpful for timing subsequent flights. The reason is that by late season, the flight period becomes less synchronous and spread out such that eggs are being laid continually. **Therefore, we are now recommending growers use the phenology model to time the second and third flights but beyond that, in warm years and for high risk sites, growers should continue spraying on a 7 to 10 day rotation until about mid-September when egg laying pretty much stops.**

6. Controlling fruit flies can help manage sour rot

Sour rot is a more appropriate topic for Wayne Wilcox's spring Opus but I did want to highlight the role of Drosophila fruit flies. Based on research led by Megan Hall, a PhD student with Wayne, we have good evidence that several species of Drosophila fruit flies, including spotted wing drosophila, the relatively new invasive fruit pest, are important in spreading and enhancing sour rot symptoms for susceptible varieties. Several factors are involved in determining risk of sour rot including cultivar (tight clustered cultivars seem more prone to sour rot), the year (warm and wet conditions favor disease development), fruit phenology (ripening fruit with Brix around 15 or more), fruit injury due to bird or insect damage, and presence of fruit flies. When factors align to promote sour rot, we have good data showing that applying an insecticide targeting fruit flies can significantly reduce incidence and severity. Drosophila fruit flies are susceptible to a number of different insecticides including organophosphates (e.g. malathion), pyrethroids (e.g. Mustang Max [zeta-cypermethrin]) and spinosad type insecticides (e.g. Delegate [spinetoram] or an organic alternative, Entrust [spinosad]). Since fruit flies are only a threat near harvest, insecticides with relatively short DTH restrictions are the most helpful. Check the grape pest management guidelines for more specific details. You can also find more information about spotted wing drosophila at http://www.fruit.cornell.edu/spottedwing/.

Spotted Wing Drosophila. Photo by Tim Martinson

There are a number of additional arthropod pests that can be problematic in grapes in our area, many of which were covered in the 2016 review that you can find at http://nygpadmin.cce.cornell.edu/pdf/newsletter_notes/pdf73_pdf.pdf. During the season if you have questions or concerns you can contact me at gme1@cornell.edu or 315-787-2345. Have a great season and I will see you out in the vineyards.

Timing Investment to Sustain for the Long-Term

By: Kevin Martin, Business Management Educator– Lake Erie Regional Grape Program

Note: This article originally appeared in the June issue of the Lake Erie Regional Grape Program's newsletter, and we thank Kevin for allowing us to reproduce it here. The numbers that he discusses here are based on growers who have the bulk of their acreage in Concord and Niagara and are less diversified than most growers in the Finger Lakes. However, we thought it was a useful presentation of information about some of the considerations concerning investment in newer technologies on the farm.

Given the state of the bulk juice market, the focus of economic extension information has been on new technology and surviving periods of low prices. The adoption of new technology takes considerable time. Recently a number of growers have had questions regarding the adoption of slightly older vineyard enhancements. Despite extremely low bulk prices, the cooperative markets have been loosely holding their own. Growers are finding the labor market tightening and considering ways to remain sustainable with the capital that has been generated by modest prices.

Growers raising questions regarding equipment upgrades are identifying the key to sustainable bulk vineyard operations (outside of good viticulture). While it seems many growers over-invest in machinery, investments that reduce labor costs are easiest to justify.

Typically, growers are trying to determine when a machinery expense becomes cash positive. In other words, when the cash that was laid out to buy the machine is realized through savings from labor or other expense. Obviously, the largest variable is farm size, which is key to understanding which pieces of equipment are right for a grower.

Pre-pruner

A mechanical pre-pruner is an investment that varies considerably in upfront cost as designs, brands and home-brew modifications significantly change costs. However, most growers would become cash positive after pruning 250 acres. Mechanical pruning also results in additional depreciation on existing equipment. Breaking even considering tractor depreciation would take 350 – 400 acres. For a 100-acre farm, the investment would be cash positive in the 3rd year and profitable in the 4th year. For a farm half that size, it would take twice as long.

Multi-row Sprayer

A similar analysis can be applied to a multi-row sprayer but does vary significantly from farm to farm. A multi-row fungicide sprayer can vary from 2-6 rows and prices of $30,000 - $145,000. The more expensive ones are also harvester mounted, which may or may not already be owned by the grower. The most efficient sprayer investment is to right size the number of rows/sprayers to the size of the farm. Farms smaller than 100 acres should have 1 single row sprayer. Farms larger than 150 acres likely need multiple single row sprayers or a multi-row sprayer. The most efficient sprayer investment is to upgrade a sprayer when previous technology nears the end of its useful life. At that point, a grower should divide the number of acres owned by 100 – 150 and purchase a sprayer with that many rows. Growers that spray more frequently should lean toward 100 and growers with only Concords can lean closer to 150.

Multi-row fungicide sprayers may improve profitability in less direct ways. It may shift all fungicide spraying to the grower-owner. Labor costs shift from paid to unpaid. Spray timing, the efficiency of materials and coverage may all improve yields and the bottom line.

Multi-row Herbicide Sprayer

These products are not as wide-spread as fungicide sprayers. Mostly sold as 2-row units, many cost more than double a single row herbicide sprayer. Many single-row herbicide sprayers are inexpensive to buy and maintain. A multi-row herbicide sprayer should not be purchased to directly improve cash-flow. It should be purchased to expand the ability of the grower to operate additional acreage and as a hedge against labor market shortages. Current market rates for labor do not immediately justify a multi-row herbicide sprayer. Future labor markets or available labor to an individual grower may justify this investment.

Modernizing Harvest

We call them modern harvesters, the first were developed twenty years ago. These harvesters offer increased harvest efficiency and the ability to increase yields by 7% - 10%. However, the average grower-owned harvester is responsible for less than 50 acres of grapes. These $250,000 – $350,000 machines are capable of harvesting 300 – 600 acres of grapes. The over-investment in harvesters is attributable to the availability of older harvesters. A grower should be harvesting 200 acres of grapes or more before investing in a modern harvester. For many growers, the investment is so large it should be timed with high yields and prices.

A bin attendant on a modern harvester should be reserved for wine grapes. The investment of $5,000 – $10,000 pays off in 1-2 years for growers maximizing acreage in a modern harvester. It may take as long as 4 years for a 200-acre grower. A volunteering relative is the only cheaper alternative. Growers using older harvesters to harvest less than 45 acres may be better served by a bin attendant.

Bulk Harvesting and Delivery

Bulk equipment is a much larger investment than a De-Mogger but offers significant savings for some operations. In general, growers can expect to reduce their harvest crew by an additional person and a tractor. With strategic planning and a bit of compromise, many growers could reduce harvest crews to 2 tractors and a harvester. For some, this would mean saving 2 tractors and 2 laborers.

Investment in bulk equipment should range between $50,000 and $75,000 per harvester. If, or when, Constellation (or any distant processor) begins receiving bulk, costs may increase by an additional $25,000. Thinking critically about the amount of bulk equipment necessary and correctly timing the purchase of the equipment can substantially reduce the payback period of the investment. Without careful planning, this investment may take 8 – 10 years. With some strategic ideas, it could pay off in as little as 2 years. In the long-run, bulk harvesting of some form, on a cost basis, will continue to be more efficient and eventually will provide the standard delivery method of Concords.

Bulk harvest was dealt with in a crop update last winter. You can find it on our website. You can also contact me for specific strategic ideas for making bulk harvesting or other capital outlays in a way that increases net farm profitability.

Where to Begin

Assuming you continue to operate a vineyard, as you can see, most of these investments make sense for many growers. Of course, I think we just spent nearly $500,000 per vineyard and this list of investments is not exhaustive. As a general guide, it typically makes sense, to begin with, investments that have the shortest payoff period. Since there is a large range, based on individual farm variables, it makes the most sense to consider how the equipment would integrate into an existing operation. Timing these investments when the older, less efficient counterparts have exhausted their useful life is the best method of ensuring shorter payback periods. For investments over $100,000, the smaller grower should carefully consider non-conventional access to the equipment. While a 50-acre grower may realize savings from machine pruning, he may realize more savings by hiring or leasing rather than purchasing the equipment.

Risks of Inaction

The focus of newest equipment, with the exception of the harvester, is to reduce labor costs. When analyzing these investments, I use the current cost of labor. Since 2010 labor costs have been rising faster than inflation. Labor costs represent a strategic risk to sustainability. Much of this equipment will last 15 years or longer. The average cost of skilled labor over that time could average $24 per hour. The average cost of unskilled labor could average $18 or more. We have the ability to remain sustainable with higher wage rates; farm size and equipment investment offer some protection from these economic and bureaucratic forces.

Final Thoughts

Investments like these should be analyzed for growers of an appropriate size. They are of the utmost importance for the future long-term and medium-term sustainability of the operation and the industry. Depending on the current financial concerns of the farm, short-term priorities may take the place of these investments over the next 2-5 years. However, short-term priorities cannot provide a barrier to long-term investment when prices are above $260 and yields are above 6 tons per acre. I understand this newsletter reaches a very wide audience and this current market has impacted growers very differently depending on the size of their yields and quality of their markets. While some growers are in a very tough spot, it is important to know that there is a great deal of energy and financial interest to continue to build successful vineyard operations for the long-term.

New Vineyard Dos and Don'ts: Tips For Beginners

By: Gillian Trimber, Viticulture Educator for The Finger Lakes Grape Program

For those of you that have been growing grapes for a while, you know that going from rooted cuttings to mature, healthy, fruitful vines can be challenging, and requires plenty of extra work and attention relative to an established vineyard. For those of you that haven't… well, get ready. A new planting represents an investment, and you want to protect that investment and shepherd it forward to the point at which you can realize returns as quickly and painlessly as possible. Here's a list of new vineyard "Do"s and "Don't"s, gleaned from others' mishaps and successes, to help those of you that are just starting out to avoid the same pitfalls.

Do:

…install drainage tile ahead of time. Unless you have an incredibly well-drained site with sandy soils and a slope, your vines will produce a better crop if drainage tile is installed. Spend a year observing where water accumulates on the proposed vineyard site, and if possible work with your county's Soil and Water office or other experts to develop a tile layout that will serve your needs in the long term.

…make any needed soil adjustments before planting. It's far easier to incorporate fertilizers and other soil amendments before the grapes are in the ground. That way, you won't have to worry about damaging roots or navigating equipment around the trellis. Planting a cover crop a year or two ahead of time can also help to reduce weed pressure for the future and improve soil tilth.

…order vines at least one year in advance, especially if you're interested in planting a large area. Grape propagation takes time, and nurseries are often back-ordered.

…develop a business plan and identify your market before you start. The best grapes to grow are ones you know you can sell. Vineyard establishment is expensive, often costing more than $10,000 per acre in initial costs. Good planning is essential in recuperating that investment.

Don't:

…plan to come back and fix things if you can do them right initially. Weak trellises, crooked rows, wet spots, poorly planted vines, and weed issues can make your vineyard less efficient for years to come, often costing more in the long-run than they would have were the problems addressed at establishment. Plus, when you're trying to fix things, the trellis and the vines get in the way!

…jump in without gathering plenty of information and ideally some experience first. If you don't have farming or vineyard experience, try working for an existing commercial vineyard for a season to learn the ropes before investing a great deal of time and money on your own venture. There are also courses available at Finger Lakes Community College and elsewhere, and programs offered through Cornell Cooperative Extension. Proper vineyard management requires a diverse skill-set and a good understanding of vine physiology, pest management, and equipment operations. A lot goes into getting a quality crop!

Do:

…have irrigation in place on new plantings. The sooner young vines reach the trellis, the sooner they can be managed the same way as older plantings and the sooner they can produce a crop. Though grapes are relatively tolerant of water stress, young plantings are not. Drip irrigation is an insurance policy against drought, and can be left in place or re-used on future plantings.

…manage for weeds. The root systems of grapes, though they can wind their way almost anywhere, are actually relatively sparse compared to most other plants you'll find growing under the trellis or in row middles, and as such young vines have often have trouble competing with grass and native vegetation for water and nutrients. Lots of tall weeds around small vines will also exasperate insect and disease issues by providing habitat and preventing airflow. Even if you plan to mow or cover crop directly under the trellis when the vineyard is mature (a great idea), it's best to keep the area directly under the vines free of weeds for the first few years. This can be done with chemical herbicides or shallow mechanical cultivation/tillage.

…encourage as much upward growth as possible. Young vines should be at minimum staked, and preferably tied up to a trellis wire with string, so that they can climb straight up in the first year of growth. They'll be easier to manage, and less prone to being run over by a tractor or splashed with fungal spores.

Don't:

…spray an herbicide that could damage young vines. Always read the label carefully when applying any chemical herbicide or July , but be particularly attentive to whether the material is appropriate for new plantings. Grow tubes can help protect small vines during herbicide applications, but can also provide a shady, humid environment for insect pests, so be sure to check inside grow tubes for problems periodically if they are used.

…leave too many shoots when vines are small. A grapevine will tend to divide up its resources between its growing shoots. If you leave too many buds in the spring during the vine's first year of growth, you'll end up with many short shoots and a bushy, small vine. By rubbing off all but a few shoots early in the season, you can ensure that the few remaining shoots grow tall and strong quickly.

Do:

...remove fruit the first few years. Though it can be hard to wait for a crop, and even vines in their first season will gamely produce clusters, dropping fruit from small vines can help those vines to establish quickly. Fruit acts as a strong sink for the vine's energy, which in the first 1-2 years should instead be focused on establishing a strong root system and healthy canopy.

…judge how much fruit each vine can handle based on vine size. Typically we encourage dropping all of the clusters prior to July in the first two years of growth, half of the clusters in the third year, and leaving a full crop in the fourth year. However, these are rules of thumb—the decision should really be based on how vigorously the vines are growing. Young plants that are irrigated or located on very fertile sites and which grow quickly could potentially handle a crop in the second year. Vines that have very small canopies or appear unhealthy, even if they've been in the ground for a number of years, should have some of the clusters removed.

Don't:

…rush into getting a crop at the expense of long -term vine health. By allowing a young vine to develop its root system rather than spending its energy on ripening clusters, you help to ensure that it will be able to withstand drought and successfully source the nutrients it needs for the future. Avoiding stresses early on can lead to more robust, resilient vines over the life of the vineyard.

For more resources on planting and vineyard establishment, check out the New Vineyard Timeline section of our website, at https://flgp.cce.cornell.edu/timeline_category.php?id=3

Figure 1: Drip Irrigation helps to ensure good growth even in dry years.

Figure 2: Mechanical cultivation with a grape hoe under these vines helps to prevent competition from weeds.

Upcoming Events

NYS Wine Grape Growers Research Tour and Barbecue

August 2, 2017, 1:00 – 9:00 PM
Anthony Road Wine Company
1020 Anthony Road
Penn Yan, NY 14527

The New York State Wine Grape Growers will hold their Summer Research Tour and BBQ on Wednesday, August 2. This will be a time for growers and researchers to get together and learn from one another. There will be a tour of the New York State Experiment Station and the USDA Grape Repository in Geneva. Researchers will discuss and show off their latest work during the field tours. Immediately following there will be a BBQ at Anthony Road Wine Company to allow everyone to continue the conversation in a more relaxed atmosphere. The fee is $5 per person, and please bring a bottle of wine to share.

Please RSVP to Mike Colizzi at mac252@cornell.edu. Please indicate if you will attend both the Tour and Picnic or just the Picnic.

Tailgate Meetings
The dates and locations for our final three Tailgate Meetings of the year are listed below. All meetings are held from 4:30 – 6:00 PM.

Tuesday, August 1
Belle Terre Farm
8142 Champlin Road
Lyons, NY

Tuesday, August 15
Gridley Vineyards
3096 Vrooman Road
Penn Yan, NY

Tuesday, August 29
Lamoreaux Landing Wine Cellars
9224 Route 414
Lodi, NY

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Visit our website, http://flgp.cce.cornell.edu, for more information on grape growing, pest management, educational events and more.

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