The Lake Erie Regional Grape Program

Crop Update for August 14, 2014

Upcoming Event Dates to put on your calendar:
Please note the deadline for registration for each event.

August 20, 2014- Thompson Ag Pig Roast and LERGP Twilight Meeting
3:00-5:00pm, Hanover NY

Information and registration forms for all of the listed events are available in this update.
Registration is also available on-line for most programs at our web-site: **lergp.cce.cornell.edu**

Business Management

Kevin Martin
Penn State University, LERGP,
Business Management Educator

Economics of Berry Moth Insecticide Applications

In some of the earliest sites growers may find themselves spraying for grape berry moth today and into this weekend. Others may have another week before growing degree-days trigger an application. Timing may be somewhat sooner for growers seeing 100% cluster damage and trying bracketed sprays (two applications for one generation).

The economics behind typical grape berry moth are rather straightforward. Even if pressure does not create a load rejection, inexpensive and moderately expensive materials applied once per generation save enough crop to justify their use. The second generation sometimes requires a special trip through, not timing itself with a fungicide application. The third generation almost always requires a special trip.

Costs on the low end start at $18 per acre, for two applications. While it is easy to save that much crop, the effectiveness of those inexpensive materials leave much to be desired. In other words, as much crop as those materials save, a larger investment could easily yield better protection and pay for itself many times over.

On the very high end a grower could spend nearly $70 per acre. Even at these rates crop damage without a yield monitor would be hard to notice. $70 per acre translates to .3 tons. In a typical row, visually, each box would be 2-3 inches lower. Without scouting and a good understanding of site-specific berry moth pressure, it is impossible to know if these high-end sprays do not make economic sense.

We have seen GBM pressure increase to levels in a few sites where even those levels of control still result in substantial fruit loss. In those areas multiple sprays per generation are increasing costs to $120 - $160 per acre. These vineyards are yielding above 6 ton per acre where GBM is controlled. In hot spots yields decrease by 25% - 100%. Further, if GBM can be controlled there are some indications that investment may be able to decline below $100 per acre over the long-term.

August 15th

Tomorrow is August 15th. New York cash market growers should be receiving notification of price schedules tomorrow. While the number of processors and growers have declined it will provide another indication of the Concord market going forward.

Cultural Practices

Luke Haggerty, LERGP,
Viticulture Extension Associate

IPM Tim Weigle, NYSIPM, LERGP Team Leader

Grape Berry Moth Model on NEWA

The cooler weather that has moved into our area recently has slowed degree day accumulation significantly. We made limited progress in the past week toward the 1610 Phenology based-degree days that times the beginning of insecticide applications for the third generation of grape berry moth for. However, looking at the extended forecast the model indicates that Ripley and Harborcreek will hit 1610 this weekend with other areas not hitting 1610 until August 19 or later. At most locations we are at, or very near, the timing for scouting for grape berry moth damage in vineyard blocks to determine the need for insecticide applications (between 1470 and 1620 DD). We are using the 15% damaged cluster threshold for scouting at the timing. Make sure you scout both the exterior and interior of vineyard blocks. Conversations with growers in the past two years have shown the importance of scouting even low risk areas as we hear reports of grape berry moth coming seemingly out of nowhere and infesting entire vineyard blocks. Again, since the model is new, and we are still trying to adapt it to large scale implementation, I would suggest scouting near 1470 DD and again close to 1620 DD to see what, if any, significant differences in cluster damage are found.

If you are using Ripley station for the GBM model you will notice 3 days of missing data. This is due to a problem in the communication between the data logger and the receiver that collects the data and sends it on to the web site. Portland is the sister station for Ripley (provides the info when Ripley cannot collect it) but unfortunately we have had some communication problems ourselves. When these problems overlap, it creates missing data. In the table, you will notice that there is a value for Ripley this week. Using the hourly data collected for Ripley (found in the left hand column of the Ripley station page), I found that data was missing for only a few hours on August 2, 5 and 6. Using the data that was available (and looking at other stations nearby) I hand calculated the degree days for the 3 days where data was missing. The degree days for the missing dates are: August 2: 24 DD, August 5: 24 DD and August 6: 20 DD.

NEWA Location	Wild grape bloom date*	DD Total on August 14, 2014
Versailles	June 5	1432
Dunkirk Airport	June 8	1461
Silver Creek	June 9	1446
Portland Escarp.	June 4	1497
Portland	June 7	1486
Portland Route 5	June 7	1528
Ripley	June 3	**1581****
North East Escarp	June 3	1505
Harborcreek	June 3	1572
North East Lab	June 5	1517
Ransomville	June 9	1366
South Appleton	June 9	1349
* Estimated date provided by NEWA website ** DD total was derived by hand calculating DD total for 3 missing days		

This calculation was done using the formula ((high temp + low temp)/2) – base temperature of 47.14
So for August 2 the formula would be:
((76.6 + 65.1)/2) -47.14 OR 141.7/2 = 70.85 – 47.14 = 23.71

Rounding shows 24 DD accumulated on August 2

If you have any questions on using the Phenology-based degree day model for grape berry moth, please give me a call at 716.792.2800 x203

UNDERSTANDING AND MANAGING SOUR ROT

Wayne Wilcox
Plant Pathology, Cornell University, NY State Agric. Expt. Sta., Geneva

SOUR ROT is often used as an imprecise catch-all term to describe the "snork" that takes over injured clusters near harvest when the weather becomes wet. Unfortunately, this means that different people (and fungicide labels) can use this same name to refer to a general condition that has different causes. For the rest of this discussion, I'll be referring to what I call "true" sour rot--a syndrome that involves pre-harvest cluster decay accompanied by the smell of vinegar (hence the name, duh).

Winemakers often refer to and measure the cause of this vinegar smell (acetic acid) as volatile acidity (VA). Dr. Wendy McFadden-Smith at OMAFRA on Ontario's Niagara peninsula, who has been in the forefront of sour rot research for more than 5 years now, has shown that the measure of VA in grapes harvested from different vineyards is strongly associated with the pre-harvest level of sour rot in them. It's generally accepted that the vinegar is produced by certain acetic acid-forming bacteria (species of *Acetobacter* and *Gluconobacter*), and that wounds (birds, rain cracking, berry moth, compression in tight bunches, powdery mildew, etc.) are necessary to get the whole process started. Sometimes these bacterial infections are accompanied or followed by infections by several wild "bad" yeasts, which can produce ethyl acetate (smells like nail polish remover or varnish). There appears to be a progression of steps involved in this whole process, which probably begins with the production of ethanol by "good" yeasts as the injured berries start leaking grape juice (ethanol is the substrate that the abovementioned bacteria convert to acetic acid, and we've found a lot of *Saccharomyces* yeasts associated with sour-rotted berries in the field), but a lot of the details are still rather murky. However, we know a lot more than we did a few years ago.

To my mind, two of the more important things that Wendy and her group have determined insofar as understanding the development of sour rot are: (1) Berries of Pinot noir and Riesling (the primary cultivars they've worked with) do not become worrisomely susceptible to infection until they mature to a point of about 15°Brix (minor levels of infection developed from inoculations at 13° Brix, nothing at 10°); and (2) The disease develops rapidly and severely at temperatures between 68 and 77°F; much more moderately at 59 to 68°F; and just barely chugs along at temperatures in the 50's. These data probably make sense to Finger Lakes Pinot Noir growers who remember last September—very warm and wet after Labor Day as clusters of this cultivar were nearing harvest and rapidly building sugars, with nasty sour rot ensuing soon thereafter.

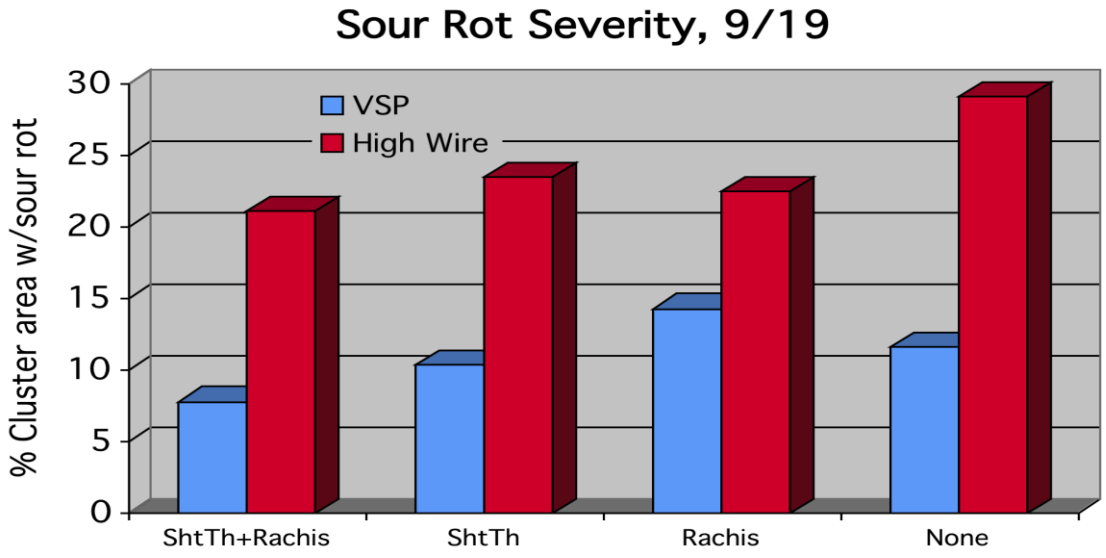
The Ontario contingent has also done a nice job of documenting that sour rot doesn't get started in the vineyards until rain occurs after berries have reached 15°Brix and temperatures are at least in the 60's. Rain probably plays a few roles in disease development, but two of the more important are that it moves the causal bacteria around and into open wounds, plus it can help cause the injuries necessary for infection to occur in the first place (e.g., cracking that results as berries swell rapidly and/or become excessively compacted in tight clusters).

Another piece of the puzzle is the potential (apparent?) role of fruit flies (*Drosophila* spp.). Clusters with sour rot are typically swarmed with these insects. A prominent line of thinking over the years has been that they are opportunists coming to feed on a convenient food source; indeed, they are attracted to the smell of acetic acid. However, a study from Portugal published in 2012, while far from conclusive, suggests that these insects may actually play a direct role in the initiation and/or spread of the disease. Which caught our interest, see below.

Thus, in terms of managing sour rot, it seems that the likely strategies are: (1) Provide a berry microclimate in the canopy less conducive to pathogen growth; (2) Minimize berry injuries; (3) Minimize pathogen populations; and (4) Control the fruit flies if they are, indeed, a factor.

Last summer, we (graduate student Megan Hall, entomologist Greg Loeb and his technician Steve Hessler, along with yours truly and technician Dave Combs) began a multi-year project to better understand sour rot and how we might be able to better manage it. One year's worth of results is just that and we might find something very different this year. But as sour rot season starts approaching, here's what we found, for what it's worth, along with some other associated information and thoughts about control options:

Canopy microclimate. I'll trot out data presented before from a trial conducted with other Cornell colleagues in a commercial Vignoles vineyard in the very wet fall of 2011. There were two different training systems and three canopy management systems involving shoot thinning and removal of old clusters stems or rachids (to lower Botrytis inoculum). The data and figure captions speak for themselves.



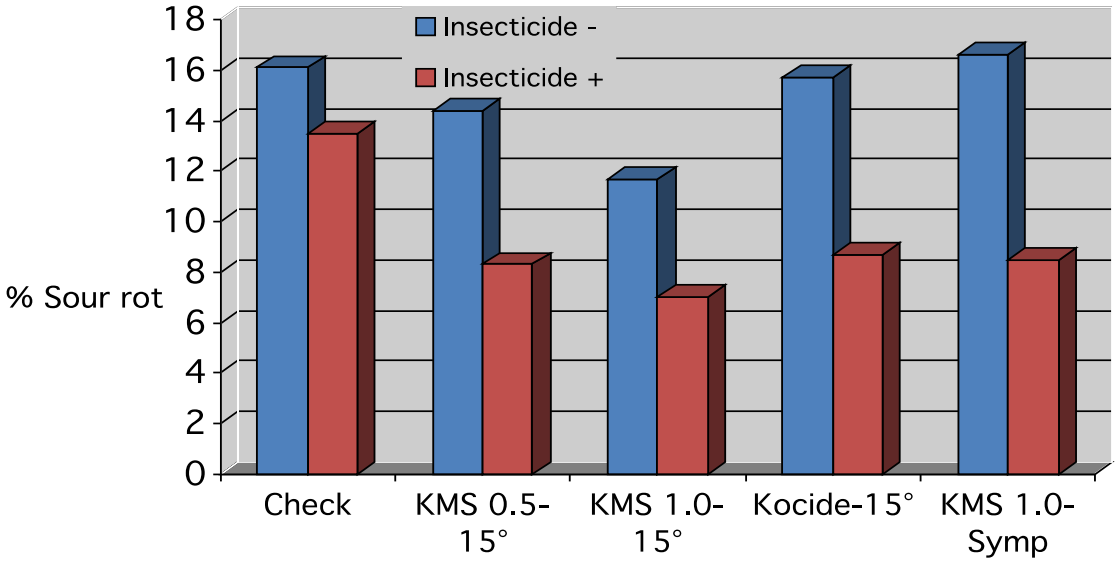
• Effect of training system was greater than that of canopy manipulation: across all four treatments, average of 11.0% cluster area w/sour rot for VSP, 22.2% for Top Wire.
• Effects of training system and canopy manipulation were additive: best treatment = Shoot Thin + Rachis Removal/VSP (7.8%), worst treatment = Check/Top Wire (29.1%)

Minimize injury. Beyond the obvious (do what you can to reduce damage from birds, berry moth, powdery mildew, etc.), loosening clusters is likely to reduce mechanical injuries due to compaction, and will also go a long way toward reducing Botrytis development as well. In fact, I'd consider loosening clusters to be the holy grail for managing the late-season bunch rots that we deal with in this part of the world; unfortunately, finding a good technique for doing so has been almost as elusive a goal. Various treatments that some have found to be effective include giberellic acid (a registered use), the growth regulator prohexidione-calcium (not registered), and prebloom leaf removal. Even the legal options have their risks and are not for the faint of heart, and need to be left for another discussion. Calcium sprays to "toughen" the grape skins haven't reduced sour rot development when tried by tried by Wendy et al., nor have Raingard or calcium chloride applied as anti-cracking treatments.

Minimize the pathogen population. A number of antimicrobial sprays tried in Ontario did not have any effect on sour rot development: Serenade, Pristine, vermicompost, potassium bicarbonate (e.g., Milstop, Armicarb). But what did reduce sour rot was potassium metabisulfite ("KMS", in shorthand), applied weekly at a rate of either 0.5 or 1.0% (4 or 8 lb per 100 gallons of water, respectively). It must be noted that whereas KMS is used widely in wineries both to sanitize equipment and as an additive to musts and wines to kill wild microorganisms and prevent oxidation, it is NOT registered for spraying onto vines to control diseases, either in the US or Canada. Also, it is nasty stuff if you get it in your eyes or breathe in the dust.

Control fruit flies. Although some growers have tried this approach, I'm not aware of any experimental data evaluating its efficacy prior to our trial last year.

2013 trial results. We looked at a combination of insecticide and antimicrobial sprays. Alternate rows in a 'Vignoles' vineyard were sprayed with the insecticide Delegate (weekly, beginning at 15° Brix), with the remaining rows receiving no insecticide. Then, within these insecticide-plus or –minus rows, we applied various antimicrobial treatments, also on a weekly schedule: (i) 0.5% KMS, beginning at 15° Brix; (ii) 1.0% KMS, beginning at 15° Brix; (iii) Kocide at 2 lb/A (registered!), beginning at 15° Brix; (iv) 1.0% KMS, beginning at first appearance of disease symptoms; (v) none (check). The results are presented below.



Bottom line: Antimicrobials without insecticide provided an average of 9% control (vs. check); antimicrobials with insecticide provided an average of 50% control (vs. check); and insecticide without antimicrobials provided 15% control.

A few comments:

- As noted, these are data from a single experiment. I'll feel more confident if we're able to repeat the results this year. However, both our results and those from Ontario indicate that some antimicrobial sprays can reduce sour rot. Because bacteria are a huge part of the complex and we haven't seen any consistent association with "filamentous" (non-yeast) fungi, I wouldn't expect fungicides to provide much benefit in our region or those with similar climates, other than reducing the number of certain injury sites (e.g., pre-harvest Botrytis infections). In warmer climates (California, Texas, South Australia), species of the *Aspergillus* fungus often are associated with sour rot, but what causal role they may or may not play is not that clear.
- We have other reasons to believe that fruit flies are important players in this disease complex. (It should be noted that whereas the spotted wing Drosophila is getting a lot of attention and may be a component in the mix, the "garden variety" species—*D. melanogaster*, which has always been around—seems to be the primary player from what we can tell so far). Now the question is what to do about them.
- This trial was designed as a "proof of concept"—we nuked the hell out some vines in order to see whether insecticide plus antimicrobial sprays can have an effect. Once we're convinced that they can, we'll start working on finding out how much less we can spray to get the same result.
- KMS is not a legal treatment and Kocide has potential copper residue issues that, although legal, might cause problems with fermentation in the winery. This year we'll also be trying Oxidate, which is expensive but legal and without potential fermentation issues. Wendy did not get benefit from it in her earlier trials, but some Finger Lakes growers tried this product last year as a "rescue" treatment and felt that it helped (of course, such observations are seldom based on comparisons with an

unsprayed check row or rows). We'll also be using Mustang Max as our insecticide, as Greg thinks it will have more residual efficacy. (Note that it is labeled for use on grapes with a 1-day PHI, although fruit flies are not a listed target pest). Stay tuned.

- We're looking at a lot of other issues regarding the various microbes involved, the mechanistic role of fruit flies in this whole process, their interactions, and when these different components appear and/or start multiplying to high levels in the vineyard. We hope to have some interesting and useful information to report as the project continues.

What does this all mean for 2014? Sour rot occurs sporadically and the "state of the art" with respect to understanding and controlling it is still pretty sketchy. Individual growers will approach managing it differently depending on their own individual perceived risk and philosophy for addressing it. For now, I'd keep these concepts in mind: Disease can be initiated once rains occur after berries reach approximately 15° Brix; warm temperatures (extended periods in the upper 60's and above) are much more problematic than cooler temperatures; good canopy management will keep things from getting worse than they would otherwise; it's much easier to keep things down to a dull roar if you address a disease outbreak early than if you wait until things start blowing up in your face. Just how to do this is the $64,000 question (and that term was coined in 1950's currency!).

Knowing what we do at this point, if it was me and I had a few thousand dollars per acre of crop threatening to go south in a hurry, I'd put something on to help control the fruit flies and responsible microbes. If it was consistently warm and wet and I'd had a problem in that block before, I might start at 15° Brix before seeing symptoms and back off if the weather turned more favorable and/or disease development stayed in check. Otherwise, I'd probably keep a very close eye on my vineyards and the weather, and be ready to jump in if I saw the disease starting and the weather looked conducive for its spread. Here's to hoping that we get plenty of disease pressure in our test plots so that we can find out more about it, but that it stays away from commercial blocks this year.

From Erie County PA.

Andy Muza, Extension Educator, Erie County, PA Cooperative Extension

Grape Berry Moth – GBM eggs were found this week in 7 of the 8 high risk sites checked. Examined clusters having eggs ranged from 8 – 28%.

Scout NOW to assess the injury levels in your blocks to determine if an insecticide application is needed soon. According to the GBM Degree Day Model in NEWA http://newa.cornell.edu/index.php?page=berry-moth , an insecticide application should be timed to coincide with **1620 degree days (DD)** in high risk vineyards (and areas above 15% injury threshold) **if using materials such as Altacor, Belt or Intrepid**. (Note that Intrepid is not registered for use in NY).

The 1620 DD may be reached as early as **this Sunday (8/17) in Harborcreek , PA.**
However, depending on your location and wild grape bloom date, the 1620 degree days may not be reached for another 9 days (Versailles, NY) to 13 days (Ransomville, NY).

Due to the wide variability throughout the belt, it is extremely important that GBM scouting is conducted in each block and that the Degree Day Model is checked frequently to determine the timing for the next insecticide application.

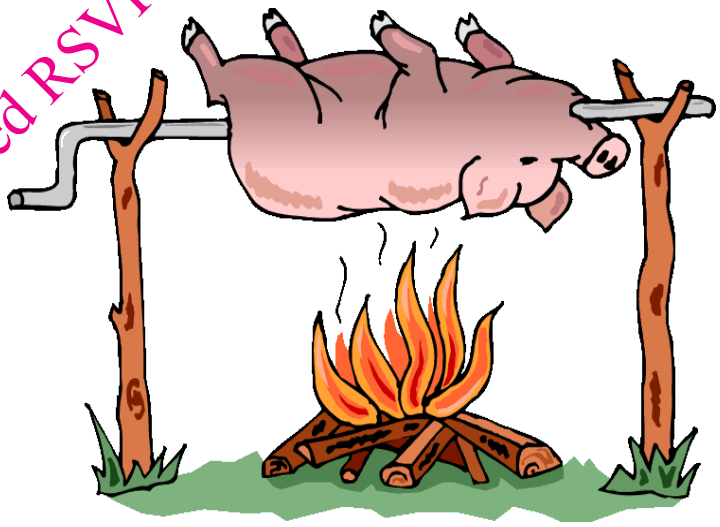
From the North East, PA Lab

Bryan Hed, Research Support Technologist in Plant Pathology
Penn State University

Weather: We have recorded 1.79” of rainfall so far during August, above average. Our growing degree day total (gdd) from April 1 through August 13 is 1685, below average. Bottom line: we are slipping a little behind with heat accumulation and are remaining wetter than average.

Disease: There has been no abatement to the frequency of wet weather since the end of bloom: we have recorded rainfall on 23 of the past 54 days (43% frequency). And with powdery mildew still at relatively low levels, the mission, in most vineyards, is to keep the downy mildew from chewing off your leaves, especially on susceptible wine varieties. The reasons for this are not only to get your crop ripe this season, but to send your vines into winter with maximum cold hardiness, and to minimize the level of downy mildew inoculum you have to deal with next spring. To review your options again, there are many effective materials available for control of this disease: phosphorous acids, Reason, Ranman, Revus, Presidio, captan (if you can use it), Ridomil copper, and good old fashioned copper/lime. All have their strengths and weaknesses. Captan and copper are strictly protectants and are less rain-fast than the others, but they can be used with little or no concern for the development of resistance. Pay close attention to pre harvest intervals. If you plan to use copper, avoid applying it to sensitive varieties or to wet, dewy leaves first thing in the morning, as you may increase your chances of injury to leaves: the last thing you need is to damage your leaves trying to protect them. The phos acids are likely to be the more cost effective choices for susceptible juice varieties like Niagara and Catawba, but try to limit yourself to 2-3 applications per season. The other materials carry a higher risk of resistance, but are quite effective at keeping this disease out of your vineyard and under control.

Please note corrected RSVP phone number



Thompson Ag Annual Pig Roast

August 20, 2014
3:00-5:00pm
Hanover NY

Program provided by:
The Lake Erie Regional Grape Program

**DEC credits are available

Agenda:

3:00 – 3:15 PM **Cost/Benefit of Implementing Integrated Pest Management Strategies (IPM)**, Kevin Martin, Extension Educator, Lake Erie Regional Grape Program.

3:15 – 3:30 PM **Late Season Viticulture Update** – Luke Haggerty, Lake Erie Regional Grape Program

3:30 – 4:00 PM **Late Season Disease Management** – Wayne Wilcox, Department of Plant Pathology, Cornell University

4:00 – 4:30 PM **IPM Updates and Roundtable Discussion** –Bryan Hed, Department of Plant Pathology, Penn State, Jody Timer, Department of Entomology, Penn State, Tim Weigle, NYS IPM Program, and Andy Muza, Lake Erie Regional Grape Program

4:30 – 5:00 PM **Effective Spraying** - Andrew Landers, Department of Entomology, Cornell University will provide the audience with the how's and why's of effective spraying from the basics through the finer details.

Please RSVP to Donna at merrwhv@roadrunner.com or call 934-3808(Thompson Ag Office)

LERGP Website Links of Interest:

Table for: Insecticides for use in NY and PA:
http://lergp.cce.cornell.edu/submission.php?id=69&crumb=ipm|ipm

Crop Estimation and Thinning Table:
http://nygpadmin.cce.cornell.edu/pdf/submission/pdf65_pdf.pdf

Appellation Cornell Newsletter Index:
http://grapesandwine.cals.cornell.edu/cals/grapesandwine/appellation-cornell/

Veraison to Harvest newsletters:
http://grapesandwine.cals.cornell.edu/cals/grapesandwine/veraison-to-harvest/index.cfm

Go to http://lergp.cce.cornell.edu/ for a detailed calendar of events.
Please remember to RSVP for those events that require one!

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Cornell University
Cooperative Extension

Lake Erie Regional Grape Program

PENNSTATE
College of Agricultural Sciences