



Cornell Cooperative Extension
Lake Erie Regional Grape Program

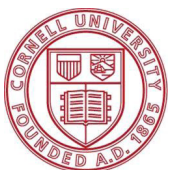


PennState Extension



Powdery mildew on foliage, photo by P. McManus
University of Wisconsin-Madison

Newsletter Special Issue
Early Season Grape Disease Management- Spring 2020
Dr. Katie Gold



Building Strong and Vibrant New York Communities

Diversity and Inclusion are a part of Cornell University's heritage. We are a recognized employer and educator valuing AA/EEO, Protected Veterans, and Individuals with Disabilities.

In this Issue:

- Early Season Grape Disease Management- Spring 2020- Dr. *Katie Gold*
- EIDL and PPP Article
- Masks and Hand Sanitizer Available to Farmers
- VIP- *Kim Knappenberger*

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How to join a Zoom meeting video (1 minute):

https://www.youtube.com/embed/vFhAEoCF7jg?rel=0&autoplay=1&cc_load_policy=1

Joining and Configuring Audio & Video (1 minute):

https://www.youtube.com/embed/HqncX7RE0wM?rel=0&autoplay=1&cc_load_policy=1

The Lake Erie Regional Grape Program is a partnership between Cornell University, Penn State University and the Cornell Cooperative Extension Associations in Chautauqua, Erie and Niagara County NY and Penn State Extension in Erie County PA.



Schedule of events

Virtual Coffee Pot Meetings

10:00 AM Wednesdays: Coffee Pot Meetings hosted by Lake Erie Regional Grape Program

May 6	Topics: Open topic Pesticide Credits: 1 NY and 1 PA Register at: https://cornell.zoom.us/j/9446178888
May 13	Speaker: Dr. Terry Bates – Director of Cornell Lake Erie Research and Extension Laboratory Topics: Soil Health and Nutrition. Pesticide Credits: 1 NY and 1 PA Register at: https://cornell.zoom.us/j/9446178888
May 20	Speaker: Dr. Greg Loeb - Department of Entomology, Cornell AgriTech Topics: Presentation on Insect management for grapes Pesticide Credits: 1 NY and 1 PA Register at: https://cornell.zoom.us/j/9446178888
May 27	Speaker: Dr. Katie Gold Cornell AgriTech School of Integrative Plant Science Plant Pathology & Bryan Hed Research Technologist – Penn State Dept of Plant Pathology and Environmental Microbiology Topics: Early Season Disease Management Pesticide Credits: 1 NY and 1 PA Register at: https://cornell.zoom.us/j/9446178888
June 3	Speaker Heather Leach – Penn State Extension (Entomology) Topics: Spotted Lanternfly Pesticide Credits: 1 NY and 1 PA Register at: https://cornell.zoom.us/j/9446178888
June 10	Speaker: Topic: Open Topic Pesticide Credits: 1 NY and 1 PA Register at: https://cornell.zoom.us/j/9446178888
June 17	Speaker: Dr. Justine Vanden Heuvel Professor School of Integrative Plant Science Director of Undergraduate Studies Viticulture & Enology Cornell University & Dr. Michela Centinari Assistant Professor of Viticulture - Department of Plant Science College of Agricultural Sciences The Pennsylvania State University Topics: Early Season Canopy Management/under trellis floor management Pesticide Credits: 1 NY and 1 PA Register at: https://cornell.zoom.us/j/9446178888

June 24	<p>Speaker: Chris Gerling Extension Associate, Sr., Cornell AgriTech Food Science & Dr. Misha Kwasniewski Penn State Assistant Research Professor Department of Food Science</p> <p>Topics: Enology Discussion</p> <p>Pesticide Credits: 1 NY and 1 PA</p> <p>Register at: https://cornell.zoom.us/meeting/register/tJYpdeyqD8uE9LvZWrt3eNpaol4r7BSFRUx</p>
July 1	<p>Speaker:</p> <p>Topics:</p> <p>Pesticide Credits: 1 NY and 1 PA</p> <p>Register at: https://cornell.zoom.us/meeting/register/tJYpdeyqD8uE9LvZWrt3eNpaol4r7BSFRUx</p>
July 8	<p>Speaker:</p> <p>Topics:</p> <p>Pesticide Credits: 1 NY and 1 PA</p> <p>Register at: https://cornell.zoom.us/meeting/register/tJYpdeyqD8uE9LvZWrt3eNpaol4r7BSFRUx</p>
July 15	<p>Speaker: Dr. Richard Stup - Cornell Agricultural Workforce Development College of Agriculture and Life Sciences and The Charles H. Dyson School of Applied Economics and Management</p> <p>Topics: Labor Relations</p> <p>Pesticide Credits: 1 NY and 1 PA</p> <p>Register at: https://cornell.zoom.us/meeting/register/tJYpdeyqD8uE9LvZWrt3eNpaol4r7BSFRUx</p>
July 22	<p>Speaker:</p> <p>Topics:</p> <p>Pesticide Credits: 1 NY and 1 PA</p> <p>Register at: https://cornell.zoom.us/meeting/register/tJYpdeyqD8uE9LvZWrt3eNpaol4r7BSFRUx</p>
July 29	<p>Speaker: Dr. Lynn Sosnoskie – Cornell AgriTech Assistant Professor Weed Ecology and Management for Specialty Crops - School of Integrative Plant Sciences - Horticulture Section</p> <p>Topics: Weed Management</p> <p>Pesticide Credits: 1 NY and 1 PA</p> <p>Register at: https://cornell.zoom.us/meeting/register/tJYpdeyqD8uE9LvZWrt3eNpaol4r7BSFRUx</p>

Early Season Grape Disease Management, Spring 2020

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What is the value of early season disease management?

Early season grape disease control is critical for season long protection. Most grape pathogens prefer soft, succulent tissues and immature berries. If disease is allowed to take hold during the early season, late season control will become near to impossible at worst, and incredibly challenging (and expensive) at best. Early season disease control pays for itself. Management in the early season in New York primarily focuses on five diseases: phomopsis, black rot, downy mildew, powdery mildew, and anthracnose. Grapevine varieties differ in their susceptibility to these diseases, but generally speaking, native American varieties are least susceptible, *vinifera* are the most susceptible, and hybrid varieties are intermediate. This article will introduce the five main early season diseases that affect grapevine in New York, discuss cultural practices that can reduce disease inoculum in vineyards, and outline the basics of a strong early season spray program from dormancy until pea-sized fruits. A follow up article will address late season management from pea-sized fruits to harvest. As a reminder, growers on Long Island should check labels to ensure recommended products in this article are labeled for use on Long Island.

What are we managing for?

Phomopsis: Phomopsis is a significant problem on Concord and Niagara grapes, though hybrid and *V. vinifera* grapes are susceptible as well. Phomopsis can infect all succulent tissue on grapevines when conditions are favorable. Infections that occur on the developing rachis when clusters first become visible at about 3" shoot growth are most damaging and can result in severe fruit loss. Additionally, infections at the base of green shoots will weaken them and make them more susceptible to breakage. Broadly, cordon-trained vines will be more susceptible to phomopsis buildup than cane pruned vines, because more old wood that can harbor inoculum is retained. Phomopsis is particularly efficient at colonizing dead wood, so infected wood left in the trellis can serve as a source of infection for years to come. Remove dead canes, arms, and pruning stubs will significantly reduce phomopsis initial inoculum. Several fungicides provide effective control. Mancozeb, captan, and ziram are all effective protectants against Phomopsis, but will not rescue an established infection. Strobilurin fungicides, Pristine, Abound, Flint, Quadris Top, as well as Sovran have all been shown to provide moderate control, but they should not be relied upon in place of a protectant during critical times of year (3-5in shoot growth). Copper provides minimal control.



Phomopsis Cane and Leaf Spot, photo by P. McManus University of Wisconsin-Madison

Black Rot: If early season diseases were competing in the Olympics, Black Rot would easily claim a spot on the podium. Black rot thrives in humid climates and is prevalent in the eastern industry. Under NY conditions, berries are highly susceptible to black rot from cap fall until 3-4 weeks (Concord) or 4-5 weeks (*V. vinifera*) later. After this point the berries begin to lose susceptibility and will become resistant/immune after an additional 2 weeks. While black rot can be spread by spores blowing in from distant infections on wild grapevines, it is most frequently started from mummified berries left by

the previous year's infections (see subsequent section on cultural management for sanitation recommendations). Infection will spread from leaves to the fruit and can result in complete crop loss under severe conditions. Protectants mancozeb and ziram have been shown to provide effective control. Captan is less effective but will provide some control. Copper only provides slight control. Unlike powdery and downy mildew, the DMIs and strobilurins will generally provide strong black rot control. High efficacy products include Abound, Aprovia Top (and to a lesser extent Aprovia), Pristine, Quadris Top, Inspire Super, Revus Top, Luna Experience (rate dependent), Luna Sensation (rate dependent), Rhyme, Topquard EQ, Sovran, Rally, Miravis Prime, Mettle, Flint Extra, and tebuconazole.

Downy Mildew: Downy mildew is caused by an oomycete (fungal-like) pathogen and thrives in warm, humid regions. While all five of the early season grape diseases can result in significant crop loss if unmanaged, mismanaged downy mildew can result in total vine loss. Under the right conditions, downy mildew infections can “explode” and defoliate grapevines prematurely, making them more susceptible to winter injury/kill. Severe downy mildew pressure in the prior season will likely result in an abundance of primary inoculum to control in the following year's early season. Early season, primary infections begin when spores spread from leaf litter on the ground to young leaves and clusters, beginning about 2-3 weeks prior to bloom. Suckers or volunteer seedlings are often the first infected because they're closest to the ground. Unfortunately, sanitation and dormant sprays have no effect on downy mildew, but early season cultural management for other diseases provides an opportunity to scout for these primary infections to see if your management to date has been effective.

Early season downy mildew management is essential for effective season-long management. If downy mildew is mismanaged in the early season and becomes established, these infections will produce secondary inoculum season-long whenever conditions become conducive, resulting in cascading late season epidemics. Secondary inoculum release is triggered by warm, humid nights with rain shortly thereafter. Without rain, most secondary inoculum will stay in place and die the next day when exposed to bright sunlight. However, these spores can survive and remain infectious for several days between rainfalls if conditions remain cloudy. All *V. vinifera* clusters are highly susceptible beginning first appearance through approximately 4-5 weeks post-bloom. Berries become resistant to direct downy mildew infection at this time, but pedicels and foliage will remain susceptible long after.

Practices that encourage air circulation and speed drying time can reduce disease pressure, but will not replace the need for chemical control. All systemic fungicides for downy mildew management are prone to disease resistance development and should be used in rotation within a sound, integrated pest management program. Protectants used to control Phomopsis and/or black rot early in the season, such as mancozeb and captan, will also provide good preventative control of downy mildew. Ziram provides some control of downy mildew, but is not as effective as mancozeb and captan. Copper provides good control, but it should be noted that that copper can cause injury to the foliage at the



*Black rot, photo by P. McManus
University of Wisconsin-Madison*



*Downy mildew on clusters, photo by P. McManus
University of Wisconsin-Madison*

time of season when downy mildew management is most essential (succulent leaves). Zampro, Revus, and Revus Top (the mandipropamid component) provide excellent downy mildew control. Ranman provides good control. Phosphorous acid (PA) products (such as Phostrol) provide good preventative and post-infection control (“kick-back”). As a caveat, overuse of phostrol as a curative has led to reports of slippage across the state. Phostrol should be used with caution as a curative on mild infections and NOT USED on moderate to severe infections. Late career studies from the Wilcox program found that the biopesticide LifeGard provided comparable control to standard products in moderate disease pressure years, and excellent control when used in rotation with FRAC 40 products (Zampro, Revus) in moderate and high pressure years. These findings suggest LifeGard could be particularly useful for growers pursuing low-input/biotensive management. That said, LifeGard should still be used with caution for downy mildew and *always* in rotation with synthetic protectants and systemics. Ridomil remains the best fungicide ever developed for downy mildew control, but is extremely prone to resistance development (and expensive), and should never be used more than once per season. Ridomil should NOT be applied to raging infections. **We no longer recommend DMI or strobilurin fungicides for downy mildew control.**



Downy mildew on foliage, photo by D. Gadoury, Cornell University

Powdery Mildew: Powdery mildew is, without a doubt, the most important fungal disease of grapevine worldwide. Uncontrolled powdery mildew can destroy infected clusters and cause “diffuse” cluster infections that increase susceptibility to bunch rots. Leaf infections limit photosynthesis and reduce fruit quality, vine growth, and winter hardiness. In general, *V. vinifera* are most susceptible to powdery mildew infections, hybrids are intermediate, and natives least. Both humidity and shade promotes powdery mildew development. This is because powdery mildew is inhibited by sunlight, so maintaining an open canopy that allows sunlight to penetrate into the canopy will reduce disease pressure, but will not replace the need for chemical control. Unlike downy mildew, rainfall is not necessary to spread powdery mildew. However, research has shown that powdery mildew disease severity is twice as great at a relative humidity of 80% versus an RH of 40%. The risk of rapid powdery mildew development increases in vineyard sites and canopies with poor air circulation and increased microclimate humidity, and seasons with frequent precipitation.



Powdery mildew on foliage, photo by P. McManus, University of Wisconsin-Madison

Berries are extremely susceptible to powdery mildew infections initiated between immediate pre-bloom and fruit set. *Vinifera* berries begin to lose susceptibility after that, and become relatively resistant about 4 weeks after their individual flowers open. Concord berries become highly resistant/immune about 2 weeks after flowering. Early powdery mildew infections on fruit are one of the worst things that can happen in a vineyard, and can cascade quickly into total crop loss under conducive conditions. Keeping leaves virtually free of powdery mildew going into pre-bloom helps assure there will be minimal inoculum to infect new fruitlets during the critical immediate pre-bloom through early post-bloom period when susceptibility is highest.

Early-season sprays are critical on susceptible varieties in order to avoid cascading epidemics in the later season. Early season sprays during the first few weeks of shoot growth will be particularly important in blocks with late season powdery mildew in the prior year. Unfortunately, fungicides that provide preventative control of the other early season diseases such as mancozeb, captan, and ziram DO NOT provide effective control of powdery mildew. Fortunately, elemental sulfur provides highly effective preventative and curative powdery mildew control with low risk of disease resistance development. Sulfur will provide excellent post-infection control when applied up through the time that young colonies start to become obvious. Post-infection sprays applied to heavily-diseased tissues are much less effective, so sulfur should not be relied upon for eradication in these instances. Rainfall will wash off sulfur coverage, leaving new shoot growth unprotected, so sulfur must be applied frequently to provide effective season-long control. Additionally, some grape varieties are susceptible to foliar injury from sulfur, and sulfur applications should be avoided on these varieties.



Powdery Mildew on foliage and clusters, photo by W. Wilcox, Cornell University

The use of curative post-infection powdery mildew material with a protectant, especially at critical times when grape tissue is most susceptible, can help control disease infections that have already occurred. All systemic fungicides for powdery mildew management are prone to disease resistance development and should be used in rotation within a sound, integrated pest management program. Repeated use of any single chemistry will eventually result in resistant strains of powdery mildew that can no longer be controlled with applications of fungicides within that chemistry. At least two, and preferably more, FRAC groups should be used on a rotational basis to avoid or delay the onset of resistance. FRAC 11 (strobilurin) resistance is becoming more and more of a problem across the US, and the eastern industry is no exception. Therefore, **DMI and strobilurin fungicides should NOT be relied upon alone for powdery mildew control.** Pre-mixed strobilurin fungicides such as Pristine (strobilurin + SDHI), Quadris Top, Topguard EQ, and Luna Sensation provide good powdery mildew control. SDHI fungicides and pre-mixes such as Endura, Aprovia/Aprovia Top, Pristine, Luna Experience, Rally, and Miravis Prime provide good to excellent control. Vivando, ProLivo, Sovran, Quintec, and Gatten (newly labeled for NY) all provide excellent control. Pre-bloom applications of stylet oils can provide good to strong powdery mildew control, but can cause damage on certain varieties, or burn when over used. Late career studies from the Wilcox program found that the biopesticide LifeGard provided slight foliar control in a moderate disease pressure year, and moderate foliar and cluster control in a light pressure year. These findings suggest it could be particularly useful for growers pursuing low-input/biointensive management. That said, LifeGard should be used with caution for powdery mildew and always in rotation with synthetic protectants and systemics.



Anthracnose on clusters, photo by P. McManus, University of Wisconsin-Madison

Anthracnose: Anthracnose isn't the worst of the early season diseases by any means, but when it's a problem, it's a problem. Historically, anthracnose was only considered to be an issue on Vidal, Reliance, and seedless varieties, but outbreaks

have become more common in recent years in New York with the increasing prevalence of cold-hardy varieties. Cold hardy varieties with *V. riparia* in their background such as Marquette (particularly susceptible), Frontenac, La Crescent, Edelweiss, Esprit, Brianna, St. Pepin, and Swenson White tend to be susceptible. It has been noted that wild grapes near the vineyard can serve as a reservoir. All succulent parts of the plant, including fruit stems, leaves, petioles, tendrils, young shoots, and berries, can be attacked, but lesions on shoots and berries are most common and distinctive. A liquid lime sulfur dormant spray is the most reliable and effective management option for established, difficult to control populations. Early season sprays of mancozeb, captan, or ziram targeting Phomopsis have been noted to provide significant control of anthracnose despite not being listed on the label. Rally, Mettle, Pristine, and Revus Top are all labeled for anthracnose control, and most DMI or sterol inhibiting fungicides have shown adequate control.

A strong spray program begins with cultural control.

Diligent cultural management will ensure that your fungicide program is set up for success from the outset. Pruning, training, and sanitation are your first line of defense against all five early season grape diseases regardless of whether your operation is conventional, organic, or biodynamic.

Pruning: Anthracnose, Phomopsis, and powdery mildew all overwinter in the cane bark and will release spores with the spring rain that can infect susceptible early growth tissue. Early season pruning can help reduce initial inoculum levels for these diseases. All prunings should be chopped, shredded, and/or destroyed to remove bark and pathogen. Ideally, prunings should be removed from the vineyard, though this practice can be costly. If you are pursuing biodynamic or organic management, you might want to consider total removal if you have had persistent problems with cane-overwintering diseases.

Training: Canopy management can significantly aid in early season disease control. Any practice that opens the canopy to improve air circulation and reduce drying time of susceptible tissue will broadly reduce disease incidence and severity. For powdery mildew, canopy management practices such as utilizing a VSP training system, shoot thinning, and basal leaf removal at fruit set can significantly reduce fruit disease severity. Broadly, any practice that increases sunlight exposure on leaves or fruit will reduce the severity of powdery mildew on those tissues, independent of spray coverage. Additionally, training to improve airflow will have the added benefit of improving fungicide penetration. When this improved spray coverage factor is considered, the benefit of canopy management for powdery mildew control is not only compounded, but extended to other diseases as well.

Sanitation: Sanitation is essential for effective black rot and Phomopsis management, and will improve season long anthracnose and powdery mildew management. Black rot overwinters in mummified fruit (“mummies”) in the vine and on the ground. These mummies will release spores with the spring rain once temperatures become conducive. It is critical to remove mummies from the canopy and ideally from the ground and burn, bury, or compost them to destroy. Why take the time to remove mummies from the canopy? Canopy mummies will produce 10-20x more spores than mummies on the ground, and will continue to do so beginning from budbreak through version. The spores they produce will “rain down” and hit the most susceptible, young tissue. Ground mummies are less of a concern than canopy mummies because they decompose much faster and will not produce spores after bloom. The spores that they do produce are less likely to be splashed up onto the trellis and onto susceptible young tissue than canopy mummies. The exception to this is if the weather has been dry, then ground mummies will remain an inoculum source for longer. Dropping mummies to the ground (but not right below the vines!) is better than leaving them hanging in the trellis if you cannot remove them from the vineyard entirely. If you had a significant black rot problem in the prior season and/or are pursuing low input management, consider taking the time to remove ground mummies in addition to your canopy mummies. Removal of black rot mummies via early season sanitation is ESSENTIAL for all growers pursuing organic/

biodynamic/low input management.

Designing a robust early season program

The overall goal of your early season (and full season) program should be 1) simultaneous control of the most important diseases, 2) fungicide resistance management, and 3) economic sustainability. Diversification is key—an effective spray program will include BOTH protectants and post-infection materials, as well as BOTH contact and systemic materials. The four most critical sprays for early season disease management for downy mildew, powdery mildew, and black rot are immediate pre-bloom, bloom, 1-2 weeks post-bloom, and pea-sized fruits. As a rule of thumb for *V. vinifera*, cover should be maintained from 4" shoots through pea sized fruits and thereafter whenever weather is wet/humid. This period of the early season is the time to use the best fungicides, the highest rates, and follow all the recommended cultural management practices.

Disease	Dormant	1-5"	6-10"	Pre-bloom	Bloom	1-2wk Post-bloom	Pea-sized
Anthraco	X	X	X	X	X	X	X
Phomopsis		X	X	X	X	X	X
Black rot			X	X	X	X	X
Powdery mildew			X	X	X	X	X
Downy mildew				X	X	X	X

Sprayer calibration: When is the last time you calibrated your sprayer? If you can't remember, it's likely time. Ideally, sprayers should be calibrated annually. Proper sprayer calibration will ensure that the product you're applying can do the job you've paid for it to do. Maximizing spray coverage through proper sprayer calibration will maximize the dose of fungicide the pathogen is exposed to at any given rate of application. Remember, fungal pathogens only respond to the dose of product applied to the part of the plant where infection is taking place, not the dose of product you placed in the spray tank. The FRAME Network released an informative article that can be found [here](#) on the important role sprayer calibration and proper application play in preventing resistance development. Andrew Landers from Cornell additionally has a wide array of helpful vineyard spraying articles that can be found [here](#).

Fungicide resistance considerations to remember as you design your program:

- **Low risk is NOT the same as no risk!** ALL fungicides for grape disease management have varying capacity to lose efficacy due to resistance development.
- **A durable spray program will include both contact protectants and systemic fungicides for post-infection activity**
 - Rotate at-risk fungicides with effective, unrelated materials.
 - Apply at-risk materials in combination with another unrelated fungicide that's active against the target disease, either through tank mixing or use of a pre-packaged product containing two or more effective ingredients.
- **DMI (FRAC 3) and strobilurin (FRAC 11) products should NOT be relied upon alone for powdery OR downy control**
- No more than 2-3x per season and never twice in a row
 - DMI (FRAC 3) – high resistance risk
 - DMI resistance (FRAC 3) in both powdery and downy mildew is present at varying levels throughout NY. The one exception to this appears to be difenoconazole (the "top" in Quadris Top & Revus Top), which still provides good control on powdery mildew even when other DMIs appear to be "slipping." That said, it is **RISKY** to rely on difenoconazole alone to control powdery mildew.
 - Strobilurin (FRAC 11) – high resistance risk
 - **Do not apply without an unrelated tank-mix or pre-mix partner! FRAC 11 resistance is becoming more and more prevalent industry-wide and can hit like a ton of bricks with no warning.**
 - SDHI – moderate to high resistance risk

- Stewardship of these high efficacy products is critical!!
- Zampro and Revus/Revus Top (FRAC 40) – moderate to low resistance risk
 - Resistance has been documented in the eastern industry in recent year- low risk is not the same as no risk!!
- No more than 2x per season and ideally not twice in a row
 - Prolivo and Vivando (FRAC 50)
 - Quintec
- Ridomil should NEVER be applied more than once per season!!

Dormancy: An early season dormant spray should be considered to 1) clean up a serious anthracnose problem or 2) if you are pursuing organic/biointensive production. A dormant spray will not replace the need for in season sprays and will likely not be economical if you well-controlled fungal diseases in the prior season. Dormant sprays are most effective for anthracnose control, but will have activity on Phomopsis, powdery mildew, and black rot as well. Dormant sprays have no impact on downy mildew. If you meet the conditions for a dormant spray, use liquid lime sulfur at an approximate rate of 5-10gal/A but check the label to ensure proper protocol. Although lime sulfur may be considered an organic treatment, it is a highly caustic and corrosive material that can cause irreversible eye damage and skin burns. As with all pesticide products, users should follow precautionary statements and use personal protective equipment (PPE) described on product labels.

One-five inch shoot growth: This is the most critical time of season to control phomopsis, especially in blocks with a history of this disease, *especially* for Concord and Niagara growers. Although several products containing Group 3, Group 7, and Group 11 fungicides are labeled for control of Phomopsis, these are all weaker than the protectants (mancozeb, captan, and ziram) and should not be relied upon at this growth stage for Phomopsis control. Anthracnose control is needed at this stage as well, but a protectant spray for Phomopsis should take care of this. If temperatures remain above 50F for long stretches of the day during this growth stage, you may want to consider including a product for powdery mildew control on highly susceptible *vinifera* cultivars, especially in blocks that had significant foliar powdery mildew late into the prior season.

Six to ten inch shoot growth: *Vinifera* cultivars and high susceptibility hybrids need powdery mildew and downy mildew control beginning at this stage. This is one of the best times to use JMS and other oils, or other eradicant material against young powdery mildew infections that are just getting started. Now is the time to start thinking about downy mildew control. If you have a susceptible variety, rainfall has been greater than 0.1in, and temperatures above 52F have occurred recently or are anticipated, then include a downy mildew product in this spray. This especially important if downy mildew was prevalent in the prior season. Phomopsis infections on rachis and fruit can still be a concern at this stage in wet years, particularly in blocks with history of the disease. Anthracnose should be controlled at this stage by growers for whom this is a concern. Black rot control can likely wait until the next growth stage unless it was a significant problem last season (high primary inoculum levels) and weather is wet (conductive environment).

Immediate pre-bloom to early bloom: THIS IS THE MOST CRITICAL TIME OF YEAR TO CONTROL POWDERY MILDEW, DOWNY MILDEW, AND BLACK ROT. USE YOUR BEST MATERIALS AND DON'T CUT ANY CORNERS ON RATES, SPRAY COVERAGE, OR INTERVALS!!! THIS SPRAY SHOULD INCLUDE BOTH A CONTACT PROTECTANT AND SYSTEMIC/CURATIVE. This spray is also important for Phomopsis and anthracnose, but it is likely that the products chosen for downy, powdery, and black rot will cover them. If you miss this spray, you're going to have a rough year.

Bloom: While not discussed in detail in this article, the bloom spray is particularly important for botrytis. Vanguard (or Inspire Super), Switch, Scala, Elevate, Pristine, Rovral/Meteor/iprodione generic, and Luna Experience applied around the bloom period often provide beneficial control of botrytis on susceptible varieties, particularly in wet years. If sulfur was the only powdery mildew material in your immediate pre-bloom spray, it's best to reapply about now on highly susceptible viniferas rather than wait until post-bloom. If this is the case, keep your spray interval short, *especially* if it's rained since your last application or is expected to soon.

One to two weeks post-bloom (10-14 days after your pre-bloom spray): THIS IS A CRITICAL TIME OF YEAR TO CONTROL POWDERY MILDEW, DOWNY MILDEW, AND BLACK ROT. USE YOUR BEST MATERIALS AND DON'T CUT ANY CORNERS ON RATES, SPRAY COVERAGE, OR INTERVALS!!! THIS SPRAY SHOULD INCLUDE BOTH A CONTACT PROTECTANT AND SYSTEMIC/CURATIVE. If weather has been warm and cloudy, increase either the rate or quality of your powdery mildew material for highly susceptible varieties. If you haven't controlled for botrytis yet, this spray should include a material for that (especially if weather has been favorable). If you miss this spray, you're going to have a rough year.

Three-four weeks post-bloom (pea sized fruits): This is still an important stage for early season disease control, but the most critical time of year for fruit infection prevention has passed. *Vinifera* varieties will still require black rot control, especially if weather has been wet. Natives and resistant hybrids can now likely move forward without black rot specific products *unless* there is a strong history of disease in the block. At this point and throughout the rest of the season, try to avoid applications of fungicides at risk of resistance development if there's enough powdery mildew present in the vineyard that it's easy to spot without even trying.

Sources: The information presented in this article is primarily sourced from the body of work of my predecessor, Professor Emeritus Wayne Wilcox, as well as the 2020 New York and Pennsylvania Pest Management Guidelines for Grapes.

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Fact Sheet #5 – It's not over until... The EIDL loan program reopens, but only for farms. Here is what you need to know to apply. Also, the PPP still has money! (and a few policy updates) – May 11, 2020

Elizabeth Higgins, Eastern NY Commercial Horticulture Program, Nicole Tommell, Central NY Dairy, Livestock and Field Crops Program and Myron Thurston, CCE Madison County

To be honest, when we wrote the last fact-sheet at the end of April, we were not optimistic that the EIDL would be open to farms in the near future. Therefore, we didn't spend a lot of time analyzing the program for you. But, never say never, because like a monster in a horror movie – just when you think it's down for the count – the EIDL is back! Last Monday the 4th the SBA application portal for EIDL opened again, for farms only. This fact sheet provides more information about the EIDL program. We also want to go over some PPP program updates, including availability of the program and changes to how monthly average wages are calculated for seasonal employers (to the benefit of NYS farms).

PPP Update – It's not too late to apply!

According to the Wall Street Journal on Friday, May 8th, SBA reported on 5/8/20 that only 40% of the second round of Paycheck Protection Program (PPP) funding had been obligated. Therefore, farms that are on the fence about applying still have time to take advantage of this program. It seems that several things have happened to make the funding more available. First, the program in the second round was made much less attractive to large, publicly traded companies. According to the SBA report, the average loan size in the first round was \$210,000 and in the second round it is only \$73,000, indicating that this second round has done a better job reaching small businesses. Second, it turns out that many applicants had PPP applications in at multiple banks to increase their odds of success. As these duplicate applications come to light, more funding that was formerly thought to be obligated is freed up. More large companies have returned the PPP funds that they received, due to new guidance from the Treasury Department. Finally, some firms are deciding that they are less interested in the loan program as questions about how much of the loan will be forgivable arise or those who needed it most have already applied for PPP funding.

More changes to the PPP are likely to take place, and some may be to your advantage. For example, because many businesses are not able to fully open, and therefore can't hire back their workers soon, there is Congressional pressure to increase the percentage of utilities, interest and rent that can be forgiven. The SBA Inspector General Mike Ware issued a report on the PPP on May 8th, 2020 which was critical of the SBA restrictions added to the PPP requiring 75% of the forgivable portion of the loan to be used for payroll. He stated that this restriction puts an unintended burden on borrowers, and that "tens of thousands of borrowers would not meet the 75% threshold." In the report, Ware recommended that the SBA "evaluate the potential negative impact to borrowers" regarding the percentage of loan proceeds eligible for forgiveness and update the requirements, as necessary. "It may be important to consider that many small businesses have more operational expenses than employee expenses," he said. The report can be found at https://www.sba.gov/sites/default/files/2020-05/SBA_OIG_Report_20-14_508.pdf.

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Should you apply? Most of you will be paying salary and fringe (for yourself at least), utilities, interest and rent for the 8 weeks after the loan is disbursed. You will also likely continue to incur these expenses all year. These are all items that will be forgivable. This loan would free up cash you have on hand to deal with other unexpected expenses this season. Whatever parts of the loan are ultimately not forgivable are a 1% loan for expenses you will likely incur. Farming is always uncertain and predicting the impacts of COVID-19 on farms in New York moves us into unknown territory. Your workers could get sick, you may need to pay more for cleaning supplies, masks, and other safety measures. Farms that rely on direct sales to the public and agritourism may experience lower revenues. Restaurant sales may be lower. Unless you are already sitting on a big pile of cash or can access funding at a better interest rate than 1%, having extra cash available during a season with a lot of uncertainty seems like a good risk management strategy, especially when some or all of it may be forgiven. BUT you also should be aware that these programs may have tax implications¹ for your business. The tax implications of these programs are issues that are currently being discussed in the federal agencies and in Congress.

Don't forget that forgiveness will depend on having good records of payment of allowable expenses.

A best practice would be to make a file for your PPP loan and keep a copy of all documentation of your expenses and payments for allowable expenses for 2020. Keep records of payments of all allowable expenses, payroll, rent, utilities, and interest.

There has been a change in the PPP to give seasonal employers, whose peak months for employment are in the summer, a better opportunity to access a larger PPP loan. This change could be very beneficial to NYS fruit and vegetable farms. Originally the PPP gave employers the option of using the monthly average of annual wages for the loan amount or their monthly average payments for payroll during “the 12-week period beginning February 15, 2019, or at the election of the eligible [borrower], March 1, 2019, and ending June 30, 2019. The Treasury Dept. issued a rule on April 30 to address this by allowing seasonal employers to use an alternative base period for purposes of calculating the loan amount for which they are eligible under the PPP. A seasonal employer now has the **option of using any consecutive 12- week period between May 1, 2019 and September 15, 2019 for determining its maximum loan amount.** As required by section 1109(d)(2)(B), Treasury has determined that this alternative period for seasonal employers is, to the “maximum extent practicable,” consistent with the terms applicable to the PPP in general. By permitting seasonal employers to calculate the maximum loan amount using any consecutive 12 weeks within a specified 4.5-month period, this interim final rule ensures that seasonal employers affected by the pandemic are treated even-handedly. Other than this adjustment, the terms and requirements applicable to PPP loans under this rule are identical to the terms and requirements that section 1102 and SBA regulations impose on other PPP loans.

EIDL Program

Now on to the SBA Emergency Income Disaster Loan (EIDL). The first thing we want to mention with the EIDL is the Advance, which was authorized in the CARES Act. **The CARES Act added the ability for businesses applying for EIDL to receive up to \$10,000 as an advance on their loan to “provide economic relief to business experiencing a temporary loss of revenue.” This advance does not need to**

¹ IRS Notice 2020-32 was recently released and provides guidance regarding the deductibility for Federal income tax purposes of certain otherwise deductible expenses incurred in a taxpayer's trade or business when the taxpayer receives a loan (covered loan) pursuant to the Paycheck Protection Program under section 7(a)(36) of the Small Business Act (15 U.S.C. 636(a)(36)). <https://www.irs.gov/pub/irs-drop/n-20-32.pdf>.

be paid back and is effectively a grant of up to \$10,000 (\$1,000 for every employee in the business up to \$10,000). When you apply for the EIDL, if you are found to be eligible for EIDL loans, you receive the Advance quickly, before the loan is approved. If you are ultimately not approved for an EIDL, you still get to keep the Advance. Last week farms that were applying to EIDL were reporting receiving the Advance quickly.

The loan portion of the EIDL is the SBA's primary disaster assistance program to businesses. It provides low interest loans (3.75%) for working capital that are intended to help a business keep going during a period of business interruption due to a disaster. Although businesses usually can apply for up to \$2 million in EIDL funding, there are reports that SBA has recently lowered the lending limit to \$150,000². The terms for repayment of the loan can be quite long (up to 30 years) with the intention that the repayment costs are low enough to help the business stay economically viable after the disaster.

Uses of EIDL funds are also very flexible. It is almost easier to say what you CAN'T do with EIDL than what you can. You can't use the EIDL funds to enrich the owners of the company. For example, you can't pay dividends or bonuses, you can't give the money to the business owners – except for payment of services, you can't use the money to repay stockholder or principal loans (unless the loans were due to the disaster and it would cause undue hardship to the stockholder/principal). You can't use the money to expand the business or buy fixed assets, you can't repair or replace physical damage, you can't refinance long-term debt and you can't use it to relocate.

The funds for the EIDL come directly from the US Treasury. Because it has been around for many years, the EIDL program is more like a traditional lending program and less the wild west than the PPP. What you can borrow for EIDL is dependent on your credit and ability to offer collateral for the loan. The maximum unsecured loan is \$25,000.

SBA will look at:

- Your eligibility (meet the requirements for an EIDL loan)
- Your credit history – if you have bad credit or not credit history you may have trouble getting and EIDL loan
- Your ability to repay the loan – a business that was failing before the disaster is not a strong candidate for an EIDL loan. The loan is intended to help an otherwise strong business get through the disaster, not to put an otherwise failing business on life support.
- That your business was (is) impacted by the disaster.

So, what does that mean as far as your ability to access EIDL vs PPP? With EIDL you go through SBA, who will be just looking at your information against a set of lending standards. With PPP you may be working with a bank that knows your business and that bank is also receiving a 100% guarantee by the federal government. Banks will not give loans to applicants who obviously are poor candidates for credit, they do have a fiscal responsibility to vet applicants and reject candidates who are obviously not credit worthy or who do not meet the lending standards of the program – but there are applicants in the

² The Washington Post reported on May 7th that SBA was limiting EIDL loans to \$150,000. On May 9th the Senate Democrats released an open letter to SBA critical of their decision to lower the loan cap to \$150,000. There is currently no documentation on SBA's website that this cap has been implemented.

grey area. Because you can work with a bank that knows you and your business, PPP may be more accessible if you have credit areas where you are weaker.

EIDL and PPP How do they Work Together?

You can apply for both the PPP and the EIDL and because the programs are so competitive if you need this help for your business is probably worth applying to both, just in case you are not able to access the other program. However, you cannot use the funds for the same purpose. So, if you do receive a PPP loan, it would be to your benefit to first use the PPP loan funds for salary because that use of the PPP is forgivable and uses of the PPP are more restricted. EIDL loans, for example, can be used to pay vendors and pay other operating costs.

If you received or receive a PPP loan, the amount of the PPP loan that will be forgiven is reduced by the amount of the Advance. So, if you received a PPP loan with a forgivable amount of \$20,000, and then get an EIDL advance for \$10,000, your PPP loan forgiveness will be reduced to \$10,000. You will pay the rest of the PPP back at 1%. However, the uses of the EIDL Advance are much broader than the PPP. For many businesses that is a good trade-off. For example, if you have a large seed bill due or need to pay a vendor you can likely use your EIDL Advance, but not the PPP loan.

Here is a chart summarizing the differences between the two assistance programs:

	EIDL + Advance	PPP
Max Loan Amount	\$2 million (maybe \$150,000)	2.5 x average monthly payroll, up to \$10 million
Interest Rate	3.75% (2.75% for non profits)	1%
Maximum Forgivable Amount (aka Grant)	up to \$10,000 – even if EIDL loan is not approved	The first 8 weeks of payroll immediately after you receive PPP funds + (rent, utilities, mortgage interest) <u>BUT</u> the total amount forgiven for non-payroll expenses is capped at 25% of the total amount forgiven.
Repayment Period	up to 30 years	2 years
Allowable Uses	working capital	payroll, mortgage interest, rent, utilities
Who is the Lender?	SBA	commercial banks

It is important to remember that these two programs are not the only forms of assistance available. Many local areas are also developing emergency loan and grant programs for businesses, so it may be worth looking closer to home – especially if the amount of funding you need is more in the under \$10,000 range. Also, don't forget that there are COVID-19 related tax benefits as well as USDA loan and assistance programs forthcoming.

Resources

- Link to EIDL Loan Application and Information <https://www.sba.gov/funding-programs/loans/coronavirus-relief-options/economic-injury-disaster-loan-emergency-advance#section-header-0>

- Link to SBA information for PPP <https://www.sba.gov/funding-programs/loans/coronavirus-relief-options/paycheck-protection-program>
- SBA Paycheck Protection Program (PPP) report: Approvals from 4/27/2020 through 05/08/2020 https://www.sba.gov/sites/default/files/2020-05/PPP_Report_200508.pdf
- Federal Register 85(84) 4/30/20 Small Business Administration Business Loan Program Temporary Changes; Paycheck Protection Program—Additional Criterion for Seasonal Employers Interim Final Rule <https://home.treasury.gov/system/files/136/Interim-Final-Rule-Additional-Criterion-for-Seasonal-Employers.pdf>
- Paycheck Protection Program FAQ (constantly updated by SBA and the Treasury Dept) <https://home.treasury.gov/system/files/136/Paycheck-Protection-Program-Frequently-Asked-Questions.pdf>
- *Washington Post* SBA slashes disaster-loan cap to \$150,000 from \$2 million, shuts out nearly all new applicants 5/7/2020 <https://www.washingtonpost.com/business/2020/05/07/sba-disaster-loans/>
- Senate Democrats May 9th letter to SBA Secretary Carranza that references the reduction in EIDL loan cap to \$150,000. <https://www.democrats.senate.gov/imo/media/doc/Letter%20to%20SBA%20re%20EIDL%20Challenges%20FINAL.pdf>

Prior Fact Sheets:

- Fact Sheet #1 ***CARES Act's Emergency Resources for Farm Businesses: Paycheck Protection Loan Program***, April 2, 2020 <https://bit.ly/358Q3Ye>
- Fact Sheet #2 ***April 8th Update to the Paycheck Protection Program (PPP) – Where the only constant is change!***, April 8, 2020 <https://bit.ly/2Yamx2Y>
- Fact Sheet #3 ***A new interim rule, the first round of funding is depleted. What does the future hold?*** April 14, 2020 <https://bit.ly/2ScV7pr>
- Fact Sheet #4 ***PPP has \$310 billion more + returned funds from large companies. \$60 billion more for EIDL, is now available(ish) for farms.*** April 27, 2020 <https://bit.ly/3eW0inq>

Hand Sanitizer and Face Masks Available to Farmers

Cornell Cooperative Extension Chautauqua County is distributing free hand sanitizer and face masks. Sanitizer and face coverings from the NYS Department of Agriculture have been brought to Chautauqua County through a partnership with CCE Chautauqua and Chautauqua County department of Building and grounds.

Lake Erie Regional Grape Program is a distribution point at Cornell Lake Erie Research and Extension Laboratory in Portland.

CCE Chautauqua will distribute from the Jamestown Community College, Jamestown Campus Parking Lot.

Production farms of any type are welcome to come pick up supplies. These farms can include dairy, livestock, grapes, vegetables, farm stands, U-Pick, nursery, equine, and craft beverage. To sign up for your product please go to chautauqua.cce.cornell.edu/resources/hand-sanitizer-and-face-mask-request.

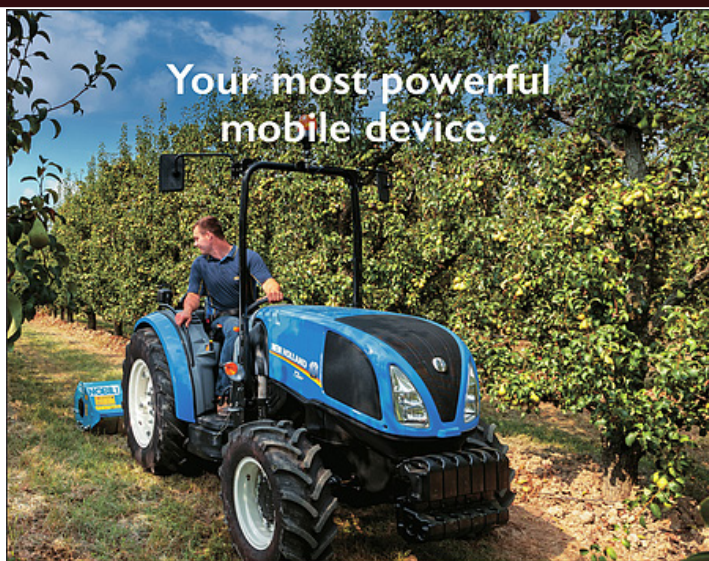
Supplies will be handed out at CLEREL; 6592 West Main Road; Portland, NY at the barn every Monday from 11:00 AM until 2:30 PM until supplies are exhausted.

Or

At Jamestown Community College Jamestown Campus Parking Lot, 525 Falconer Street, Monday, May 18, 11 am – 2:30 pm



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Kimberly Knappenberger, Viticulture Assistant, LERGP

The Vineyard Improvement Program – Yes, It's still here!

If you have been considering taking advantage of this NYS Ag and Markets and The Southern Tier Agricultural Improvement Fund program, now is the time! This Vineyard Improvement Program grant is available to help with removal of unwanted Concord vineyards that can be replaced by another agricultural commodity. As you all know these things take time, so I would urge you to start this process if you have been thinking about doing it. There are a little under 3 ½ years left of the program unless the funds are depleted before then. The process allows for 1 year to get the removal completed after the contract has been established and then 2 more years to get the replant done. As you can see that brings us right about to the end of the timeline. Some of those participating in the program have been able to complete the replants in less time, but most have not.

If you are interested in seeing if this can benefit you please visit lergp.com/about-vip to learn more about it. You can also email Kim at ksk76@cornell.edu if you have questions. As a reminder this is for New York vineyards in the eligible regions. See the map on the website for details.

Figure 1. Yep, this is a vineyard!



How to Virtual Coffee Pot



Lake Erie Regional Grape Program is pleased to announce that they are able to offer Coffee Pot meetings virtually. This year, due to the restrictions in place from COVID-19, the group is unable to conduct business as usual. In an effort to continue the sharing of important research as well as maintaining the collaboration of ideas from the growers, the LERGP team has been able to set up Virtual Coffee Pot meetings.

In addition, the New York State Department of Environmental Conservation (DEC) has approved offering of one pesticide recertification credit for each of the Virtual Coffee Pot Meetings and the Pennsylvania Department of Agriculture (PDA) has the information for approval. **That will be 13 opportunities to receive pesticide recertification credits in 2020!**

Please join the team Wednesdays, May through July 2020 at 10:00 AM Eastern Time. You must register in advance for this meeting at: <https://cornell.zoom.us/meeting/register/tJYpdeyoqD8uE9LvZ-Wrt3eNpaol4r7BSFRUx>.

If you are seeking pesticide recertification credits, you must send an email to lergpcoffeepot@gmail.com and include the above information required for each state. On each Coffee Pot Wednesday, you must click on the provided Zoom link and it will prompt you to download the software.

Laptop: Use of a laptop is recommended if you have access to one.

Zoom In: To use a computer make sure you have a microphone. Many desktops do not. Simply click the link to connect. You'll automatically be prompted to install zoom software to connect to the meeting. This might take some time so feel free to do it before the scheduled meeting. You can use the same link as a smartphone to connect.

Tip: If you have a pop up blocker installed, you may be prompted to launch the zoom application after you click the link

Tip: If prompted make sure you give zoom access to your microphone and video camera. Particularly on a Mac computer it is a little more complicated to give access to the devices once you initially deny zoom access. A pop up window will typically request this access the first time you click a zoom link.

Zoom In: Smart Phone

On any smartphone you can install a zoom app. Once you have the app, you can click the link provided in the e-mail invitation and you'll be connected to the meeting. The link will prompt the app to open automatically, if it is already installed. This will provide you with an audio and video connection. We think we'll be better able to communicate in small groups if you connect this way, but it does require an app. Also, if you have limited data on your phone, please make sure you're connected to Wi-Fi as Zoom is fairly data intensive.

Please don't let your fear of technology scare you away from receiving pesticide recertification credits. We fully anticipate walking you through the process until you feel comfortable.

If you are seeking pesticide recertification credits, you must have your video camera on so that we can confirm that it is you. You must click on the 'Chat Box' that looks like conversation bubble at the

bottom of your screen which will prompt a white box on the right hand side of your screen to appear. At the bottom there is a section that says: 'To: Everyone' with a small down arrow, click the down arrow and all of the participant names pop up. You will select the name 'Kate Robinson' and type your name and pesticide applicator license number and hit 'enter'.

After that, all you need to do is answer the poll questions to prove to the DEC and PDA that you are engaged in the meeting. We will help you out with the polling as well.
Join us on Wednesday at 10 AM!

Sheep Can be Employees too?



The Vanden Heuvel viticulture research program at Cornell University is conducting a survey to determine grower perceptions of using sheep to mow/sucker in vineyards. The goal of the survey is to guide future research and extension efforts in this area. The survey is completely anonymous. You can complete the survey by clicking on this link: https://cornell.qualtrics.com/jfe/form/SV_80QJfMVgdqlqOOh
Please only complete the survey once for each vineyard operation. If you have any questions, please get in touch with Prof. Justine Vanden Heuvel directly (Justine@Cornell.edu).

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This publication may contain pesticide recommendations. Changes in pesticide regulations occur constantly, and human errors are still possible. Some materials mentioned may not be registered in all states, may no longer be available, and some uses may no longer be legal. Questions concerning the legality and/or registration status for pesticide use should be directed to the appropriate extension agent or state regulatory agency. Read the label before applying any pesticide. Cornell and Penn State Cooperative Extensions, and their employees, assume no liability for the effectiveness or results of any chemicals for pesticide usage. No endorsements of products are made or implied.

Cornell University Cooperative Extension provides equal program and employment opportunities.

Contact the Lake Erie Regional Grape Program if you have any special needs such as visual, hearing or mobility impairments.

CCE does not endorse or recommend any specific product or service.

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