

Cornell Cooperative Extension  
Lake Erie Regional Grape Program



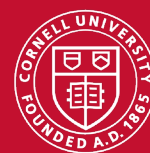
PennState Extension

## LERGP August 2023 Newsletter

*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.*



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# NY 23 Farm Bill Listening Session

SEPTEMBER 6, 2023

Please RSVP for a listening session to provide feedback as we develop the 2023 Farm Bill. Your voice plays a vital role in this major legislation.

*RSVP required.*

9:30am- 11:30am  
at the Cornell  
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(6592 W Main Rd, Portland,  
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*Hosted by*  
**CONGRESSMAN NICK LANGWORTHY**

HOUSE COMMITTEE ON AGRICULTURE  
CHAIRMAN **GLENN "GT" THOMPSON**

*with special guest*



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A special thank you goes out to our 2023 Coffee Pot Meeting hosts! We can not do this each year without you. We appreciate your generosity in providing space for us and the time you take to prepare for our meeting at your farm.

If anyone would like to host a 2024 LERGP coffee Pot meeting, please call Katie at 716-792-2800 ext 201, or send an e-mail to [kjr45@cornell.edu](mailto:kjr45@cornell.edu).

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# Viticulture

Jennifer Russo, Viticulture Extension Specialist, LERGP

## Pre-Harvest and Late Season Disease Management

Many of our modern-hybrid and vinifera cultivar vineyards are approaching the anticipated harvest date for early wine grape varieties. This can be a trepidatious time for some varieties that can be vulnerable to heavy rains, cuticle cracking, and biotic and abiotic stresses. It is now that the soluble sugars accumulate, and the air begins to fill with the smell of sweet fruit. This can attract vectors that may aid in the introduction of secondary infections and a variety of late-season rots, which adds a different smell in the air. With the larger size of the crop this year, the delay in Growing Degree Day accumulation, shorter days at this time in the season, and the precipitation/humidity we continue to experience, it is very important to keep your leaves clean to support the ripening of this crop. As you know, the Lake Erie Regional Grape Program is a collaboration between Cornell and Penn State University that provides timely expertise in viticulture, business management, and integrated pest management. This collaboration does not stop at our team, but efforts of many of the research and faculty staff coordinate to provide the New York and Pennsylvania Pest Management Guidelines for Grapes. We have been working with a half-staffed team this season during our team's transitional time. I am excited to mention that I have verbal confirmation that New York State's Grape IPM Coordinator, Dr. German Vargas, is scheduled to join us this fall. In the interim, I have relied heavily on the NY & PA Grape Guidelines as you all should. You can purchase this great resource here: [Click Here to Buy Guidelines](#).

The guidelines are not a substitute for pesticide labeling. Always read and understand the product label before using any pesticide. The guidelines reflect the current (and past) authors' best efforts to interpret a complex body of scientific research, and to translate it into practical management options. Below are the guideline's options for mid-season and pre-harvest management.

**BEFORE YOU BUY** - carefully and thoroughly read the label to be sure that the pest you wish to control is listed for the site (i.e., crop) where you will apply the pesticide. **In New York State, it's a requirement that the pest must be listed on the label for the site you're treating.** Other states may not have this requirement.

If a pest is not listed on the label for the site you're treating, check the [NYSDEC's product registration database](#) to see if a 2(ee) recommendation for unlabeled pest has been approved for the pesticide and the site.

Before purchasing new quantities of a pesticide **you have used before**, be sure to read the label for the new product. Labels can and do change! It's not uncommon for sites and/or pests to be deleted from a newer version of a label. Checking this ahead of time will prevent you from making an illegal pesticide application or put you in the position of having an unusable pesticide. This is going to become increasingly important in the next few years as the EPA makes changes regarding the Endangered Species Act.

### 5.2.11 MIDSUMMER SPRAYS (July and August, as necessary)

**Black rot** - For some time, it was thought that berries would remain highly susceptible to black rot until they reach approximately 8° Brix. However, research has shown that even under high disease pressure, berries become highly resistant to infection by about five (Concord) to seven (V. vinifera)



weeks after the start of bloom. Experience has shown that it is usually possible to end black rot spray programs after the second post-bloom application **IF** the disease has been well managed until then. However, protection may continue to be necessary until late July if more than a trace level of fruit rot is present, to limit spread within the clusters.

*Table 1. Black Rot Materials and Rate per Acre in the NY & PA 2023 Grape Guidelines 5.2.11 Midsummer & Pre-harvest Sprays*

Tebuconazole products	4 oz	
OR Rally 40WSP	4-5 oz	
OR Mettle 1 ME	5 fl oz	
OR †Rhyme 2.08SC	5 fl oz	
OR Revus Top 4SC	7 fl oz	<b>CAUTION: Do not use Revus Top, Inspire Super, or <sup>*NY</sup>aprovia top on Concord grapes (cause injury).</b>
or Inspire Super	16-20 fl oz	
or <sup>*NY</sup> Aprovia Top 1.6EC	8.5-13.3 fl oz	
OR <sup>*NY</sup> Dithane DF	4 lb	<b>CAUTION: Do not apply mancozeb products within 66 days of harvest.</b>
or Dithane M45		
or Manzate Pro-Stick 75DF		
or Penncozeb 75 DF		
OR <sup>*NY</sup> Dithane F-45	3.2 qt	
or <sup>*NY</sup> Manzate Max 4F		
OR Ziram 76DF	4 lb	
OR <sup>*NY</sup> Dexter Max	3.2-4.25 lb	<b>CAUTION: Do not use Quadris Top on Concord grapes (causes injury).</b>
OR Abound 2SC	11-15 fl oz	<b>Note that Quadris Top, <sup>^</sup>AZAKA, Abound, †topguard eq, and <sup>*NY</sup>dexter max are extremely phytotoxic to certain apple varieties due to the active</b>
OR <sup>^</sup> Azaka 2SC	11-15 fl oz	
OR Quadris Top 2.7SC	12-14 fl oz	
OR †Topguard EQ 4.3SC	5-6 fl oz	<b>ingredient azoxystrobin. See the ABOUND entry in Section 3.2 for information concerning use of these fungicides in Pennsylvania.</b>
OR <sup>*NY</sup> †Cevya	4-5 fl oz	
OR <sup>*NY</sup> Sovran 50WG	3.2-4.0 oz	
OR Flint Extra	3.5-3.8 fl oz	<b>CAUTION: Do not use Flint EXTRA on Concord grapes (causes injury).</b>
OR Pristine 38WG	8-12.5 oz	<b>CAUTION: Do not use Pristine on Concord or Noriet grapes (causes injury).</b>
OR <sup>*NY</sup> †Luna Experience	8.6 fl oz	Although a lower rate of <sup>*NY</sup> †Luna Experience is registered for control of powdery mildew, the 8.6 fl oz/A rate is necessary for reliable black rot control. This higher rate will also provide improved control of Botrytis.
OR <sup>*NY</sup> †Luna Sensation	7 fl oz	See earlier comments regarding <sup>*NY</sup> †Luna Sensation.
OR <sup>*NY</sup> †Miravis Prime	9.2-13.4 fl oz	<sup>*NY</sup> †Miravis Prime is a combination of a new succinate dehydrogenase inhibitor fungicide (SDHI, Group 7) and fludioxonil (Group 12). In NY and PA trials, <sup>*NY</sup> †Miravis Prime has provided high levels of black rot control in PA trials at the 11.4 and 13.4 fl oz rates.

**Powdery mildew** - Older leaves retain some susceptibility and new leaves remain **highly susceptible** so long as they continue to be produced. We have had ample rain this season and vines continue to grow and produce susceptible tissue to powdery mildew. The guidelines state that the strategy for powdery mildew management should be to provide aggressive control earlier in the season and then maintain an appropriate level of control on clean berries and new foliage during the midsummer. This objective often can be accomplished with sulfur later in the season on those varieties most in need of protection (vinifera and some hybrids). On Concord and some other sulfur-sensitive varieties with only moderate susceptibility to powdery mildew and tolerant of copper, copper fungicides will provide adequate control of mid-season foliar infections if needed, while also providing control of downy mildew. Many other materials that provide good control of foliar disease but are less active against fruit infections can be used effectively at this time also. Thus, this is an excellent time to use non-premium rotational materials. Most newer conventional fungicides provide a longer period of protection than sulfur, potassium salts, oils, and biological, so can be applied less frequently.

*Table 2. Powdery Mildew Materials and Rate per Acre in the NY & PA 2023 Grape Guidelines 5.2.11 Midsummer & Pre-harvest Sprays*

	Liquid Sulfur 6L	see label, rates vary	In addition to being relatively economical, use of sulfur in midsummer reduces the pressure for developing resistance to other powdery mildew
OR	Wettable Sulfur (several formulations)	see label, rates vary	fungicides. Concerns about potential sulfur residues reducing wine quality are much lower for white cultivars than for red cultivars.
OR	fixed copper (several formulations)	2 lb	Fixed copper formulations and lime should not be used with Sevin or <sup>*NY</sup> Imidan.
	+ hydrated lime	4 lb	
OR	Champ Formula 2	1.33 pt	
	+ hydrated lime	0.5 lb/100 gal, see label	
OR	JMS Stylet Oil	1-2.0% conc., see label	Multiple applications of oil products near or after veraison may cause a reduction in Brix values at harvest.
OR	Purespray Green	1-2% conc.	
OR	Nutrol	4-8 lb	
OR	Kaligreen 82 SO	2.5-5 lb	
OR	<sup>^</sup> Armcarb 85WG	2.5-5 lb	
OR	Milstop 85WG	2.5-5 lb	
OR	Revus Top 4SC	7 fl oz	<b>CAUTION: Do not use Revus Top or Inspire Super on Concord grapes (cause injury).</b> <b>Resistance Warning:</b> Limit use of the DMI (Group 3) fungicides (generic tebuconazole products, Mettle, Rally, Revus Top/Inspire Super/ <sup>*NY</sup> Aprovia Top, <sup>*NY</sup> Procure, †Rhyme, † Topguard EQ, <sup>*NY</sup> Viticure, <sup>*NY</sup> Trionic, and <sup>*NY</sup> †Cevya) to a maximum of three applications per season of all such materials combined. Refer to previous discussions regarding the occurrence and management of powdery mildew resistance to these materials.
	or Inspire Super	16-20 fl oz	
OR	Tebuconazole products	4 oz	
OR	Rally 40WSP	4-5 oz	
OR	<sup>*NY</sup> Viticure 4SC	6-8 fl oz	
OR	<sup>*NY</sup> Procure 480SC	6-8 fl oz	
OR	<sup>*NY</sup> Trionic 4SC	6-8 fl oz	
OR	Mettle 1ME	5 fl oz	



OR	†Rhyme 2.08SC	5 fl oz	
OR	*NY†Cevya	4-5 fl oz	
OR	*NY†Gatten	6.4 fl oz	The *NY†Gatten label recommends 6.4 fl oz per acre with a maximum 25.6 fl oz per acre per year with a maximum 4 applications, but we do not recommend more than 3 for resistance management purposes. <b>Restrictions for New York - DO NOT</b> apply more than 16 fl oz /A/year.
OR	Flint Extra	3.0-3.5 fl oz	
OR	*NYSovran 50WG	3.2-4.0 oz	CAUTION: Refer to previous discussions regarding the occurrence and management of powdery mildew resistance to the strobilurin (Group 11) fungicides.
OR	Abound 2SC	11-15 fl oz	
OR	^Azaka 2SC	11-15 fl oz	
OR	Quadris Top 2.7 SC	12-14 fl oz	CAUTION: DO NOT USE FLINT EXTRA, *NY†LUNA SENSATION, OR QUADRIIS TOP ON CONCORD GRAPES (CAUSES INJURY). Note that Quadris Top, ^AZAKA, Abound, †TOPGUARD EQ, and *NYdexter max are extremely phytotoxic to certain apple varieties due to the active ingredient azoxystrobin. See the ABOUND entry in Section 3.2 for information concerning use of these fungicides in Pennsylvania.
OR	†Topguard EQ	5-6 fl oz	CAUTION: DO NOT USE PRISTINE ON CONCORD OR NOIRET GRAPES (CAUSES INJURY).
OR	Pristine 38WG	10-12.5 oz	
OR	Endura 70WG	4.5 oz	
OR	*NY†Luna Experience	6.0-8.6 fl oz	See earlier comments regarding *NYAprovia, *NYAprovia Top, *NY†Luna Experience, *NY†Luna Sensation, Torino, the Double Nickel products, Oso, and Ph-D.
OR	*NY†Luna Sensation	7 fl oz	
OR	*NYAprovia 0.83EC	8.6-10.5 fl oz	CAUTION: DO NOT USE *NYAPROVIA TOP ON CONCORD GRAPES (CAUSES INJURY).
OR	*NYAprovia Top 1.6EC	8.5-13.3 fl oz	
OR	*NY†Miravis Prime	9.2-13.4 fl oz	*NY†Miravis Prime is a combination of a new succinate dehydrogenase inhibitor fungicide (SDHI, Group 7) and fludioxonil (Group 12). In NY and PA trials, *NY†Miravis Prime has provided high levels of powdery mildew control.
OR	Torino 120SC	3.4 or 6.8 fl oz	The newest Torino label allows a maximum of two applications per year at the 3.4 fl oz rate or one application per year at the 6.8 fl oz rate.
OR	Quintec 2SC	4 fl oz	
OR	Vivando 2.5SC	10.3-15.4 fl oz	Vivando and Prolivo are similar products with an active ingredient in the same chemical class and should provide similar (good to excellent) levels of powdery mildew control.
OR	Prolivo 300SC	4-5 fl oz	
OR	Double Nickel LC	2 qt	
	or Double Nickel 55	1 lb	

OR	Oso 5SC	6.5 fl oz	
	or Ph-D 89WD	6.2 oz	
OR	Regalia	1-4 qts (see label)	Regalia is a biopesticide that has provided fair to very good control of powdery mildew in NY trials, depending on disease pressure. It is likely to work best on less susceptible varieties or at times of year when pressure is low. Different rates are recommended depending on whether it is used alone or in a tank mix. Because Regalia requires 48 hours to activate plant defenses, applications need to start before infection. This product could be included in an organic spray program or in rotation before or after the critical powdery mildew control window (immediate prebloom and post bloom) to slow the development of resistance to other products. Regalia should not be relied on for powdery mildew control during immediate prebloom and post bloom applications.
OR	Fracture	20.5-24.4 fl oz	Fracture is a biopesticide that has provided fair to good control of powdery mildew in NY and PA trials. Fracture has been sold and will be marketed as ProBlad Verde and should work similarly. ProBlad Verde is OMRI listed and can be included in an organic spray program or in rotation before or after the critical powdery mildew control window (immediate prebloom and post bloom) to slow the development of resistance to other products. Fracture/ProBlad Verde should not be relied on for conventional powdery mildew control during this critical window. No more than 5 applications can be made during the season, and Fracture/ProBlad Verde may be applied no more than twice before alternating with a product that has a different mode of action.
OR	ProBlad Verde	18.1-45.7 fl oz	
OR	Howler	2.5-7.5 lbs	
OR	Romeo	0.23 lbs	
OR	Stargus	0.5-4.0 qts	Stargus has shown to be more effective when tank mixed with Regalia.

**Downy mildew** - Downy mildew often “disappears” for a while if midsummer weather becomes hot and dry, but it has the potential for “explosive” spread under favorable conditions (moderately warm temperatures and wet, or to put it mildly, this year’s conditions). Vineyards should be scouted for the presence of this disease throughout the summer, and the foliage should be protected appropriately to prevent premature leaf drop, as determined by weather conditions, cultivar susceptibility, and disease presence.

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	or Captan 50WP	4 lb	
	or Captan 80 WDG	2.5 lb	
	or Captan Gold 4L	1-2 qt	
	or Captan Gold 80WDG	1.25-2.5 lb	
OR	*NY Dithane DF	4 lb	<b>MANCOZEB PRODUCTS CANNOT BE USED WITHIN 66 DAYS OF HARVEST.</b>
	or Dithane M45		
	or Manzate Pro-Stick 75DF		
	or Penncozeb 75DF		
OR	*NY Dithane F-45	3.2 qt.	
	or *NY Manzate Max 4F		
OR	*NY Dexter Max	3.2-4.25 lb	
OR	fixed copper formulations	label rate	<b>CAUTIONS:</b> (1) Fixed copper formulations and lime should not be used with Rally, Sevin, or *NY Imidan. (2) Copper applied under humid, slow-drying conditions may cause injury.
	+ hydrated lime	4 lb	
OR	Ridomil Gold MZ WG	2.5 lb	<b>CAUTION:</b> Refer to previous discussions about downy mildew resistance concerns and management considerations for the Ridomil products. Ridomil Gold MZ WG cannot be used within 66 days of harvest. Ridomil Gold Copper formulation may be used to within 42 days of harvest.
OR	Ridomil Gold Copper	2 lb	
OR	Abound 2SC	not recommended	<b>Resistance Warning:</b> Refer to the discussion above in the "Immediate Prebloom" and "1 <sup>st</sup> Postbloom" sections about the prevalence of downy mildew resistance and management considerations for use of the Group 11 (strobilurin) fungicides. <b>CAUTION: DO NOT USE QUADRIS TOP OR REVUS TOP ON CONCORD GRAPES (CAUSE INJURY). CHECK INDIVIDUAL LABELS FOR OTHER CULTIVARS THAT MIGHT ALSO BE AFFECTED. Note that Quadris Top, ^AZAKA, Abound, †TOPGUARD EQ, and *NY Dexter max are extremely phytotoxic to certain apple varieties due to the active ingredient azoxystrobin. See the ABOUND entry in Section 3.2 for information concerning use of these fungicides in Pennsylvania.</b>
	^Azaka 2SC	recommended	
	Quadris Top 2.7SC	for use alone	
	†Topguard EQ		
	†Topguard EQ		
OR	Pristine 38WG		<b>CAUTION: Do not use Pristine on Concord or Noiret grapes (causeS injury).</b>
OR	*NY Sovran 50WG		
OR	*NY †Reason 500SC	2.7 fl oz	
OR	ProPhyt	2-4 pt	Refer to the discussion above in the "Immediate Prebloom" and "1 <sup>st</sup> Postbloom" sections about use of the phosphorous acid fungicides (e.g., ProPhyt, Phostrol, Rampart). <b>Resistance Warning:</b> IT IS IMPORTANT THAT USE OF THESE PRODUCTS BE LIMITED TO A <b>MAXIMUM</b> OF THREE APPLICATIONS PER YEAR, WITH NO MORE THAN TWO SEQUENTIAL APPLICATIONS, IN ORDER TO DELAY RESISTANCE DEVELOPMENT. Refer to the discussion on "phosphorous acid" in the "Fungicides" section for further information.
OR	Phostrol	2.5-5 pt	
OR	Rampart	2-6 pt	
OR	Revus 2SC	8 fl oz	Refer to previous discussions on the properties of Revus/Revus Top, Ranman, and *NY Gavel.
	or Revus Top 4SC	7 fl oz	
OR	*NY Gavel 75DF	2.0-2.5 lb	<b>CAUTION: DO NOT USE REVUS TOP ON CONCORD GRAPES (CAUSES INJURY).</b>
OR	Ranman 400SC	2.1-2.75 fl oz	

Table 3.

*Downy Mildew  
Materials and  
Rate per Acre in  
the NY & PA 2023  
Grape Guidelines  
5.2.11*

*Midsummer &  
Pre-harvest Sprays*

OR	*NY†Zampro 4.4SC	11-14 fl oz	<p>*NY†Zampro is a new fungicide active against only downy mildew.</p> <p>*NY†Zampro contains two downy mildew-specific active ingredients: (i) ametoctradin, representing a new class of chemistry (Group 45), with no other representatives currently registered; and (ii) dimethomorph, a Group 40 fungicide similar to Revus. It is assumed to have good protective activity; some limited post-infection activity; and anti-sporulant activity. It is labeled for use at 7-10 day intervals but has provided very good to excellent control on <i>V. vinifera</i> cultivars when used at 14-day intervals in several NY trials.</p> <p>The label allows a maximum of four applications per season, but we recommend no more than three applications of *NY†Zampro and Revus (or Revus Top) <b>combined</b>, and no more than two sequential applications of these products before rotating to a product that does not contain a Group 40 material.</p>
OR	Howler	2.5-7.5 lbs	

**Botrytis bunch rot** - Most commonly a problem on tight-clustered French hybrid and *Vitis vinifera* cultivars. Proper timing and thorough spray coverage are essential for good control. Removal of leaves around clusters soon after fruit set also aids significantly in control. Botrytis sprays should be directed towards the fruit, using sufficient water to ensure thorough coverage. Although weather plays a large role in determining the most important application times for Botrytis fungicides, **sprays at or shortly after veraison consistently appear to be beneficial on susceptible varieties** unless preharvest weather is especially dry. A subsequent application also can be beneficial on highly susceptible varieties if the preharvest weather is wet, particularly if the disease is already established; this preharvest spray should be at least 2 weeks after the veraison spray, and its precise timing should be determined by weather conditions, the presence of disease in the vineyard, the time remaining until harvest, and label restrictions. Applications at late bloom and pre-bunch closure can be as important as those at veraison and preharvest if the weather is wet during these earlier periods. Thus, growers who have had trouble controlling Botrytis when they have delayed applications until veraison (or later) should consider protecting against the disease at late bloom and/or pre-bunch closing if the weather is wet during these times. **Resistance Warning:** All of the most effective Botrytis fungicides are subject to resistance development; therefore, they should be used in rotation with each other to minimize this risk. Make no more than two applications per season of any one material or class of fungicide, e.g., Vanguard and Scala are both in the same class (Group 9) and Inspire Super and †Switch each have a (Group 9) component; \*NY†Miravis Prime and †Switch each have a Group 12 component; \*NY†Intuity and Flint Extra are both in the same class (Group 11) and Pristine has a (Group 11) component; Endura is in (Group 7) and Pristine \*NY†Luna Experience, \*NY†Luna Sensation, and \*NY†Miravis Prime each have a (Group 7) component.

*Table 4. Botrytis Bunch Rot Materials and Rate per Acre in the NY & PA 2023 Grape Guidelines 5.2.11 Midsummer & Pre-harvest Sprays*

	Rovral 4F	1.5-2.0 pt	7 day PHI. Performance of Rovral and generic iprodione products usually is improved by adding oil or a surfactant to the spray mix.
OR	Vangard WG	10 oz	7 day PHI
OR	Inspire Super	16-20 fl oz	A rate of 20 fl oz/A of Inspire Super provides the same amount of cyprodinil, the active ingredient in Vangard, as 7 oz/A of that product. From veraison onwards, it is likely necessary to tank mix with an additional 3 oz/A of Vangard or another Botrytis-active fungicide to obtain best control, especially under high disease pressure.
OR	Elevate 50WDG	1 lb	0 day PHI
OR	Endura 70WG	8 oz	
OR	Scala 5SC	18 fl oz	7 day PHI
OR	Flint Extra	3.5-3.8 fl oz	14 day PHI. Labeled for control of Botrytis at higher rates than used for powdery mildew control. High risk of resistance development and resulting poor performance in vineyards where Group 11 (strobilurin) fungicides have been applied for a significant length of time. Research in VA has shown Botrytis resistance among the strobilurin (Group 11) materials to be common there; thus, it is also likely to occur in many NY and PA vineyards where these products have been used more than occasionally for a number of years, although this has not been investigated specifically. Nevertheless, based on our experiences with downy and powdery mildews, it is risky to rely on Flint Extra for control of Botrytis in vineyards with a significant history of strobilurin use, unless it is tank mixed with another product with good efficacy against this disease.
OR	Pristine 38WG	18.5-23 oz	Pristine is only fair against Botrytis at the rate of 8-10.5 oz/A commonly used for other diseases, but it traditionally has been good at 12.5 oz/A and very good to excellent at 18.5-23 oz/A.
OR	*NY†Luna Experience	8.0-8.6 fl oz	Although a lower rate of *NY†Luna Experience is registered for control of powdery mildew, the 8.0-8.6 fl oz/A rate will provide more reliable Botrytis control late in the season.
OR	*NY†Luna Sensation	7 fl oz	*NY†Luna Sensation is another newer product with the same fluopyram active ingredient as *NY†Luna Experience, but combined with trifloxystrobin, a traditional strobilurin (Group 11) fungicide. Unlike *NY†Luna Experience, both active ingredients have good to excellent activity against <i>Botrytis</i> . The 7.0 fl oz label rate for <i>Botrytis</i> delivers a fluopyram dose <i>about</i> equal to 8.6 fl oz of *NY†Luna Experience and about the same amount of trifloxystrobin as 3.5 fl oz of Flint Extra for good to excellent <i>Botrytis</i> control. <b>CAUTION: Do not apply this product to Concord grapes or injury may occur.</b>
OR	*NY†Miravis Prime	10.3-13.4 fl oz	*NY†Miravis Prime is a combination of a new succinate dehydrogenase inhibitor fungicide (SDHI, Group 7) and fludioxonil (Group 12), introduced about 25 years ago for Botrytis control. Fludioxonil is also found in another combination product called †Switch for Botrytis control. Most, if not all of the activity against Botrytis comes from fludioxonil. The 10.3-13.4 fl oz rate of *NY†Miravis Prime delivers the same amount of fludioxonil as the 11-14 oz label rate range of †Switch.
OR	†Switch 62.5WG	11-14 oz	...



OR	*NY †Intuity 4SC	6 fl oz	*NY †Intuity is a strobilurin fungicide for control of Botrytis and suppression of powdery mildew. In limited NY and PA trials, *NY †Intuity provided good to fair control of Botrytis equivalent to current standards like Elevate, Vanguard, Scala, and †Switch. <b>Do not use on <i>V. labrusca</i>, <i>V. labrusca</i> hybrids or other non-vinifera hybrids. Avoid mixing with organosilicone surfactants.</b>
OR	Botector	6-8 oz	Botector is a preparation of a living yeast-like organism that competes with the Botrytis fungus for colonization sites on the grape flowers and berries. It provides protective activity only and can be killed by some broad-spectrum fungicides used for managing other diseases.
OR	Fracture	24.4-36.6 fl oz	Fracture/ProBlad Verde is a fragment of a naturally occurring plant protein that has activity against some fungi. Both products have provided fair to
OR	ProBlad Verde	18.1-45.7 fl oz	good control in a limited number of NY trials with moderate disease pressure.
OR	Howler	2.5-7.5 lbs	

## General Guidelines

In general, it is best to avoid applying fungicides containing sulfur, copper, and Captan within 30–45 days of your anticipated harvest date. Even though we tend to have considerable rainfall during this time and most residual should be gone by harvest, there is still the possibility of off-flavors to wine, and stuck or delayed fermentation.

Many of you have called in with larger berry size and crop estimations that have caused you to pause. Some have decided to fruit-thin and others have not. It is very important that your vines stay healthy to be able to sustain crops in the future and allowing for clean leaves that can provide the necessary photosynthesis to feed the vine is essential. The above information was provided to you by the Crop and Pest Management Guidelines - A Cornell Cooperative Extension Publication, that is based off of research in our region. There is so much more included in this resource that will help you make informed decisions and provide a framework for healthy vines in the future. Thank you to all of the authors and contributors listed below:

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## Business – 2023 Finger Lakes Price Listing

My colleague, Hans Walter-Peterson, puts together the FLX Grape Price Listing every year and shares it with the rest of us. Below is the PDF of the Listing and Hans' notes. I am grateful for his efforts to bring this information to all of you and appreciate the collaboration.

From Hans:

Hello everyone - I have attached the 2023 Grape Price listing for the Finger Lakes as it stands today, August 29. We have received prices from 11 buyers as of today, and we are grateful to them for supplying us with their price lists this year. If we get any more listings, we will revise the list and post a new version.

A few initial takeaway points from this year's list:

- Most of the average prices are up more than 0.5% this year, and in many cases, a lot more. Vinifera cultivars are up 9.3% on average, labrusca-type cultivars ('natives') are up 14.1%, and hybrids as a group are up 4.5% overall. These are the largest increases that I have seen since taking over this project back in 2007. I suspect this is the result of a combination of both increased demand and the reduced crop this year due to the May freeze. For growers who have a decent crop this year, this is good news.
- The top 10 varieties with regard to change in price this year are:
  - Concord: 26.9%
  - Diamond: 22.8%
  - Aromella: 20.8%
  - Sauv blanc: 19.6%
  - Syrah: 18.3%
  - Cayuga White: 15.9%
  - Lemberger: 14.7%
  - Saperavi: 13.2%
  - Niagara: 12.9%
  - Aurore: 12.8%

Keep in mind that these might change if we get more prices added to the list, but that's the order as of today, August 29.

- The only varieties/categories that were down more than 0.5% this year also have a different number of reported prices than last year. Considering only the buyers who purchased them in both 2022 and 2023, those prices would show no change.
- Concord prices reported by most buyers are up substantially from last year. Demand for the variety is high right now, and when combined with the freeze that hit some large Concord vineyards in the Finger Lakes this year, it makes sense.

## 2023 Finger Lakes Grape Price Survey (as of August 29, 2023)

Name	Anthony Road	Bully Hill Vineyards	E & J Gallo	Fox Run Vineyards	Fulkerson Winery	Glenora Wine Cellars	Heron Hill Winery	Inspire Moore	Lakewood Vineyards	Red Newt	Swedish Hill	Average	Low	High	# of Responses	2022 Avg Price	# of 2022 Responses	% change
Aromella					900						750	825	750	900	2	683	2	20.8%
Aurore		440	440		420							433	420	440	3	384	3	12.8%
Baco Noir		700	600		600	725			675			660	600	725	5	635	6	3.9%
Cabernet franc	1650	1600		2100	2000	1800	1700	2400	1700	1800	2000	1875	1600	2400	10	1773	10	5.8%
Cabernet Sauvignon		1700			2000	2000	1850	2800		1800	2150	2043	1700	2800	7	1865	7	9.5%
Castel		700	595									648	595	700	2	630	2	2.8%
Catawba		400	365		400	400			450		385	400	365	450	6	364	8	9.9%
Cayuga White		700		700	600	675	650	900	650	700	675	694	600	900	9	599	10	15.9%
Chambourcin		700									1000	850	700	1000	2	800	3	6.3%
Chancellor		700			600							650	600	700	2	650	2	0.0%
Chardonel		750										750	750	750	1	750	1	0.0%
Chardonnay	1600	1800		1800	1600	1700	1575	2100	1550		1750	1719	1550	2100	9	1539	9	11.7%
Chelois		900										900	900	900	1	900	1	0.0%
Colobel		700	570									635	570	700	2	630	2	0.8%
Concord		600	430		425				450		385	458	385	600	5	361	7	26.9%
Corot noir					600						700	650	600	700	2	608	2	6.9%
De Chaunac		400			600				525			508	400	600	3	485	3	4.8%
Delaware		400			450				525			458	400	525	3	442	3	3.7%
Diamond					550						560	555	550	560	2	452	3	22.8%
Dornfelder					1600							1600	1600	1600	1	1600	1	0.0%
Elvira			365									365	365	365	1	328	1	11.3%
Frontenac		500							975			738	500	975	2	738	2	-0.1%
Frontenac Gris											700	700	700	700	1	665	1	5.3%
Geneva Red (GR7)		700	575			575						617	575	700	3	612	3	0.8%
Gewürztraminer	1760	1800			2200	1700	1700	2100	1725	1800	1850	1848	1700	2200	9	1758	8	5.1%
Grüner Veltliner	1760				1900			2100				1920	1760	2100	3	1733	3	10.8%
Himrod					700							700	700	700	1	700	1	0.0%
Hybrid - Red		300	500	300		650				400	550	450	300	650	6	451	7	-0.2%
Hybrid - White		300	360			450				400	550	412	300	550	5	412	5	0.0%
Isabella						550					550	550	550	550	2	520	2	5.8%
Ives			575						550			563	550	575	2	530	2	6.1%
LaCrescent											800	800	800	800	1	800	1	0.0%
Lakemont					500							500	500	500	1	500	1	0.0%
Lemberger	1650			2100	1900	1750	2300	2400	1750	1800	2000	1961	1650	2400	9	1710	9	14.7%



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# PA Update

Bryan Hed, Research Technologist, Lake Erie Grape Research and Extension Center

Well, the ripening period is upon us already, and I thought I'd just contribute a few things to consider as we enter the final stretch for the season.

**Weather:** It's definitely been a cooler season than what we're used to experiencing: we're about 200 growing degree days behind our long term average (from April 1) at this point. However, precipitation for us is right at average since April 1 (Penn State lab in North East PA).

**Diseases:** Although we're done dealing with issues like Black rot, Phomopsis, and powdery and downy mildew on shoots and fruit, mildews continue to be an issue on leaves, especially for wine growers. Every day is a powdery mildew infection period (no rain required), and frequent rains have kept downy mildew alive and well.

Most Concord canopies I've seen look good at this point. The continuation of summer sprays for leaf powdery mildew on juice grapes should have been based on crop size (the more above average the crop, the more necessary it will be to keep canopies clean, longer) and *anticipated* weather conditions. That said, the window of opportunity to spray your way to 16 brix by harvest, is now past. Fungicide sprays are insurance policies, but they don't guarantee you'll harvest that monster crop; much depends on the weather during ripening. If you've done a good job up to now, the rest is in the hands of 'mother nature' over the next critical 6-8 weeks.

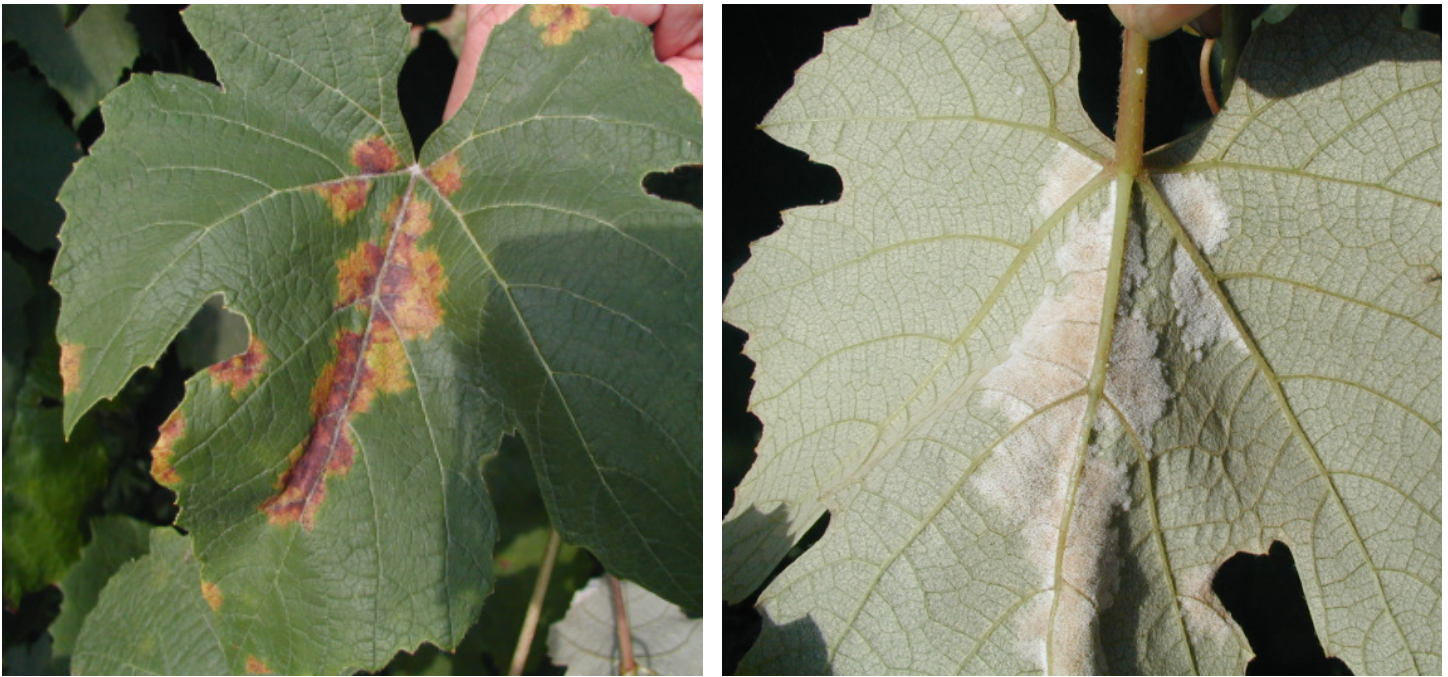
On the other hand, wine grapes, especially varieties of *Vitis vinifera* will benefit from continued protection against these two diseases. Scout your vineyards to maintain good control of downy mildew. With all the rain we've been getting, it continues to be a threat for varieties with susceptible leaves. Look for it primarily on young leaves of still actively growing shoots, especially leaves that emerged since the last fungicide spray. Older leaves are more resistant and may still have protective fungicide residues on them from previous sprays. However, under these wet conditions, it's very important to keep this disease under tight control: if it blows out of control (and it easily could if we continue to receive regular wetting periods in September and control measures are not taken seriously), it can defoliate a vineyard and essentially end the season for that block. A defoliated vine will go into winter with un-ripened canes that will not survive, and reduced cold hardiness that could make it more prone to trunk damage and crown gall the following spring. If you get into a pinch and downy mildew blows up on your leaves, 2 consecutive copper sprays (on varieties that can tolerate copper) OR a copper spray followed by a phosphorous acid or captan spray (if you're close to harvest) can go a long way to bringing things back under control. For wine varieties that don't tolerate copper, captan may be an option for treating an epidemic of downy mildew. It won't eradicate what's already there, but it will help to control future infections and there is relatively little concern about resistance development with captan. Hydrogen peroxide products will likely not control downy mildew under these wet conditions. These products may sterilize the leaf and burn the existing sporulation, but they don't provide any forward protection and they don't eradicate the lesions. Infected leaves will simply re-sporulate during the next wet/high humidity period, to continue spreading the disease.

Continue protecting leaves from powdery mildew for as long as you feel necessary to ripen the crops you have developing, especially for high-end wine grapes (*Vitis vinifera*) that will hang well into October.

In the rest of this update, I'm borrowing information from previous blogs and Crop Updates, so as not to try to reinvent the wheel.

### **Downy mildew**

The pathogen that causes downy mildew is dependent on wet conditions; without a wet plant surface, no infection takes place. At this time, scouting for the distinctive white 'downy' sporulation on the undersides of leaves and on cluster stems is very important, and yields valuable information with regard to future need to spray (Figure 1). Growers of susceptible varieties do well to keep closely monitoring their vineyards for active sporulation to determine if and when infection periods have occurred.



*Figure 1. Late summer leaf symptoms of downy mildew (Niagara) showing 'blocky' lesion development and discoloration on the top side (left) and 'downy' white sporulation on the underside of a grape leaf (right). The late summer leaf blotches can differ dramatically from the yellow 'oil spot' symptoms that are observed in spring.*

Leaves will remain susceptible all season, though they do become less susceptible as they age. For this reason, the limiting or elimination of new shoot growth by veraison, through good nutrient and/or canopy management, can help to reduce the supply of susceptible tissue in the vineyard during ripening, and make post veraison control of this disease more manageable. I have gone into vineyards in late August-early September and observed that downy mildew was largely present on new shoot growth, but not on mature leaves at older nodes. There were two reasons for this: i) new shoot growth is more susceptible than older, mature growth, and ii) new shoot growth, unless just sprayed, is unprotected or less protected by previous fungicide applications. Symptoms on mature leaves in late summer may appear different from those on young leaves in early spring (Figure 1).

The sight of active, white sporulation on green vine tissues means the downy mildew pathogen is capable of spreading quickly under wet conditions, and that sprays for downy mildew should continue, especially for susceptible varieties. Even humid nights that result in heavy dews by morning, can continue to fuel downy mildew development, generating fresh sporulation that can spread the disease rapidly when plant surfaces become wet. If you let downy mildew get out of control, it can strip vines

of their leaves and in the worst cases, effectively end fruit ripening for the year, and shoot ripening for next year's crop. Your grapevines go into winter dormancy in poor condition, and are more vulnerable to damage by severe cold, leading to crown gall and expensive trunk renewal the following season, with little or no crop to pay for it; all that stuff is connected, so you want to keep downy mildew under *very tight control, especially on Vitis vinifera*.

**Chemical control:** Your list of chemical control options will start to dwindle as we get within 66 (Mancozeb products, Ridomil MZ), 42 (Ridomil copper), 30 (Ranman, Reason), 21 (Ziram), and finally 14 (Revus, Revus Top, Zampro) days of harvest. In the end you'll be left with Captan (which will also control ripe and bitter rot), copper, and phosphorous acid products (0-day pre-harvest interval), which have their own shortcomings, discussed below.

Products like Ridomil (the mefenoxam component), Ranman, Reason, Revus/Revus Top, Phos acid products, and Zampro, are more rainfast than the surface protectants (like copper, mancozeb, ziram, and captan) but contain chemistries that are prone to the development of resistance. Therefore, they **should not be used** to put down an epidemic, which will only speed up the resistance development process. Even phosphorous acid products can be lost to resistance through repeated applications on a diseased vineyard, so keep downy mildew well under control. *The resistance prone materials (Ridomil, Ranman, Reason, Revus/Revus Top, Zampro, Phos Acid products) are best used to maintain a clean vineyard, NOT to put down an epidemic.* Conversely, the surface protectants (the old standards) would be least risky in terms of the development of resistance and can be an effective means of controlling downy mildew late into the growing season. Just be aware of seasonal limits, so plan ahead as best you can.

Here are some precautions to consider with use of the 'old standard' protectants:

- Some insecticides and oils should not be applied with Captan.
- There is the concern for plant injury by copper applications, which will be exacerbated by application under slow drying conditions and application to wet canopies (for example, don't make applications to dew covered canopies in the early morning). The addition of lime to the application raises the pH of the spray solution and reduces the chances for plant injury.
- Consider that copper is poisonous to yeasts and that excessive copper residues at harvest can interfere with fermentation, and wine stability and quality. Unfortunately it's impossible to predict how high residues will be on fruit at harvest; that's going to depend on the copper formulation (some of the newer coppers utilize lower copper concentrations), rate of material used, number and timing of applications made, spray coverage, and amount of rainfall from application to harvest. I am not aware of any information that establishes a nice, clean cut-off date or pre-harvest interval for avoiding excessive copper residues at harvest, but I have heard that cutting off copper use about a month before harvest may be sufficient in most cases. In the case of premium wine grapes on a vertical shoot position trellis, you could consider directing your sprayer to focus on the canopy above the fruit zone, minimizing coverage on your fruit, which should now be immune to downy mildew.

When you're less than a month or so to harvest, growers need to balance the importance of keeping copper residues low by harvest, with the severity of your downy mildew problem. Losing your canopy means losing your crop, your canes (they won't harden off before winter), and possibly your crop for next year, not to mention that defoliated vines will go into winter weak and be more apt to suffer trunk damage followed by crown gall and the need for trunk renewal that could set you back for multiple years. Consider that a defoliated vineyard precipitates a very ugly chain of events with potential effects for years to come.



Do not use copper and lime with Rally, Sevin, or Imidan.

- There is also evidence that late Captan sprays can delay fermentation and have negative effects on wine quality but the consequences seem less severe and irreversible than those associated with copper use. For more on this, consider this online article by Dr. Annemiek Schilder, former fruit pathologist at Michigan State University: [https://www.canr.msu.edu/news/late\\_season\\_fungicide\\_sprays\\_in\\_grapes\\_and\\_potential\\_effects\\_on\\_fermentatio](https://www.canr.msu.edu/news/late_season_fungicide_sprays_in_grapes_and_potential_effects_on_fermentatio)

If you are protecting a non-bearing, young vineyard from downy mildew (you're not selling/harvesting a crop), you can continue to use mancozeb products to control downy mildew past the 66-day pre-harvest interval. You can also consider using mancozeb after harvest to keep canopies clean of downy mildew and 'firing on all cylinders' until that first frost. The longer your vines can continue to produce and store carbohydrates after harvest, the better prepared they'll be to withstand winter cold without damage (and the crown gall that follows).

### **Powdery mildew**

In contrast to downy mildew, the fungus that causes powdery mildew is dependent on rainfall only for the initial release of spores in early spring. There is no requirement for plant wetness beyond that, which is why this disease is a problem even in dry climates like California. Once primary spores (ascospores) land on a susceptible grape surface, they germinate and form colonies that grow across the plant surface (Figure 2), sucking resources from the plant and producing secondary spores (called conidia) that are now spread by wind/air currents. The disease spreads rapidly under ideal conditions of high humidity, cloudy skies, and warm (but not hot) conditions. During the mid-late summer period, *every day can be a powdery mildew infection period*.



Figure 2. Greyish-white colonies of powdery mildew on the upper surface of grape leaves.

At four weeks post capfall the focus for powdery mildew control shifts to keeping leaves clean, to ensure optimal ripening of fruit and shoots/canes, to ensure optimal cold hardiness, and to more effectively and more easily manage fungicide resistance. There is also another important reason (especially for growers of *Vitis vinifera* varieties), demonstrated by some excellent research conducted by Wayne Wilcox and others at Cornell University, who showed that controlling powdery mildew up to about Labor Day can reduce overwintering inoculum and disease pressure the following spring. Why Labor Day? When powdery mildew infected leaves die by that first hard frost in fall, the mildew on those leaves also dies...UNLESS it has had time to form fully mature, winter resistant

structures called chasmothecia. These are the tiny, dark, period sized (.) structures you observe in heavily infected tissues in late summer. If the chasmothecia do not have time to fully mature before the leaf dies (as we would expect from infections that occur *after* Labor Day), they will not be tough enough to survive the dormant period (winter) and will not contribute to the bank of primary inoculum that infection periods draw upon the following spring. Knowing this, a grower can continue their spray program up to Labor Day, to control the ‘size’ of the powdery mildew problems he/she will potentially face next spring. Once again, this is most important if you are growing *Vitis vinifera* and much less important for growers of native varieties like Concord and Niagara.

**Chemical control:** Fungicides like Quintec, Vivando/Prolivo, Torino, Endura, Luna Experience/Sensation, Miravis Prime, Cevya and other sterol biosynthesis inhibitors (tebuconazole, tetraconazole, difenoconazole products) can be used for additional post bloom applications to control powdery in mid-summer in vineyards, but only where tight control of the disease has been maintained. Where disease control has been less than ideal, and especially for late summer applications (August and September), options for powdery mildew control should emphasize materials that are less risky in terms of the development of resistance, like formulations of sulfur on varieties that are not sensitive to it (which could also be tank mixed with the aforementioned synthetics to manage resistance). The more expensive, micronized formulations of sulfur will generally perform better (more effective per pound, more rainfast) than the cheaper, wettable powder formulations, especially for *V. vinifera* (you get what you pay for). Also, according to the **New York and Pennsylvania Pest Management Guidelines for Grapes**, “sulfur activity is strongly influenced by formulation, rate, frequency of application, and weather”; that is, higher rates and shorter spray intervals will provide better control than lower rates and longer spray intervals.

Also consider that sulfur residues on fruit at harvest have been correlated with increased hydrogen sulfide and sulfurous off-aroma formation during fermentation, and so growers will need to phase out sulfur applications at some point well before harvest. This is mostly a problem for wines that are fermented on the skins (reds) where most of residues at harvest are found. Work published by Dr. Misha Kwasniewski showed that “sulfur residues are likely of low concern in white wine making, especially when juice is clarified before fermentation. However, residue levels in red fermentations (fermented on skins) can exceed levels associated with increased hydrogen sulfide production when some sulfur sprays are applied within *8 weeks of harvest*” (Kwasniewski et al. 2014). However, in that same study, ceasing sprays no later than 5 weeks before harvest, resulted in sulfur residues that were below a concentration consistently shown, in previous literature, to increase hydrogen sulfide production. Therefore, for reds fermented on the skins, one may need to end sulfur applications a month or two before anticipated harvest date, to avoid increased H<sub>2</sub>S production during fermentation. Another strategy can include early-mid summer sulfur applications with micronized formulations (that are longer lasting/more rainfast) and making the later sulfur applications with a wettable powder formulation that is more quickly reduced by weathering. Other late season options include coppers, potassium salt sprays like Nutrol, formulations of potassium bicarbonate, and horticultural oils. Keep in mind that the later oil applications are made, the greater the chance they will negatively impact ripening. Therefore, the current recommendation is to discontinue oil sprays as you near veraison. As for coppers, the same concerns that were mentioned in the section on downy mildew, apply here as well. These materials can be a good way to maintain decent control of powdery mildew on leaves, while minimizing the chances for the development of resistance to the riskier materials used earlier in summer.

**Bunch and sour rots:** And finally, because the ripening period is upon us, I’m also including some information from a previous report regarding Botrytis bunch rot and sour rot pesticide applications to susceptible wine varieties. Botrytis specific fungicides have active ingredients that are prone to the

development of resistance by the Botrytis fungus. Below is a list of these materials according to the FRAC (Fungicide Resistance Action Committee) group that each product belongs to. FRAC numbers group together active ingredients with the same mode of action.

For example, Vanguard and Scala are in the same FRAC group, 9. This means that if a population of Botrytis in a vineyard has developed resistance to the active ingredient in Vanguard, then it will also be resistant to the active ingredient in Scala, even though the active ingredients may be different chemical compounds (cyprodinil in Vanguard and pyrimethanil in Scala). Nevertheless, the mode of action of these two chemistries (the way in which the fungicide disrupts a specific metabolic pathway in the fungus, killing it) is the same, or similar enough that pathogen resistance to one chemistry will confer resistance to the other.

1. Rovral/Meteor: FRAC group 2, 7 day pre-harvest interval
2. Endura: FRAC group 7, 14 day pre-harvest interval
3. Luna Experience: FRAC group 7 (and 3, which is not for Botrytis), 14 day pre-harvest interval
4. Pristine: FRAC group 7 and 11, 14 day pre-harvest interval
5. Vanguard, Scala: FRAC group 9, 7 day pre-harvest interval
6. Inspire Super: FRAC group 9 (and 3, which is not for Botrytis), 14 day pre-harvest interval
7. Switch: FRAC group 9 and 12, 7 day pre-harvest interval
8. Flint and Intuity: FRAC group 11, 14 and 10 day pre-harvest interval, respectively.
9. Elevate: FRAC group 17, 0 day pre-harvest interval

Botrytis specific fungicides will provide little or no control of sour rot. However, work by Drs. Megan Hall and Wayne Wilcox at Cornell University has shown a close connection between fruit flies and sour rot development and spread. Weekly sprays of insecticides (to control the fruit flies) initiated just before sour rot symptoms are observed (preventive sprays just before about 15 brix) can provide significant control of sour rot. The addition of antimicrobials (Oxidate, Fracture, for example) could improve sour rot reductions even further, though most of the sour rot control will come from the insecticide. Be careful to rotate insecticides as fruit flies can develop resistance to insecticides very quickly. This could be an important part of your rot control program if you're growing varieties like Pinot noir/gris, Vignoles, Chardonnay, or Riesling, especially if the last leg of the ripening period is a wet one.



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# PA Update

Megan Luke, Penn State Extension Viticulture and Tree Fruit Educator

## Pesticide Use Best Practices

With rising costs of pesticide materials, and downward pressure by consumers, processors, and environmental conservation groups, there is more incentive than ever to be judicious when it comes to pesticide applications on our farms. Concerns surrounding the rise of resistance to common chemistries in pest populations are often voiced by farmers, while off-site drift affects sensitive crops and non-target species. Labor shortages, fuel costs, and supply chain issues further exacerbate the issues surrounding timely pest control and good spray practices, so it is important to know that materials are ending up where we want them to for good coverage and control, and to avoid waste.

There are several low-cost practices that can be implemented that reduce drift, improve coverage, and reduce the likelihood of pests developing resistance. These include pesticide sprayer calibration, correct nozzle selection and orientation, good tank mix practices, and rotating your chemicals based on the mode of action.

### Sprayer Calibration

If you have equipment which does not utilize computer-controlled output, it is necessary to regularly calibrate your equipment to ensure that pesticides are being applied at label-described rates. The NY and PA Pest Management Guidelines for Grapes outlines this process in detail. The Lake Erie Regional Grape Program will be offering calibration services on-site to a limited number of growers each year beginning Spring of 2024, please reach out to Megan Luke if you have any questions or would like to be on the contact list for this program.



*Calibration equipment for commercial agricultural sprayers: photo by Megan Luke*

## Nozzle Selection and Orientation

Your choice of nozzles determines where your spray material ends up. Droplet size affects overall coverage directly on the plant and influences the risk of drift. Smaller droplets are more likely to blow away, or evaporate before contacting the target crop, while larger droplets may bounce off, so it is important to match the size to the goal. Reducing PSI will increase droplet size. Be sure that the angle of the nozzles and the output rate match the location of the canopy. Check nozzles frequently for clogs, damage, and general performance. **Remember that just because the material is being applied at the expected rate does not mean that it is all ending up where you need it the most!** Replace nozzles at least once per season and keep notes of the brand, location, output, and droplet size of nozzles in use.



*Water soluble paper used to demonstrate spray coverage: photo by Megan Luke*

## Tank Mix Practices

Be sure that you are following all label recommendations for tank mixing pesticides. Check to see if any adjuvants or activators are required or contraindicated, as some combinations are necessary for pesticide effectiveness, while others can render the pesticide ineffective or cause damage to plant tissue when applied.

**Be mindful of the formulations you choose, just because an active ingredient is safe to mix with other pesticides, does not mean that all formulations containing that active ingredient are safe to mix with other pesticides!**

When in doubt, or when using a new material, always perform a jar test to check for compatibility. To do this, combine pesticides and adjuvants that you plan on mixing in a jar at the same rate and in the same order as if you were mixing them for application. Agitate well by rolling or shaking the jar for 5 minutes. Heat, clumping, precipitation of crystalline matter, or other reactions can indicate that materials are NOT compatible and should NOT be combined in a tank mix.



*Jar test for pesticide tank mixes*

### **Rotating Pesticides by Mode of Action**

It is important to be rotating your chemicals to avoid resistance in pest populations. While most of you are familiar with the terms resistance and rotation, it's good to understand what these terms mean in practice.

**Resistance-** The ability of a pest or pathogen to survive application of a pesticide. Resistance increases in a pest population when the same chemistry is used repeatedly. Resistance renders specific products ineffective against the pest.

**Rotation-** The practice of frequently changing the type of chemical used for control of a specific pest or pathogen to reduce resistance.

**Mode of action (MOA)-** This is the method that a specific product uses to kill a pest. Every pesticide on the market has a code for the mode of action. When you rotate your products, you should choose products with different modes of action. The standard recommendation is to rotate between three products with different modes of action. When a pest population becomes resistant to a specific product, it is likely to be resistant to **all** products with that mode of action.

Modes of action for fungicides can be found here: [FRAC](#)

Modes of action for insecticides can be found here: [IRAC](#)

Modes of action for herbicides can be found here: [HRAC](#)

### **Herbicide Use Updates**

The EPA has been under fire in recent years with multiple lawsuits claiming that the agency has been negligent in its assessment of pesticides and their risks to species and their habitats as defined and protected under the Endangered Species Act.

Last week, the EPA hosted a webinar to address these concerns and to outline new measures for mitigating risks of damage to protected species and habitats by creating new label requirements for herbicide use. As we all know, the label is the law when it comes to pesticide applications, so these measures will affect agriculture and individual farming operations as soon as next year.

**Recording of webinar:** [https://youtu.be/vmm\\_oTmxdLU](https://youtu.be/vmm_oTmxdLU)

**Link to public comments:** [EPA Herbicide Practices Comment Link](#)



## Key takeaways:

- The EPA is working with the U.S. Fish and Wildlife service to create maps of every endangered and protected species in the USA and their critical habitat.
- If your farming operation is within 1000 feet of critical habitat, you will be required to demonstrate compliance with “mitigation measures” as defined by the EPA
- Mitigation measures are defined on a point system, with individual measures being worth a given number of points
  - Measures will include practices such as cover cropping, conservation tillage, drift reduction practices, contour farming, etc.
  - Points vary for each qualifying practice
- Every new herbicide and every herbicide due for re-registration will have a mitigation point requirement added to the label
  - Herbicides with higher risk to non-target species will require a higher number of points
  - Farmers **MUST** be able to demonstrate commensurate mitigation practices to the number of points on the label **IN ORDER TO USE THE HERBICIDE**
- All current information on point values and mitigation practices will be hosted **EXCLUSIVELY** on a website

The only exemptions provided at this time are for farmers who have land that is NOT within 1000 feet of any protected habitat, OR for farmers currently working with an “expert” to utilize conservation practices on their land with actionable steps in place. The definition of what type of qualifications are required for an “expert” exemption are not yet defined.

Methods of enforcing these measures were not discussed in the webinar. Currently, these measures are open to public comment until September 22<sup>nd</sup>. We are strongly encouraging growers to voice their thoughts on these measures. It seemed that at this point the suggested “point system” was going into place regardless, but the speakers for the EPA requested advisement on possible exemptions, methods for refining the maps of critical habitat, and mitigation practices that should be included in the menu of options.

## Paraquat/Gramoxone Handler Certification

Regarding weed management, this is a timely reminder that if you use or handle paraquat under any name or formulation, you are required to undergo **mandatory** training every three years under EPA regulations.

**As per the EPA:** All certified applicators using paraquat are now required to complete a paraquat-specific training program approved by the EPA. This training must be successfully completed before using any paraquat product. In addition, all certified applicators who handle paraquat are required to take the course every three years.

The free training is available online here: [Paraquat online training](#)

When you go to the website, click on the online training button pictured below:

## PARAQUAT TRAINING UPDATE

NPSEC has updated both the English & Spanish label mandated Paraquat training to include the new labeling for closed-system requirements.

## Online Course

The online course reinforces how to properly and safely **mix, load, apply, and handle** Paraquat. Users wishing to take the online course should click the ONLINE TRAINING button below to be directed to the website [USParaquatTraining.com](http://USParaquatTraining.com) which hosts the online course. *This course is available in both English and Español.*

[Online Training \(English\)](#)[Online Training \(Español\)](#)

- Dicam
- Glyph
- Neoni
- Sulfur



Once you click on the link, you will be prompted to create an account and register for the course. Once you do so, you will have access to the recorded course and quiz. The training will take approximately one hour. You must score 100% on the final quiz. Once completed, the certificate is valid for 3 years from date of completion.

**If you prefer in-person training, I have registered as an instructor for this course and will be offering it in New York and Pennsylvania in the coming months. Call or email for more information.**

**Contact information:**

Mobile (*call or text*): (716) 397-9674 (*preferred*)

Office: (814) 825-0900

Email: [MFL5873@psu.edu](mailto:MFL5873@psu.edu)



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# Updates and Information

Kimberly Knappenberger, Viticulture Assistant, LERGP

## NEWA updates in the Region

The coverage of weather stations in our region has improved over the past few months.

Thanks to a grant from the New York Wine and Grape Foundation we were able to purchase 7 new KestrelMet 6000 stations. Three of these have been installed in our Lake Erie Region and four are going to the Finger Lakes Region to help update their aging stations.

In our region we were able to add a station in Newfane, which came at the perfect time due to the removal of the station in Corwin. We also added the East Ripley station where there was a bit of a gap in coverage near Forsythe Road. The third station is a replacement for Lake City which was placed in a protected area due to limitations of the Wi-Fi – the new station there is cellular and able to be placed in a more open space to get better data. This new station is called Lake City (Mason Farms) on NEWA.



In the Finger Lakes Region the Williamson (Young Sommer) station is new, and the Ovid (Hosmer) station has been replaced. Unfortunately they are both experiencing issues with the wind speed sensor due to a manufacturing problem. New aerovanes will be arriving soon and with the help of a technician with NYS IPM will be replaced in the near future. There are 2 more stations that need to be set up, so that update will come later.

These stations are improving as technology improves, but they aren't perfect. If you notice anything that doesn't seem right please contact Kim at [ksk76@cornell.edu](mailto:ksk76@cornell.edu).



## Vineyard Improvement Program

This program is a cooperative project led by the Lake Erie Regional Grape Program through the New York State Department of Ag and Markets with funding through the Southern Tier Agricultural Enhancement Program and is available for Concord vineyards at least 1 acre in size in New York State. Eligible counties include: Chautauqua, Erie (NY), Niagara, Cattaraugus, Allegany, Steuben, Schuyler, Chemung, Tompkins, Tioga, Broome, Chenango, and Delaware.

This was a proposal from the Concord Grape Summit held in April 2018 aimed at assisting Concord grape growers in their efforts to respond to the challenges they face through processor closings, contract reductions and overall reduction in demand for grapes. Although these conditions have changed some over the past 5 years, these challenges have led to a significant number of acres that have essentially been abandoned due to the cost prohibitive nature of removal. This program offers partial reimbursement for removal of that acreage as well as for replanting\* to improve the economic viability of their production operations. In addition the program is useful for removal of vineyards that are poor for whatever reason. The land does need to remain agricultural and is expected to be planted back to a crop that could be grapes, orchard, berries, Christmas trees, or even to cover crop, field crop or hay. This is not an exhaustive list, so if you have an idea, please contact us!

VIP is a reimbursement program that offers 50% of removal costs up to \$1,500 per acre and 25% of replant costs up to \$1,500 per acre, with a maximum reimbursement of \$3,000 per acre and \$50,000 per applicant.

To date we have had 54 applicants who collectively represent 718 acres. 27 of the applicants amounting to 277 acres have completed their projects, of which 100 acres have been replanted to vineyards, 177 acres are now cover crops or field crops. To date the program has paid out almost \$433,000 for the finished projects.

With the extension that has been granted for the program we have the rest of this season and next year for projects to be completed. If you are considering removing a Concord vineyard you can visit <https://lergp.com/about-vip> and if you are ready to apply you can go to <https://lergp.com/about-vip>.

If you have any questions please feel free to contact Kim at [ksk76@cornell.edu](mailto:ksk76@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.

THE LAKE ERIE REGIONAL GRAPE PROGRAM at CLEREL

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