



CROP UPDATE

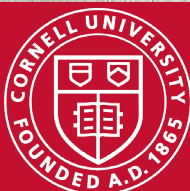
September 21, 2023

Concord Bunch-
Kim Knappenberger
9/18/2023

Cornell Cooperative Extension
Lake Erie Regional Grape Program



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



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Viticulture

Jennifer Russo, Viticulture Extension Specialist, LERGP

In the Vineyard

Thank you to Dr. Bates and the research staff for their weekly monitoring of the Concord Berry Curve here at the Cornell Lake Erie Research and Extension Laboratory in Portland, NY. Figure 1 below is the Concord Berry Curve where the red line indicates 2023 Concord growth, the dark blue line is 2017 growth (which was above the historical average), the black line is the 24-Year historical average, and the green line is from 2016, which was below the historical average. 2023 began to level off with tracking 2017 at this point in the growing season last week, but the numbers indicate that this week they surpassed 2017 again, and still approximately half a gram larger than the 24-Year Mean. The Concord Brix accumulation graph black line illustrates the 24-year mean of Brix accumulation and the shorter red line is 2023. This 2023 Brix measured to be approximately two Brix behind in accumulation as compared to the last 24 years at this point in the growing season. These numbers are indicative of last week's weather because the berry collection took place on Monday. We are concerned because the Brix did not progress like we hoped it would last week with the warm weather. Brix is now tracking most closely with 2004 where we did not reach 16 Brix until 42 days after veraison. We are currently 30 days after veraison at the Cornell Lake Erie Research and Extension Laboratory, which officially called on August 23, 2023. We are hoping for clear skies and heat for the next 10 days.

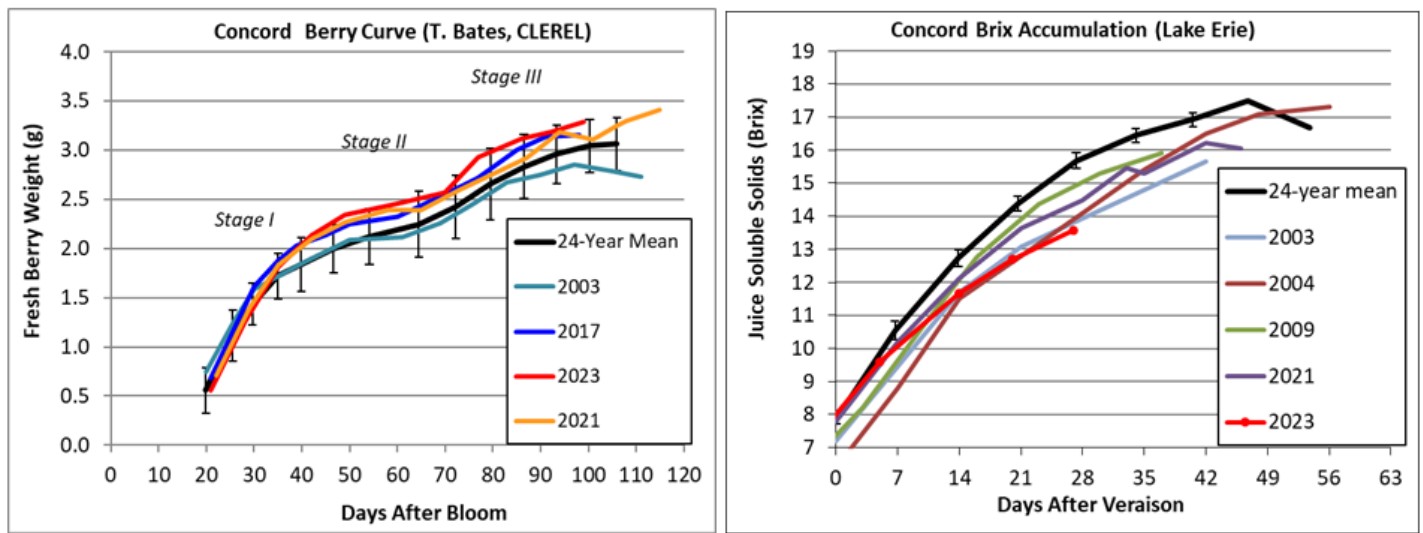


Figure 1. Dr. Terry Bates Concord Berry Curve and Brix Accumulation Graphs

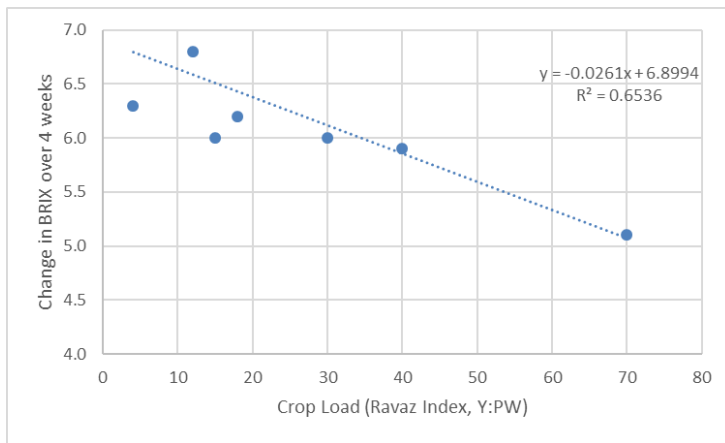


Figure 2. Concord Change in Brix over 4 weeks in relation to Crop Load (Ravaz Index, Y:PW)

Dr. Terry Bates provided his thoughts on the figures above as summarized below:

- Berry weight is tracking like 2017 and 2021 and should flatten out this week. Yes, with some dry and sunny conditions in the forecast, sugar accumulation should not be inhibited by dilution...fingers crossed. We did see a good Brix bump in 2021 under the same conditions but this was followed by a lag in the next week when we got rain and the berries swelled up again.
- At this point, the rate of sugar accumulation is following 2003. However, we had smaller berries in 2003 and they did dehydrate late in the season.
- Crop load is having an effect, but we lost it in the very important week 3. We are collecting samples by crop load in Cornell Lake Erie Research Extension Laboratory blocks and lower crop load vines do have higher sugar overall. What is interesting is “when” we saw the difference. As expected, crop load had no effect in week one. We saw good separation by crop load in week two and expected to see a bigger separation in week three; however, we saw no separation in week three...sugar accumulation was low across the board. Things separated again in week four but now the sugar accumulation rate is so low that the crop load effect, although present, is having less of an impact.
- I don’t know what the deal was with week three. It was sunny, hot, and humid that week and we expected to see a good Brix jump. Yes, there was an increase in berry weight so dilution was a contributing factor, but we should have seen more sugar accumulation that week.

How bad is bad? It is 2003 ripening with 2021 berry weight.

One processor asked, “What effect to you think/ if any is the extended bloom period is having on this lack of progression? ...based on the kaleidoscope of color that you see when lifting the canopy in many places.” This has been a common thought around the region since veraison by growers and processors. Dr. Bates responded with, “Yes, I agree that the extended bloom is going to increase variation within a cluster, within a vine, between vines, and between vineyards...and contribute to the overall lower Brix mean. Not ideal. However, that can’t be the whole story. We have vineyards at



Photo of Concord Grapes on the vine Portland, NY

CLEREL that bloomed relatively early and uniform and have a balanced to low crop load...and Brix are still sluggish. Our “best case” scenario was still only 14.4 Brix yesterday, a good 1.5-2.0 Brix behind where they should be.”

Table 1 below has the latest data from Veraison to Harvest sampling that is done every Monday morning in our Lake Erie and Niagara County regions. We also send out the electronic version to members when available. Please refer to the Veraison to Harvest, which is a weekly electronic newsletter put out by viticulture and enology extension personnel from Lake Erie, Long Island, Hudson Valley, and the Finger Lakes. Each issue provides accurate and up-to-date regional data while giving a statewide perspective as well. V to H begins in early September and concludes in late October. We have begun a new effort to share Veraison to Harvest updates in a different format via a podcast where listeners can hear around New York updates from the Cornell Viticulture Extension Specialist and Chris Gerling, Senior Extension Associate for Enology to enhance the Fruit Composition Report. [Podcast Now Available!](#)

All previous issues available online at:

<https://cals.cornell.edu/viticulture-enology/research-extension/veraison-harvest>

Table 1. Data for the Lake Erie AVA only this week due to Niagara County late submissions (will be updated after processed). This data compares last week’s numbers with this week.

		9/18/2023	9/11/2023	9/18/2023	9/11/2023	9/18/2023	9/11/2023	9/18/2023	9/11/2023
Variety		Berry Wt	Berry Wt	Brix	Brix	pH	pH	TA	TA
Concord	LE	399.94	315.14	13.8	11.5	3.07	2.95	12.27	15.35
Niagara	LE	422.80	402.68	13.1	11.8	3.10	3.02	9.28	10.41
Seyval blanc	LE	164.60	165.88	16.5	16.3	2.95	2.99	9.77	9.44
Marquette	LE	Harvested	144.18		18.4		3.06		16.18
Riesling	LE	170.52	161.79	13.2	11.2	3.06	3.00	12.99	14.82
Cab Sauv	LE	162.26	152.92	16.4	14.6	3.04	2.99	13.80	14.54
Lemberger	LE	186.06	207.82	15.8	14.3	3.12	3.12	10.65	10.94
Frontenac	LE	127.24	125.93	18.3	15.4	3.01	2.91	20.05	22.26
Vignoles	LE	Harvested	191.93		14.9		2.91		18.78
Cab Franc	LE	163.56	157.2	13.7	11.6	3.08	2.99	12.45	15.10
Traminette	LE	172.63	166.19	11.5	9.6	2.91	2.86	15.16	15.79
Gewurztraminer	LE	169.81	147.65	16.7	15.4	3.27	3.21	8.36	9.28
Chardonnay	LE	175.91	166.09	17.3	15.6	3.13	3.15	10.63	11.27
Saperavi	NI	249.40	229.00	15.7	13.6	3.05	2.88	16.41	19.19
Lemberger	NI	201.2	192.95	18.0	18.2	3.14	3.05	10.49	10.95
Vidal Blanc	NI	198.38	184.72	14.1	13.2	2.96	2.93	11.57	14.07
Siegfried	NI	110.68	114.86	13.4	14.2	2.84	2.81	15.29	15.85
Sauv Blanc	NI	176.44	133.97	17.8	17.2	3.05	2.94	7.59	10.88

PA Update

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

Weather: We have accumulated about 332 growing degree days and 0.86 inches of rain in September so far. We have accumulated 2,282 gdds since April 1 (cooler than average). The short-term forecast for North East PA looks to be right around average with high temperatures in the lower 70s. Dry conditions will prevail for the next 4-5 days.

Phenology: Our Concord block on route 5 (on the lake) is at 14.2 brix, as of September 21.

Diseases: Though downy mildew can easily be found chewing on young leaves in many wine grape vineyards (especially *Vitis vinifera*), the relatively dry conditions that have characterized September so far, have helped keep this disease from blowing out of control. The objective for now is to keep an eye on the symptoms and the weather, and be prepared to pounce on it in susceptible wine varieties, if you anticipate conditions turning wet (be vigilant with regard to the weather forecast!!). Currently, I'm seeing it on new shoot growth of many premium wine varieties of *V. vinifera* (Cabernet Franc, Chardonnay, Riesling, etc), susceptible hybrids (Vidal, Cayuga) and susceptible natives (Niagara, Catawba). Scout your vineyards to know your individual circumstances and maintain control; vigilance is the key here. Look for it primarily on young leaves of still actively growing shoots. In fact, the continuation of new shoot growth is a primary reason it remains a threat in vineyards, despite relatively little rainfall in September. Vineyards where shoot growth has slowed or quit altogether, often have little or no downy mildew in them under these conditions. As long as it remains only on new growth, it may pose little threat to the ripening process. However, be aware that in vineyards with infected new growth, inoculum concentrations are higher and the disease can jump to older foliage and begin "chewing" on the entire canopy. The sight of active, white sporulation on the undersides of leaves means the downy mildew pathogen is still capable of spreading, and it will do so rapidly under wet conditions. Humid nights can continue to fuel downy mildew development at a "slow burn", generating fresh sporulation that can spread the disease rapidly, especially when whole canopies get wet with rain.

If you get into a pinch and downy mildew blows up on your leaves, copper sprays (on varieties that can tolerate copper) 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. Here are precautions to consider with the use of the 'old standard' protectants like copper and captan, as there are serious downsides to having excess residues of these materials on grapes going into the fermentation for wine. However, one needs to keep in mind how much long-term damage downy mildew can cause to susceptible wine grape canopies late in the season; there may be consequences from defoliation that stretch way past the current vintage. These are not expensive sprays, and neglecting to control late season downy mildew, especially on susceptible premium wine varieties of *V. vinifera* (*that may be hanging for another month or so*), can lead to more expensive long-term damage.

- 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.
- 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

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).

And again, here's a repeat regarding bunch and sour rots: 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. This is where late season insecticide applications come in. 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 sprays. 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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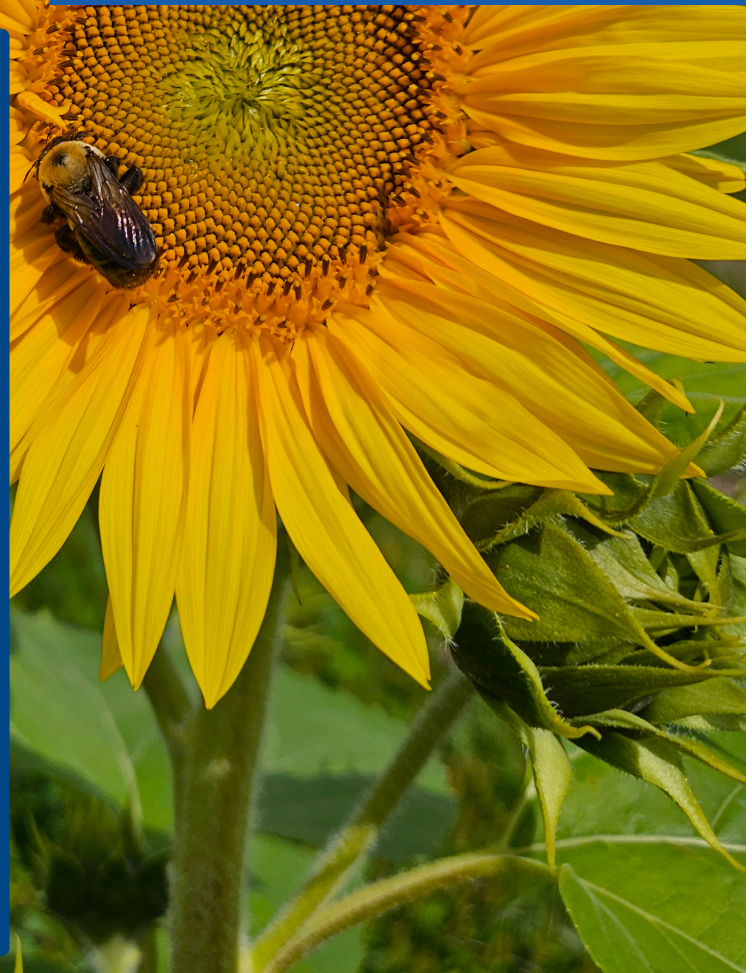
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PA Update

Megan Luke, Penn State Extension Viticulture and Tree Fruit Educator

General scouting and management: Current pests of concern include multi-colored Asian lady beetle which can emit a noxious chemical when disturbed leading to taint of juice and wine, and fruit flies which can promote sour rot. I have not heard of or observed this pest in vineyards this year, but if you have observed MALB in high numbers in previous years, it is imperative to scout for these pests in order to reduce the risk of rejected shipments at the processor. I've also received many questions from growers in both PA and NY regarding weed management, it seems that most growers have at least one or two species in their vineyards that are resistant to common chemistries or that quickly regrow throughout the season after application of herbicides. If you suspect that you have a resistant weed population on your property, there are a few steps to follow to reduce the stress and the cost of getting it under control.

Additionally: many weeds are currently going to seed as autumn approaches, and our new weed scientist at Penn State University, Dr. Caio Brunharo, has requested seed from populations that seem to be (observationally) resistant to herbicide applications. If you believe that you have a stand of herbicide resistant plants in your vineyards, please contact me directly. I may be able to come out to your property to collect seeds for future experiments.

General Weed Management Guidelines

- 1) **Identification** The most important aspect of management is properly identifying the plant you are trying to eradicate. If you are unsure of what plant you are dealing with, take photos of the top and underside of the leaves, the stem where the leaf connects, any flowers or buds that are present, and the roots (if possible) and contact Extension via text or email with an ID request. Both Penn State and Cornell Extension have bulletins outlining strategies for managing specific weeds on their respective websites, these can help with choosing best practices.
- 2) **Cultural Management** Determine the best practices for managing the weed prior to choosing herbicides. Some weeds can be managed through mowing or cultivation, while other species may increase in number with those practices. Generally, you will always want to burn down with herbicides or mow/cultivate prior to the plant setting seed. It's important to understand the life cycle of the weed in question to know when the best time is to employ the methods at your disposal for maximum efficacy.
- 3) **Herbicide Application** Remember: when using herbicides the label is the law, and herbicides are labeled for use *not only in certain crops, but sometimes for specific target weeds as well*. Knowing what your target is makes it easier to choose the best herbicide, and to also determine if there has been documented resistance in that species to common chemistries.
- 4) **Assess Results** Observations of the results of your management strategies provides valuable information for the future. Things to make note of include the percentage of target weeds that were killed, the consistency of die-back across the treated blocks, and if the

weeds recovered after treatment. These notes help to rule out issues like sprayer malfunction or poor coverage and allow documentation of herbicide resistance.

Multi-colored Asian lady beetle (MALB) *Harmonia axyridis* (Figure 1): Multi-colored Asian lady beetle is typically a beneficial insect in vineyards, consuming pest insects such as aphids, as well as spider mites. Late in the season MALB can at times congregate within grape clusters, and when this occurs they can emit a noxious chemical when they are disturbed, such as during harvest activities. This chemical can lead to taint in juice and wine, and a high number of MALB may be grounds for rejection of harvested grapes.



Figure 1

Multi-colored Asian Lady Beetle Jon Yuschock, Bugwood.org

Fruit flies: Sour rot infections appear to be a function of bacteria, yeast, and fruit flies on damaged grape berries that encourages disease progression throughout the entire cluster as ripening progresses. Sour rot symptoms have been observed when berries are around 15 Brix and daily temperatures are at least 68°, and tight-clustered cultivars (e.g., 'Pinot gris', 'Riesling', 'Sauvignon blanc', 'Vignoles') are at greatest risk compared to those that have looser clusters. A chemical program using antimicrobials and insecticides directed at controlling yeast, AAB, and fruit flies can minimize risk of sour rot. Weekly applications of insecticides and antimicrobial sprays, commencing at 15 Brix, may be necessary for vineyards with extensive disease or insect damage to prevent added pressure from sour rot.



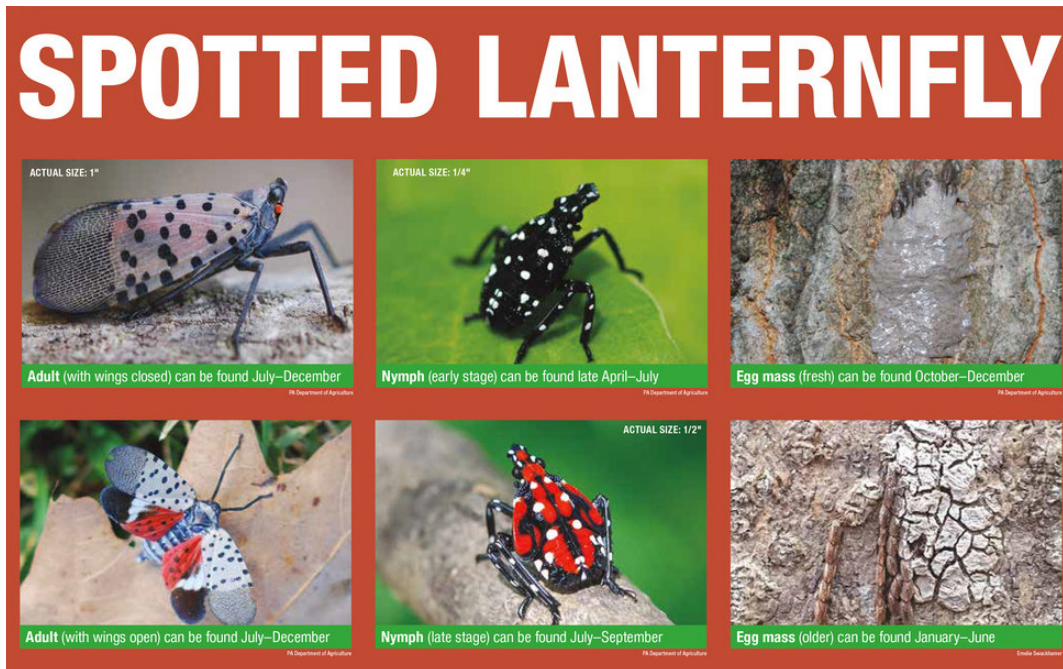
Figure 2

Drosophila species on grape clusters (left) and Botrytis bunch rot on sour rot-infected grape clusters (right). Note the fungal growth, which is not part of the sour rot complex but exacerbates the damage. Left photo courtesy of Rachael White, University of Georgia; right photo courtesy of Cain Hickey, Penn State Extension.

Spotted Lanternfly

There have been unconfirmed reports of adult SLF in Erie County, PA. The Pennsylvania Department of Agriculture has not found an established population of SLF so far this year, all adult insects have been individual “hitchhikers” from infested areas. Erie County is not currently expected to come under quarantine.

That being said, the PDA and Penn State Extension are strongly encouraging any sightings to be reported. In the event of the discovery of an aggregation or established population in Erie County, the PDA will provide mitigation and eradication of the pest on your property to prevent it from spreading.



If you see an adult SLF, catch and crush it, take a photo, report it, and contact a member of the LERGP team immediately!

- **Pennsylvania Reporting:** 1-888-4BAD-FLY (1-888-422-3359) or <https://services.agriculture.pa.gov/SLFReport/>
- **New York Reporting:** <https://survey123.arcgis.com/share/a08d60f6522043f5b-d04229e00acdd63>

Additionally, if you or someone you know is traveling into a quarantine zone, be sure to check vehicles for adult SLF hitchhikers upon arrival in Erie, PA or Chautauqua County, NY.

Office schedule (September 25th-September 22nd)

M 8am-4:00pm CLEREL Portland, NY

T 8am-4:30pm LERGREG North East, PA

W 9:30am-4:30pm Out of office (available by email or phone)

Th 8am-4pm Summit Municipal Building, Erie, PA

F 9:30am-4:30pm Out of office (available by email or phone)

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