



Cornell Cooperative Extension
Lake Erie Regional Grape Program



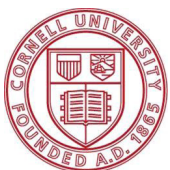
PennState Extension

LERGP Newsletter July 2020



A Day at the Office-

photo -Jennifer Phillips Russo



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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.

Business Management

Kevin Martin, Penn State University, LERGP, Business Management Educator

Weed Control: Economic Challenges and Solutions in a Dry Year

Is this a dry year?

In publications this year much has been said about COVID-19, labor management and costs. Those concerns are unusual and will be critical to risk management and have potential impacts on profitability. Current weather patterns also bring a more typical problem to bear. While drought certainly does not strike every year, fully functioning vines with no water stress are critical to sustained years of high yields. Even if frost has severely impacted yield this year, weed control should continue to be aggressive. Reasonable expenses in weed control should not be spared. A minimal program of 2 post-bloom applications could easily reduce yield in 2021. Results will vary by current yields, soil types and weather patterns. However, weed control results are not immediate. Once stress sets in, it is already too late to maximize benefits of weed control. Row middle weed control is extremely inexpensive. Even if control does not boost yield in 2021, the risk control measure is justified by the low cost.



Poor weed control undermines vineyard sustainability and profitability

Row middle herbicide management will typically cost \$9 per acre. Dual tank sprayers have nearly eliminated application costs. Materials cost less than \$6 per grape acre, per application. A third row middle spray would increase total cost of the program from \$9 to \$16 or \$25 per acre, depending on whether or not the 3rd application necessitated an additional trip. This cost can be justified by long-term savings in weed control, occasionally improved cover-crop uptake and perhaps even improved disease control in some years. The real benefits that drive these activities are current and future yields. In effect we are risking \$10 to protect \$600. For details on that science take a look at [Dr. Bates presentation](#) on 7/8/2020. He does an excellent job explaining the biology and impact of drought stress on grape vines.

The science of water conservation and drought stress on vines is clear. Trying to establish a uniform strategy of weed control in a commercial vineyard to accomplish those goals is murky, challenging and filled with potential for error. If money were no object, it might be possible at least for a few years. One thing we are seeing is earlier round-up applications. Earlier termination makes sense for soils that do not hold much water. Driving around this week all of those earlier terminations now look green. At one of the most critical periods row middles are greening up and stealing the bit of water we just got. A second round-up in early July is not going to keep things clean through September. While we certainly do not need bare soil in October, we do need it until August and then we need to keep germination under control.

At the moment there are two or three good strategies to improve the effectiveness of round-up. One

option is to rotate chemicals. Round-up is thought to be the only inexpensive option because recently it has become very inexpensive. That was not always the case. When Round-up was released the cost was \$27 per sprayed acre or \$18 per grape acre. Glufosinate is cheaper than that now. Aggressively mow in periods when water is not an issue, use this as a tool to change the timing of round-up applications. Another option is to implement cover crops.

It is becoming increasingly likely that effective weed control will drive yield and profitability in 2021. Many vineyards just recently received 1" of rain. Row middle weed control is critical in periods of moderate drought stress to maintain profitability. Extremely short mowing can be an effective method of water conservation in this climate, however it does not maximize savings. Ideally row middles will be burned down from 2-4 weeks prior to drought stress, until approximately August 1st in normal years.



Cover crop trial shows the effectiveness of a delayed round-up application.

Costs above assume the continued effectiveness of Round-up. Round-up alone is no longer an effective material, unfortunately. Prior to round-up row middle management involved tillage and mowing. These practices are not effective for modern commercial production. Vine size takes too large of a hit to be effective. Chemical control of round-up resistant weeds will increase costs. Glufosinate cost is \$12.70 per grape acre or \$19.22 per acre sprayed. Three row middle herbicide applications will likely be necessary to ensure solid economic performance in a dry year. One application of glufosinate will need to be well timed as it does not translocate to the roots as glyphosate does.

The higher material costs and increased number of passes makes other methods of weed control, for purposes of water conservation, economical. Growers can avoid chemical weed control in row middles when moisture content is high. By limiting chemical control from May until August, chemical applications can often be reduced to two. Mowing or cover crops can be used before May and after August 1st.

Mowing typically costs a bit more than round-up, around \$17 per grape acre. Mowing, like Glufosinate is not going to last long. If timing is poor

regrowth happens too quickly or seed development has already occurred. When timed correctly very short mowing can conserve moisture and take care of marestail.

Cover crops can be finicky and require experience. When grown effectively they'll control fall weeds and can control weeds into the next growing season. Costs are typically around \$40 per grape acre. There are a lot of different options when it comes to seed selection but of the \$40, approximately \$25 is for seed. Successful cover crop management, particularly for weed control, takes preparation. Soil pH should be high. If pH is below 5.5 I would avoid clovers and if pH is below 5.0%, I would avoid cover crops altogether. If possible organic matter should be above 2%. Weed control to this point

in the season needs to be effective. The best way to think of cover crops is a preventative, not a curative.

Dry weather seed mixes should include a blend that is quick to germinate, somewhat drought tolerant and will outcompete other weeds. Decisions about seed blends need to be made in the next 10 – 14 days. While this decision will not define the success of the farm, I would lean toward less expensive blends when germination is less likely. This advice will differ slightly from 2018. In 2018 I recommended rye grass, radish and clover. This is a good option in a normal year. If it stays dry buckwheat will be an essential component of any weed control mix. It might also make sense to eliminate the clover. Buckwheat, grain rye and radish will drop the cost of the recommended mix by 30%, to \$19 per grape acre.

Why buckwheat? Well, the price has been increasing but it is a good back up to rye grass. It's allelopathic effects can temper problematic weeds. It can also outcompete other seeds in the seed mix. It makes sense to lower seed rates with buckwheat, particularly legumes. This may allow you to control weeds less expensively. It may also reduce the progress toward other goals such as soil health and nutrient recycling. Buckwheat is also an excellent stand-alone crop for modest erosion prevention. It can be used in June and July to hold tilled soil together. While that shouldn't be a regular practice we all know that occasionally a vineyard floor is disturbed.

Make sure you tune into our remaining virtual coffee pot meetings and also our crop updates. There are plenty of other reasons to plant cover crops. Weed control should not always be the primary goal in a cover crop strategy. If it is, this seed mix is one good option. Changes in soil type and weather conditions will allow other options to outperform this blend.

Total cover crop cost is approximately \$40. When compared to minimal herbicide control, cover crops increase vineyard passes and costs. When compared to effective weed control, cover crops have a real potential to eliminate at least one pass and reduce chemical costs. Without cover crops it would likely be necessary to make two round up applications, glufosinate and potentially mow fall grasses or spring mustard.

Cover crops have a lot of other purposes. Take a look at research and extension materials. The topic is really interesting just don't get lost in the weeds. Soil health captures the imagination. It's the holy grail of agriculture. Unfortunately, when it comes to perennial crops, it is still a work in progress. Grape trials looked at soil health benchmarks but discovered very little measurable change in the 3 years the trials were conducted. It remains challenging to place an economic benefit on improvements in soil health. We know in non-perennial systems cover crops show impacts on soil health that would have a real benefit on vine size. Trials in those crops lasted longer and are also planted over



Both blocks are weed free at the moment but timing on the left conserved more moisture during critical periods

100% of acreage rather than 60%. Cover crops also perform differently due to the length of growing season.

Our potential to grow cover crops, without interfering with vine performance is a bit shorter than some other crops. Direct evidence of long lasting benefits in soil health is limited, at least in grapes. We have plenty of reason to suspect well managed cover crops can have long-term direct benefits. Results from longer term trials in a commercial vineyard did eventually show some important differences in soil health measurements. Reaching those goals more quickly, while conserving moisture, will continued to be researched. Also, aim for weed control and eliminating soil compaction. Perhaps in the long-run better soil health will just be an inadvertent outcome.



Cover crop seeded in August of 2019 had a delayed round-up application in 2020. Shown is row middle weed control after one round-up application in the spring of 2020. Picture taken 7/13/2020

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Considering Converting to Bulk Harvesting? Financing from USDA is an Option



UNITED STATES DEPARTMENT OF AGRICULTURE
FARM SERVICE AGENCY

Price Support FACT SHEET

November 2017

Farm Storage Facility Loans

OVERVIEW

Farm Storage Facility Loans (FSFLs) provide low-interest financing for producers to store, handle and/or transport eligible commodities they produce. This includes the following:

- Acquire, construct or upgrade new or used, portable or permanently affixed, on-farm storage and handling facilities;
- Acquire new or used storage and handling trucks; and
- Acquire portable or permanently affixed storage and handling equipment.

The program is administered by the U.S. Department of Agriculture (USDA) Farm Service Agency (FSA).

A producer may borrow up to \$500,000 per loan, with a minimum down payment of 15 percent. Loan terms are up to 12 years, depending on the amount of the loan. Producers must demonstrate storage needs based on three years of production history. FSA also provides a microloan option that, while available to all eligible farmers and ranchers, also should be of particular interest to new or small producers where there is a need for financing options for loans up to \$50,000 at a lower down payment with reduced documentation.

Applicants for all loans will be charged a nonrefundable \$100 application fee.

MICROLOANS

Producers who select the microloan option can borrow up to \$50,000, with the minimum down payment reduced to 5 percent and shorter loan terms. Producers can self-certify the storage needs of the eligible commodity and are not required to demonstrate storage needs based on production history.

ELIGIBLE COMMODITIES

The following commodities are eligible:

- Corn, grain sorghum, rice, soybeans, oats, peanuts, wheat, barley or minor oilseeds harvested as whole grain;
- Corn, grain sorghum, wheat, oats or barley harvested as other-than-whole grain;
- Other grains (triticale, speltz and buckwheat);
- Pulse crops (lentils, chickpeas and dry peas);
- Hay;
- Honey;

- Renewable biomass;
- Fruits (includes nuts) and vegetables - cold storage facilities;
- Floriculture;
- Hops;
- Malted small grains;
- Maple sap;
- Maple syrup;
- Milk;
- Cheese;
- Butter;
- Yogurt;
- Eggs;
- Meat/poultry (unprocessed);
- Rye; and
- Aquaculture.

ENVIRONMENTAL EVALUATION REQUIREMENTS

These loans must be approved by the local FSA state or county committee **before** any site preparation and/or construction can be started.

All loan requests are subject to an environmental evaluation. Accepting delivery of equipment, starting any site preparation or construction before loan approval may impede the successful completion of an environmental evaluation and may adversely affect loan eligibility.

ELIGIBLE FACILITIES, EQUIPMENT AND UPGRADES

The following types of new/used facilities and upgrades are eligible and must have a useful life for at least the term of the loan:

- Conventional cribs or bins;
- Oxygen-limiting structures and remanufactured oxygen-limiting structures;
- Flat-type storage structures;
- Electrical equipment and handling equipment, excluding the installation of electrical service to the electrical meter;
- Safety equipment, such as interior and exterior ladders and lighting;
- Equipment to improve, maintain or monitor the quality of stored grain;
- Concrete foundations, aprons, pits and pads, including site preparation, off-farm labor and material, essential to the proper operation of the grain storage and handling equipment;

FACT SHEET

Farm Storage Facility Loans

November 2017

- Renovation of existing farm storage facilities, under certain circumstances, if the renovation is for maintaining or replacing items;
- Grain handling and grain drying equipment determined by the Commodity Credit Corporation to be needed and essential to the proper operation of a grain storage system (with or without a loan for the storage facility);
- Structures that are bunker-type, horizontal or open silo structures, with at least two concrete walls and a concrete floor;
- Structures suitable for storing hay built according to acceptable design guidelines;
- Structures suitable for storing renewable biomass;
- Bulk tanks for storing milk or maple sap;
- Cold storage buildings, including prefabricated buildings that are suitable for eligible commodities. Also may include cooling, circulating and monitoring equipment and electrical equipment, including labor and materials for installation of lights, motors and wiring integral to the proper operation of a cold storage facility; and
- Storage and handling trucks, including refrigerated trucks.

ELIGIBILITY REQUIREMENTS

An eligible borrower is any person who is a landowner, landlord, leaseholder, tenant or sharecropper. Eligible borrowers must be able to show repayment ability and meet other requirements to qualify for a loan. Contact an FSA office for more details.

WHERE TO FILE THE APPLICATION

Loan applications should be filed in the administrative FSA county office that maintains the farm's records.

FOR MORE INFORMATION

This fact sheet is provided for informational purposes; other eligibility requirements or restrictions may apply. For more information about FSFLs, visit www.fsa.usda.gov/pricesupport or contact your local FSA office. To find your local FSA office, visit <http://offices.usda.gov>.

Other examples of equipment include but are not limited to the following:

<ul style="list-style-type: none">• baggers• boxers• brush polishers• bulk bin tipplers• case palletizers• cement flooring• circulation fans• cold dip tanks• conveyors• drying tunnels• dumpers	<ul style="list-style-type: none">• electrical equipment• food safety-related equipment• hoppers• hydrocoolers• hydrolifts• ice machines• quality graders• refrigeration units or systems• roller creepfeeders• roller spray units	<ul style="list-style-type: none">• safety equipment meeting Occupational Safety and Health Administration requirements• sealants• sizers• sorting bins and/or tables• storage and handling trucks• washers• waxers• weight graders
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Notes:

- Eligible storage structures and handling equipment, having a useful life for the entire term of the loan, may be permanently affixed or portable.
- Facilities built for commercial purposes and not for the sole use of the borrower(s) are not eligible for financing.

In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident.

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- 1) mail: U.S. Department of Agriculture Office of the Assistant Secretary for Civil Rights 1400 Independence Avenue, SW Washington, D.C. 20250-9410;
- 2) fax: (202) 690-7442; or
- 3) email: program.intake@usda.gov.

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Viticulture

Jennifer Phillips Russo, Viticulture Extension Specialist, LERGP

Soil pH and Your Vines

What is soil pH?

Soil pH is the negative logarithm of the hydrogen ion concentration in the soil. As the number of hydrogen ions in the soil increases, the soil pH decreases becoming more acidic. The pH scale ranges from 0 to 14 with 7 in the middle of the scale indicating the neutral point. Are you hesitant to read any further? Don't be. I will try to explain it so that the science doesn't cloud the important take home message of why pH is critical to the health of your grapevines and what you can do to increase vine productivity in regard to pH. Basically (a little pH humor), any number below a neutral pH of 7 is considered acidic (think sourness), conversely, any number above 7 is alkaline (think sweetness).

Let's put this in terms of your stomach. If your stomach is too sour you do not feel well and if it is too sweet your stomach is upset. Have you ever overeaten sweets on Halloween as a child or watched your child hold their belly full of Halloween sweets? When your stomach is upset, or sour, there are products available to settle it such as antacids. Most antacids contain at least one of the following key active ingredients: calcium carbonate, magnesium hydroxide, aluminum hydroxide and/or sodium bicarbonate. In agriculture when our soils are acidic, the grapevine is in a sour state and lime is our antacid. Adding agricultural lime which is calcium carbonate or limestone crushed into a powder, raises the soil pH due to high amount of calcium (alkaline ions) to a less acidic state. Most lime products are a mix of Calcium and Magnesium carbonate. Although Ca and Mg have some role through cation exchange, the important reaction with carbonate reacting with (sucking up) protons (hydrogen ions) and raising the soil pH.

Why is this Important?

In LERGP's March 2020 Newsletter, I wrote an article on Soil Health that went into detail about what soil is and why soil health is important. Please visit <https://lergp.com/archived-newsletter-and-crop-updates> to access previous articles. Basically (I did it again), grapevines require nutrients for optimal health and the plant's nutrient acquisition is derived mainly from the soil. Different minerals and nutrients come from weathered rock parent materials and organic matter in the soil.

Before a nutrient can be used by the grapevine it must be dissolved in the soil solution. Most minerals and nutrients are more soluble (available) in acidic soils than in neutral or slightly alkaline soils. But, when pH levels are too high or too low, minerals are bound to soil particles and simply unavailable to the plant. Under those conditions, it doesn't matter how much fertilizer you apply to feed the vines, because it will just stay locked up in the soil until pH reaches a level that allows the nutrients to release. See the figure below that displays the availability of important nutrients at different pH levels.

What Causes Acidic Soils?

First, we need to discuss the parent soil material, which is probably the biggest consideration. Parent material is the bedrock that is weathered overtime and ground into smaller particles that make up the soil material. Most of the Lake Erie grape belt has sandstone and shalestone based parent material which is strongly acidic (adds hydrogen ions) when weathered. In northern counties and Niagara on the Lake area (anything north of the Niagara Falls drop off) there is limestone parent material which naturally has higher soil pH.

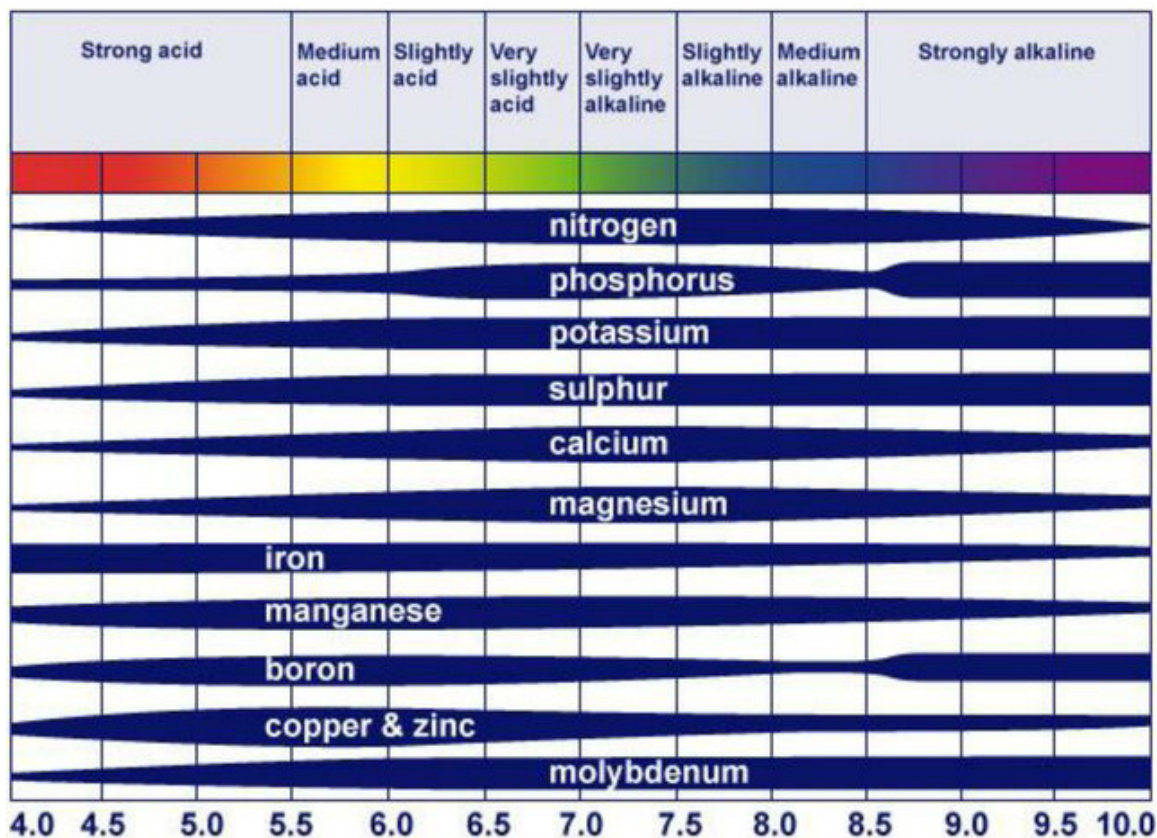


Figure 1. The effect of soil pH on nutrient availability

Many of our grape industry commercial practices have acidifying consequences. Agricultural soils become acidic as a result of a couple of things:

- rainwater leaching alkaline ions from calcium, magnesium, potassium, and sodium essentially washing them away from the root structures and uptake of them into the plant during growth
- carbon dioxide produced from decomposing organic matter and root respiration dissolves in the soil water and forms weak organic acid
- the formation of strong organic acids (nitric and sulfuric acid) from decomposing organic matter and oxidation of ammonium and sulfur fertilizers.
- frequent use of fertilizers and other chemicals and/or after the soil has become deprived of important nutrients from years of harvesting crops

In a commercial vineyard, we certainly experience one or more of the above soil acidifying factors. We add urea fertilizers (ammonium nitrate), which have acidifying effects, and also pull nutrients from the soil during plant growth in the form of alkaline ions (calcium, magnesium, potassium, and sodium) during commercial production leaving soils more acidic. That is why it is necessary to apply lime to continue to raise the pH and keep nutrients available for plant health.

Research Support

The following research support are excerpts from the research report to the Wine and Grape Foundation from 2006 by Dr. Terry Bates, Director at the Cornell Lake Erie Research and Extension Laboratory in Portland, NY. He conducted field research trials to study the effect of soil acidity on Concord grapevine health. Commercial 'Concord' (*Vitis labruscana*) vineyard soils in the Lake Erie American Viticultural Area (AVA) are dominated by "strong" and "very strong" soil acidity which can

reduce vine growth and nutrient balance. (Lathwell and Reid, 1984).

The experimental design ran from 1999 to 2006 and included manipulating the soils into four levels of soil acidity: very strong, strong, moderate, and slight. Ground sulfur and dolomitic limestone soil amendments established soils in four acidity classifications: very strong acid (4.5-5.0), strong acid (5.1-5.5), moderate acid (5.6-6.0), slight acid (6.1-6.5). All vines were planted at the same time and de-fruited until the third year when 50% crop was de-fruited. From 2001-2005 the vines were pruned by retaining 20 nodes per pound of dormant cane pruning mass, and in 2006 the vines were over cropped. Each year soil and tissue samples (bloom and veraison) were analyzed for each treatment to ascertain nutrient levels.

Discussion

Ownrooted 'Concord' vines in this study performed well across four categories of soil acidity when crop demand was relatively low.

At high crop levels, this trial illustrates the importance of K and Mg supply and demand balance in commercial 'Concord' production. Under "very strong" soil acidity (4.5-5.0), soil availability of both Magnesium (Mg) and Potassium (K) were low. Increasing vine K demand with large crop size caused vine K deficiency as measured through veraison petioles. Attempting to mitigate the risk of K deficiency at high crop levels with supplemental K fertilizer induced Mg deficiency (both visually and through tissue samples). For more reading on this research, visit the Efficient Vineyard blog post written by Terry Bates by clicking this link: <https://www.efficientvineyard.com/blog-3/blog-post-title-one-bfj39>.

Under "strong" soil acidity (pH~5.0), 'Concord' grapevines had the highest vine size and nutrient balance throughout the experiment. When vines were mature, Mg and K tissue concentrations fell within acceptable limits without additional fertilizers. High crop loads caused veraison petiole K values to drop slightly below 2.0%, the recommended value for 'Concord' production. Visual K deficiency, however, was not observed at these values and the tissue K concentrations were still well above the other soil pH treatments.

Under "slight" (6.1-6.5) and "moderate" (5.6-6.0) soil acidity, where limestone was used to increase soil pH, vines had high Mg tissue concentrations and developed strong K deficiency in large crop years with a concurrent decline in vine size and fruit maturation. In this case, application of K fertilizers maintained vine K status, vine size, and juice soluble solids. As with the lowest soil pH treatment, supplemental K fertilizer decreased vine Mg status; however, Mg tissue concentrations remained within sufficiency values.

Put into Practice or Proof is in the Pudding?

I am a hands-on learner and I get more out of applied science or doing and seeing it in the field. I was having a soil health conversation with one of the growers in our region discussing what the problem could be for underproducing vines in some blocks when the management practices are all the same across the blocks.

This grower's spray program, nutrient applications, and floor management strategies were all the same and yet, certain blocks simply under-performed. That's when they decided to take soil samples and see if there were any nutrient factors limiting the vine's growth. Sure enough, the difference between the blocks was pH levels. Let's look at the results in the table below.

Table 1. Soil and Plant Tissue Sample Analysis Results and Average tons/acre for 2018 and 2019

		Soil	Buffer	Org						Block	2018	tons/	2019	tons/
Block	Variety	pH	pH	Matter	P	K	Mg	Ca	CEC	acres	Ave Yld	acre	Ave Yld	acre
1	Concord	5.5	6.6	2.3	25	92	159	891	9.5	2.6	16	6.2	15	5.8
2	Concord	4.5	5.9	3.6	20	223	112	673	16.9	10.1	48	4.8	40	4.0
3	Concord	5.0	6.1	2.8	9	138	123	468	13.8	9.7	32	3.3	60	6.2
4	Niagara	6.1	7.0	3.1	12	73	222	1514	7.5	5.0	40	8.0	35	7.0
5	Niagara	6.2	7.0	3.6	24	66	333	1785	9.3	2.8	18	6.4	28	10.0
6	Niagara	6.0	6.9	2.0	34	81	270	1349	8.4	1.6	5	3.1	12	7.5
7	Concord	6.6	7.0	2.7	12	70	257	1801	11.0	3.0	24	8.0	28	9.3
8	Concord	4.9	6.6	2.0	28	112	138	780	9.0	6.0	25	4.2	32	5.3

Per Dr. Terry Bates' Concord pH Analysis study, the pH for optimal commercial vineyard production should range between 5.5-6.5 pH. Concord blocks 2, 3 (baby grapes that just came into fruition), and block 8 are all below the optimal pH range. Their respective average tons/acre for the past two years are 4.4, 4.75, and 4.75. The Concord blocks that fall within the optimal range were block 1 (the lower end of the range) and 7 (the upper end of the range). Their respective average tons/acre for 2018 and 2019 were 6 at the lower range and 8.65 at the higher end of the range of 6.6 pH.

We drove from block to block on the same day taking photos of the visual differences in growth between blocks of different pH. It is my hope that reading this article will encourage you to look at your commercial block's performance and take the necessary soil and tissue samples to diagnose vine and soil health for optimal performance. This particular grower applied two tons of lime across the of the blocks the days following my visit.

Remember that when pH levels are too high or too low, minerals are bound to soil particles and simply unavailable to the plant. Under those conditions, it doesn't matter how much fertilizer you apply to feed the vines, because it will just stay locked up in the soil until pH reaches a level that allows the nutrients to release.

The following photos are block 1 (5.5 pH), block 2 (4.5 pH), and block 7 (6.6 pH).



Photo 1. Block 1 with 5.5 pH row view



Photo 2. Block 1 with 5.5 pH vine



Photo 3. Block 2 with pH 4.5 row view



Photo 4. Block 2 with 4.5 pH vine

The two photos above are of a cane from block 2 (4.5 pH) on the left compared to a cane from block 1 (5.5 pH) on the right. Photo 5 illustrates the visual difference in cane lengths while photo 6 is a close of the visual internode differences. Remember that these blocks are relatively close to each with similar soil types that all have been managed the same.



Photo 5. Visual differences in internode lengths from block 2 with a pH of 4.5 on the right and block 1 with a pH of 5.5 on the left.



Photo 6. Visual differences in cane lengths from block 2 with pH of 4.5 on the left and block 1 with pH of 5.5 on the right.

The next two photos are from Concord Block 7 with a 6.6 pH. Note that when looking at these pH range vines and comparing them to the other block photos, the canes fill the trellis and reach the vineyard floor. When the soil pH is optimal for vine growth, the nutrients applied are available for uptake and use by the vine, hence the longer canes and full trellis. When looking at Block 2, the vine looks sick compared to the Block 7 or even Block 1. This is a visual clue that lime is needed to correct the sour soil, just like antacids are needed in our sour stomachs to neutralize the acid.



Photo 7. Block 7 with a pH 6.6 row view



Photo 8. Block 7 with a pH of 6.6 vine

An old farmer's tale states that vines that reach across to hold hands are happy vines. Feed them lime and soothe the sour to unlock the nutrients for optimal health and watch the canes reach for the next row.

Figure 1. The effect of soil pH on nutrient availability.
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[Review of the non-NPKS nutrient requirements of UK cereals and oilseed rape/figures?lo=1](https://www.researchgate.net/publication/277669269)

Terence R. Bates¹, Alan Lakso, Richard Dunst. The Response of 'Concord' Grapevines to Soil pH Final Report to Viticulture Consortium and New York Wine and Grape Foundation 1/7/2006. Dept. of Horticultural Sciences, Cornell University Vineyard Laboratory, 412 East Main St., Fredonia, NY 14063



Lathwell, D.J. and W.S. Reid. 1984. Crop response to lime in the Northeastern United States, p. 380. In: F. Adams (ed.). Soil acidity and liming. Amer. Soc. Agron., Crop Sci. Soc.Amer., Soil Sci.Soc. Amer. Madison, Wis.

Cornell Soil Health Program has a wonderful resource available online at <http://www.css.cornell.edu/extension/soil-health/manual.pdf>, or you can purchase a hard copy of it as well.

<https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/nra/nri/>

<https://soilhealth.cals.cornell.edu/soil-health-manual-series/>

https://cpb-us-e1.wpmucdn.com/blogs.cornell.edu/dist/f/5772/files/2016/12/02_CASH_SH_Series_What_Is_Soil_Health_040517-1ruc3sq.pdf

<https://cpb-us-e1.wpmucdn.com/blogs.cornell.edu/dist/f/5772/files/2018/12/03-Soil-Health-Principles-and-Functions-1y64532.pdf>

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Hand Sanitizer and Face Masks Available to Farmers

Kimberly Knappenberger, Viticulture Aide, LERGP

PPE Distribution of Hand Sanitizer and Masks:

On Monday, July 20th we will be having another distribution day at CLEREL in Portland from 10:00 AM to 12:00 noon. If you are interested in picking up some supplies please **sign up for your free product** at chautauqua.cce.cornell.edu/resources/hand-sanitizer-and-face-masks-request. If wearing masks and having hand sanitizer available for your employees or visitors is a part of your NY Forward plan, make sure you get your free supplies!

Cornell Cooperative Extension Chautauqua County is distributing free hand sanitizer and face masks to producers in Chautauqua County. NYS Clean brand Sanitizer and Hanes 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.

Production farms of **any type** are welcome to come pick up hand sanitizer. These farms can include **dairy, livestock, grapes, vegetables, farm stands, U-Pick, nursery, equine, and craft beverage**. If you know of anyone that still needs some please send them the link to register. Once registered you will be contacted at the number left on the online request form to confirm pick up time.

For those of you who have already picked up gallon jugs of hand sanitizer with the hand pump, I'm sure you have noticed how fast and how much comes out. A simple trick that some have tried is to put a piece of a pool noodle or pipe insulator on the pump to keep it from pressing all the way. This will reduce the amount of sanitizer dispensed.

We plan to have Monday distributions until supplies are exhausted. The best way to see if it is still available is to fill in the form at the link above. You will be contacted with the next available pick up date/time.



Vineyard Improvement Program and Empire Brands Opportunity Presented at LERGP Virtual Coffee Pot Meeting

-by Kim Knappenberger & Jennifer Phillips Russo

Coffee Pot meetings have been a staple of the extension work done by the Lake Erie Regional Grape Program for many years. During these meetings researchers and extension associates come together with growers in a relaxed setting to share up to date information and advice on how to take care of the issues that arise in their vineyards as well as offering time for the growers to collaborate on what works and what doesn't work. In addition pesticide recertification credits are given for both New York and Pennsylvania growers. This year there has been a unique opportunity to move to an online platform by using Zoom to meet with the growers. Although they don't get the traditional coffee and doughnuts, they are able to hear from a wide array of specialists that can help solve some of the problems they are facing in their vineyards and still get credits!

[On July 22, 2020 LERGP will be holding the usual Wednesday morning meeting.](#)

At 11:00AM there will be a special presentation about the Vineyard Improvement Program and how growers/landowners can use it to turn an unwanted/underproducing vineyard into a more productive agricultural venture. The Vineyard Improvement Program is a reimbursement program available to owners of Concord vineyards in the Southern Tier, and Chautauqua, Erie (NY) and Niagara counties. It will reimburse applicants up to \$3,000 per acre to remove unwanted Concord vineyard(s) and replant another agricultural crop. A representative from Empire Brands will also share their thoughts on the company's vision to build a better more efficient food system for local agricultural products, how innovation will play a role in a post Covid19 world, and the opportunity for local farms and the promotion of the region.

Senator George Borrello (57th District), who will be among the meeting's participants, expressed support for the program, noting that "the exchange of information by researchers, extension associates and growers is always important, but it is even more crucial this year as our agricultural sector works through the financial and operational disruptions caused by the pandemic. We are in a time of immense change and those who are informed and engaged will be in the best position to navigate both the challenges and the opportunities. I encourage all those in the Concord grape industry to join this valuable discussion."

If you are interested in attending this meeting you can register by clicking [this link](#) or going to [lergp.com](#) and click on the purple EVENTS button. Click the link there to get signed up.

To view specialists from previous Virtual Coffee Pot meetings visit <https://lergp.com/2020-virtual-coffee-pot-meeting-guest-speakers>

The list includes:

- Dr. Terry Bates – Soil Health and Nutrition
- Dr. Greg Loeb – Insect Management for Grapes
- Dr. Katie Gold – Early Season Disease Management
- Bryan Hed – Early Season Disease Management
- Heather Leach – Spotted Lanternfly update from Pennsylvania
- Dr. Terry Bates – Bloom Talk

- Kevin Martin – Farm Safety Plans
- Michela Centinari – Under Vine Cover Crops
- Justine Vanden Heuvel – Canopy Management
- Misha Kwasniewski – Flavor Development in the Vineyard / Pruning Level Impact on Concord Juice Flavor Development and Optimal Harvest Timing
- Chris Gerling – Impacts of Late Season Sprays on Wine Quality
- Dr. Terry Bates – How Grapevines Respond to Drought Conditions

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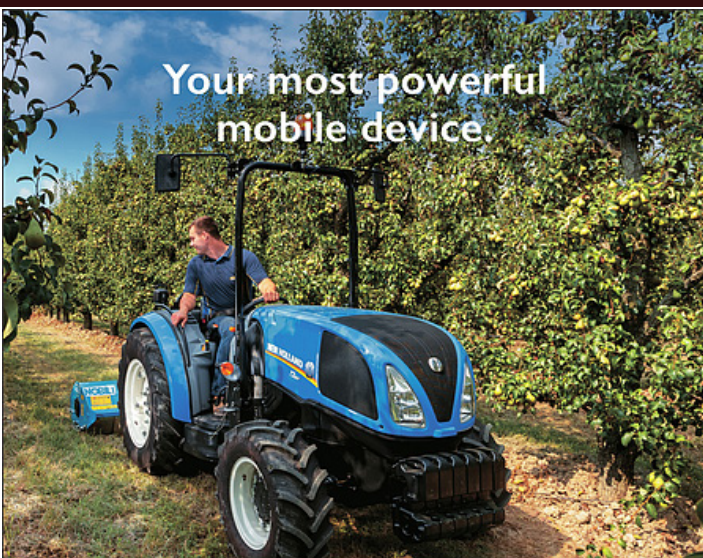


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PA Update

Andy Muza, LERGP Extension Team/Penn State Extension- Erie County

Insects and Diseases – What to Expect for the Remainder of the 2020 Season –

Below are my expectations on what the insect and disease situation will look like for the remainder of the season in the Lake Erie Region. Since I can't predict the weather, my assumptions are based on pest conditions I have found up to this point and the weather trend (hot and dry) so far this season. Remember that pest conditions in each block are unique and may be different than what I find during scouting. Therefore, frequent scouting of your vineyards provides the most reliable information for making pest management decisions.

Grape Berry Moth – As reported in the Crop Update on July 2, webbing in clusters was not difficult to find and red discoloration of injured berries was already visible in high risk Concord sites (Figure 1). Growers were also reporting finding webbing and red discolored berries during this period. Therefore, I expect GBM population levels to be high for the start of the third generation (1620 GBM DD). If temperatures continue to be higher than average during the remainder of the season, like the last 2 weeks, then a fourth generation of GBM is likely.

Since GBM pressure is expected to be high it is also important that low and intermediate risk sites are also scouted as we approach the start of the third generation, which may be as early as the first week in August this season. Check the GBM Degree Day Model in NEWA <http://newa.cornell.edu> frequently to monitor the accumulation of GBM DD for the third generation choosing the closest station near your vineyard for more specific timings.

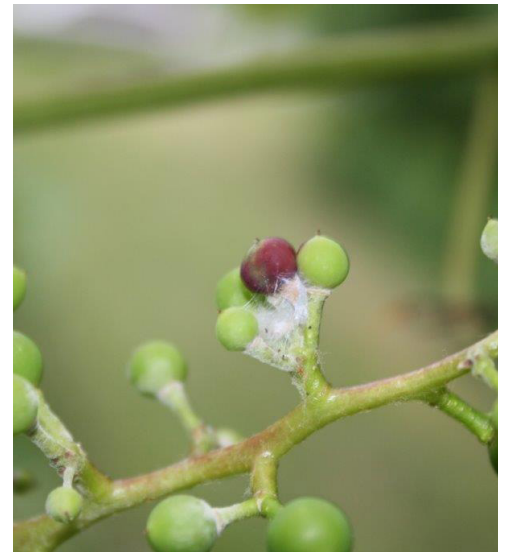


Figure 1. Webbing and red discoloration of Concord berry due to GBM larva. Photo – Andy Muza, Penn State



Figure 2. Grape leafhopper adults on bottom of Concord leaf. Photo – Andy Muza, Penn State

Grape Leafhopper – So far, I have not found many leafhoppers or feeding injury but there is still plenty of time until harvest. In most years, the majority of vineyards in the Lake Erie Region should not require an insecticide treatment specifically for management of grape leafhopper. But, the greatest risk for economic losses due to grape leafhopper (GLH) feeding occurs during hot, dry years in vineyards with heavy crop loads and high leafhopper populations. The weather conditions have certainly been hot and dry for the first 2 weeks in July, but heavy crop loads are not expected in most vineyard blocks this season. However, if the hotter, drier conditions persist through the season then I expect GLH pressure will

be higher this year (Figure 2).

An insecticide application is recommended if a threshold of 5 nymphs/leaf is reached by the third week in July or 10 nymphs/leaf in late August. A scouting procedure for leafhoppers was designed by Tim Martinson (Senior Extension Associate, Cornell University) to determine threshold levels (see: “Bulletin 138, Risk Assessment of Grape Berry Moth and Guidelines for Management of the Eastern Grape Leafhopper” <https://ecommons.cornell.edu/handle/1813/5202>).

Japanese Beetle – As of July 9th I was only finding a small number of beetles feeding in vineyards. This obviously was only the beginning of the Japanese beetle threat for the season. Over the next few weeks population levels will increase but I can’t predict if beetles will be a major problem this season. However, I was contacted this week by a grower reporting that large numbers of beetles were already feeding in his wine grape varieties.

Beetles are most active on warm, sunny days and tend to congregate on vines to feed and mate in groups on the top leaves of the canopy (Figure 3). Feeding injury, depending on severity, can result in leaves having a skeletonized appearance due to consumption of the soft leaf tissues between veins. Research and field observations indicate that Japanese beetles prefer smooth, thinner type grape leaves which are characteristic of many wine varieties (e.g., Chardonnay,



Figure 3. Japanese beetles congregating and mating on Concord leaf. Photo – Andy Muza,



Figure 4. Skeletonizing of Concord leaf by Japanese beetles. Photo – Andy Muza, Penn State

Traminette, Vidal Blanc). However, large populations of beetles can also cause concern in Concord and Niagara vineyards (Figure 4). Although leaf feeding on Concord and Niagara vines may look alarming, serious widespread injury is not common in our region. Beetle infestations are usually concentrated in pockets and not uniformly spread throughout a vineyard block.

Research has shown that grapevines (especially ConCORDs with large canopies) can tolerate a fair amount of leaf area loss without detrimental effects. However, no economic threshold level has been established for leaf injury on grapes caused by Japanese beetle. Therefore, growers must rely on their judgement and experience to determine leaf injury levels they can tolerate.

Before deciding if an insecticide application is needed in any of your vineyard blocks consider these factors: Japanese beetle population levels, varietal susceptibility, age of vineyard (i.e., young or mature), canopy size, and crop load. Frequent scouting of vineyards is necessary to determine if heavy infestations are occurring which may warrant an insecticide application. Many wine varieties, young vineyard blocks and vines in grow tubes are

especially vulnerable to serious leaf loss by Japanese beetle feeding so consistent monitoring is required.

Diseases

My assessment of the disease situation for the remainder of the 2020 season is about the same as last year in my “2019 Grape Disease Update for the Lake Erie Region”, July 2019.

Phomopsis – In blocks that I have scouted, the amount of shoot and leaf infections are at low-moderate levels while rachis and pedicel infections are at low levels. Considering that the majority of Phomopsis spores are depleted by about pea-sized berry stage, I do not expect this disease to be of concern from this point on.

Downy Mildew – At this point, I have not found any downy mildew in any Concord or Niagara commercial vineyards. Also, inoculum levels have been low in the region over the last few years. So, the threat of any downy mildew problems in Concord vineyards this season is minimal but Niagara, Catawba and other highly susceptible wine varieties could still experience problems if the weather pattern changes (i.e., frequent thunderstorms, rainy) later in the season.

Black Rot – At this point, we are about 4 weeks after bloom. Since Concord berries are susceptible to infection up to 5-6 weeks after bloom there is still about a 2 week period for berry infections to occur in the Lake Erie Region. Black rot inoculum levels are low in most vineyards across the region but I have checked a few sites where the number of leaf and berry infections were a concern (Figure 5). This disease still poses a potential threat for about 2 more weeks: in shaded areas near wood lines;



Figure 5. Black rot lesions on Concord leaf. Photo – Andy Muza, Penn State.

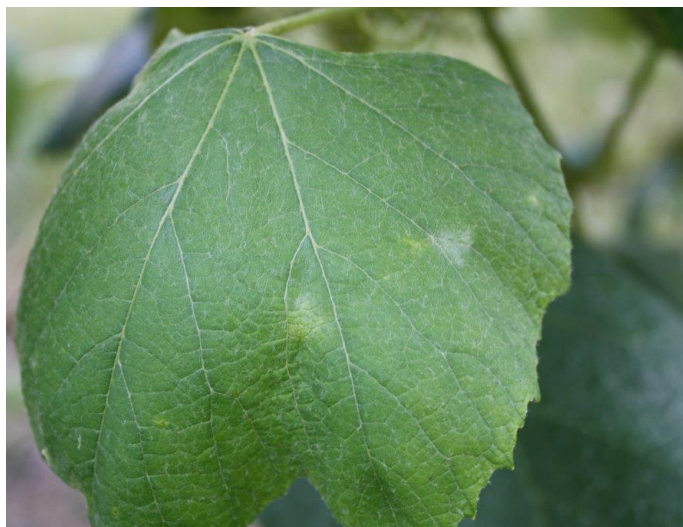


Figure 6. Powdery mildew colonies on Concord leaf. Photo – Andy Muza, Penn State.

blocks that have a history of black rot problems; and blocks where more than a scattering of symptoms can be found.

Powdery Mildew – Concord berries are susceptible to infection for about 2 weeks after bloom, so berries are beyond that stage at this point. However, leaves can be infected throughout the season. Low levels of leaf infection have been observed, so far, but infection levels normally increase as the season progresses (Figure 6). It is still too early to predict the severity of powdery mildew across the region as this will depend on: weather conditions for the remainder of the season, inoculum levels in a particular block and your management of powdery so far and later in the season.

Research by Wayne Wilcox showed that good control of powdery mildew leaf infections is particularly important in blocks with large crops in years with cloudy, rainy weather conditions. So, the need for additional fungicide applications in Concord vineyards will depend on the amount of PM leaf infections in **your** vineyard(s) and crop load. It is important to continue scouting vineyards and to conduct crop estimations to determine potential crop size. Ideally, crop estimations should be conducted starting at 30 days postbloom. (See: **Using the Concord Estimation Chart**, pages 5-8 in Crop Update – July 9, 2020 https://nygpadmin.cce.cornell.edu/pdf/newsletter_update/pdf570_pdf.pdf).

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