

Lake Erie Regional Grape Program

PENNSTATE



Happy Spring!

CROP UPDATE MARCH 22, 2018

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

Dates of interest:

Wednesday, March 28, 2018-Core Pesticide Training and License test-
see info in Crop Update

Location: CLEREL

May 2, 2018- Coffee Pot Season Begins!

10:00am- Clover Hill Farm, 10401 Side Hill Rd., North East, PA 16428

See full coffee pot schedule in this edition, and on <https://lergp.cce.cornell.edu/>



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Business Management

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

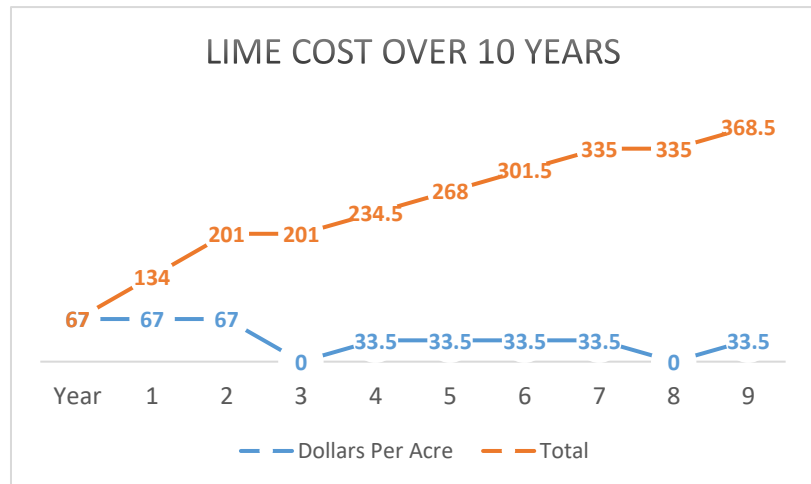
Economics of pH

Research once indicated that Concords were able to tolerate low pH. That was actually true. At the time the economic and viticulture reality was an entirely different world. Balanced pruned umbrella kniffin training systems were the best known way to manage juice grapes at the time. Advanced fungicide, canopy design improvements and machine harvesting all developed while agricultural commodity prices would trend lower for the next fifty years.

Our new economic reality is to maximize yields. Our commercial vineyards are now typically in a constant state of over-cropped, unless frost events allow vines to rest. This model, while not sustainable, also completely eliminates the ability of the vine to “tolerate” low pH. In our new economic reality vines demand higher pH.

While some vineyards have a pH over 6.0, most growers need to invest \$200 per acre over the next 3 years. While some soils change easier than others, chart 1 shows what a typical grower with a soil pH of 4.9 would likely need to budget for the next decade. Chart 1 shows both the cost per year and the total accumulating cost over time.

After about three years the grower will start to see benefits. It is more than likely that a balanced yield will be 1-2 tons higher as vine size increases. If that’s not the case,



savings would be realized as nutrients like potassium become more available. It is possible that savings in potash would exceed \$350 per acre. At a minimum, the increase in potash availability would save a grower \$125 per acre over years 3- 10.

It’s also important to keep in mind, these savings are calculated under the assumption that the desire is to maintain vine size and soil health. It is often possible to neglect potassium application for 5 years or more. Vine size will eventually decline, yield will decline, and brix will also decline. Eventually you might not even need to prune! Finally, the vineyard could be abandoned or the grower could adopt a soil remediation strategy to replenish organic matter, potassium and perhaps phosphorus levels to allow vines to recover. This remediation is intensive, expensive and must be completed without the support of vineyard production (yields will return after). Additional nutrient applications will be necessary as availability will be low, because part of a remediation strategy would be a 5-10 plan to increase soil pH.

Viticulture

Jacqueline Dresser, LERGP Viticulture Extension Support Specialist

THE SOIL PH IN MY VINEYARD IS TOO LOW... NOW WHAT?

INTRODUCTION

In the last crop update, we discussed soil pH and its relationship to nutrient availability in vineyards. Maintaining appropriate soil pH (5.5 – 6) in most Lake Erie soils is an uphill battle, due to the interaction of many sources of soil acidification. In this article, we are going to explore how to increase soil pH with lime.

Commercial agricultural lime is made from finely ground limestone or chalk. It may contain calcium and/or magnesium carbonates, oxides or hydroxides. The various compositions of liming materials offer different benefits, but all work in primarily the same way.

HOW AGRICULTURAL LIME WORKS

When lime is introduced into the soil solution, it reacts with H_2O and releases hydroxide anions (OH^-) and/or bicarbonates (HCO_3^-) depending on the composition of the lime. These anions bind to positively charged hydrogen ions in the soil solution, neutralizing them. Remember that acidic soils (low pH) have a higher concentration of H^+ ions.

As lime reacts in the soil solution and raises the pH, Al_3^+ and Fe_3^+ precipitate as $Al(OH)_3$ and $Fe(OH)_3$ and allow Ca^{2+} and/or Mg^{2+} to replace them on cation exchange sites. These reactions are extremely important to vine nutrition, as calcium and magnesium are made available and toxic aluminum is given a one-way ticket out of the rooting zone. It is important to consider, however, that Ca^{2+} and/or Mg^{2+} may outcompete K^+ for cation exchange sites (K has a weaker charge), so it is important to monitor potassium levels and supplement as needed.

LIME SPECIFICATIONS

Liming materials differ in their neutralizing value and their degree of fineness, which influence their effectiveness in bringing up soil pH. The neutralizing

value of a liming material, referred to as its purity, is measured as percent calcium carbonate equivalence (CCE, Table 1). The higher the CCE, the more acid that a unit weight of a given liming material will neutralize.

Table 1 Calcium Carbonate Equivalent of Some Liming Materials, adapted from Havlin et al. 1999

Liming Material	Calcium Carbonate Equivalent (CCE, %)
Calcium Oxide, CaO	179
Calcium Hydroxide (hydrated lime), $Ca(OH)_2$	136
Calcium-Magnesium Carbonate (dolomite), $CaMg(CO_3)_2$	109
Calcium Carbonate (calcite), $CaCO_3$	100
Slag, $CaSiO_3$	86

Fineness of a liming material also factors into its effectiveness. The surface area in contact with the soil influences the rate of the chemical reactions that neutralize the soil. The finer the particles, the faster they neutralize the soil acid. Fineness is expressed as the percentage of particles that will pass through a 100-mesh sieve. Calcium oxide and calcium hydroxide are powders with maximum fineness (100%) about the consistency of flour, while limestones must be crushed to decrease particle size. Crushed limestone may have a range of particle sizes and coarser particles will take longer to react with the soil solution. As a general rule, for dolomite and calcite to have the same effectiveness in raising pH at the same application rate, dolomite must be given twice as long to react or be ground twice as fine (Havlin et al. 1999).

Lime addition recommendations are typically made based on 80% CCE and 60% fineness (Table 2). Depending on the specifications of the liming material chosen, the recommended liming rate may need to be adjusted up or down. The supplier of the lime you are using should provide you with the specifications you need to make an educated decision on the application rate needed to achieve the desired pH increase.

Table 2 General lime recommends to increase soil pH to 6.0. Adapted from Bates and Wolf (2008)

Initial Soil pH	Initial Soil Cation Exchange Capacity (meq/100g)							
	2	4	6	8	10	12	14	16
	Lime needed to bring soil pH up to 6.0 (tons/acre)							
4.0	0.99	1.99	2.98	3.97	4.97	5.96	6.95	7.95
4.5	0.75	1.51	2.26	3.02	3.77	4.53	5.28	6.04
5.0	0.53	1.06	1.60	2.13	2.66	3.19	3.72	4.25
5.5	0.33	0.67	1.00	1.34	1.67	2.01	2.34	2.68

APPLYING LIME

In no till systems, applying lime does not provide instant gratification. Several studies reported that 10 to 14 years were required for surface applied lime to raise soil pH at a depth 15cm (6in) without incorporation (Havlin et al. 1998). Many variables exist that contribute to how quickly a desired pH may be achieved in vineyard soils. Initial pH, organic matter content, texture, moisture, cation exchange capacity, and compaction of a soil can all influence how effective broadcasting lime may be in increasing soil pH and the time required to reach the desired pH. The presence of cover crops, weeds, and the specifications of the lime used also play a role.



Figure 1 Lime application with Stolzhus lime spreader. Taken from *Liming the vineyards*. 2012. Missouri State University

It is also important to consider that soil pH changes with increasing depth in the soil. Acidifying fertilizers or fungicides will have the most pronounced effect on pH in the first few inches of soil. Ruling out deep cultivation to incorporate lime due to risk to established roots and considering to poor infiltration of liming materials into the soil profile, maintaining surface soil pH near 7.0 consistently across several growing seasons is the most practical way to reduce acidity deeper in the root zone (Ketterings et al. 2006).

Soil texture, water holding capacity and compaction vary across vineyards as well, which means that the soil pH (which varies spatially as well) may not respond uniformly to lime application at the same rate. Some growers in the region are using variable rate lime application to make sure lime additions are well matched to the soil conditions in the targeted area.

Broadcasting dry lime (Figure 1) either after harvest or before budbreak is the most typical practice in vineyards, though more expensive fluid lime may offer an increased reaction rate and other advantages. For lime additions exceeding 2 tons per acre, it is advisable to split the addition over successive seasons.

SUMMARY - GENERAL LIMING GUIDELINES

- Take representative soil samples at least every 3 years to determine lime requirements and evaluate effects.
- Check the specs! Lime with high CCE has higher neutralizing capacity. Finer lime particles react quickly and are mobile in the soil.
- Surface pH may not tell the whole story but keeping it above 6.0 constantly will help increase subsoil pH over time.
- Liming materials add Ca and/or Mg to the soil, so watch those K levels and add potash if necessary.

REFERENCES

- Havlin, J.L., Beaton, J.D., Tisdale, S.L. and Nelson, W.L. (2005). *Soil Fertility and Fertilizers: An Introduction to Nutrient Management* 6th edition. Upper Saddle River, Pearson Prentice Hall.
- Bates, T.R. and Wolf, T.K. (2008). Nutrient Management. In: Wolf, T.K. (ed.) *Wine Grape Production Guide for Eastern North America*. Ithaca, PALS Publishing, pp. 141-168.
- Ketterings, Q.M., Shaw Ried, W., Czymmek, K.J. (2006). *Lime Guidelines for Field Crops in New York*. Department of Crop and Soil Sciences Extension Series E06-2 Cornell University.

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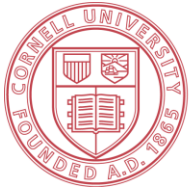
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Lake Erie Regional Grape Program

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850 East Gore Road, Erie, PA 16509-3798

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814-825-0900

“CORE” Pesticide Training and Pesticide Applicators License Exam
March 28, 2018
Cornell Lake Erie Research and Extension Laboratory (CLEREL)
6592 West Main Road
Portland, NY 14769

Space is limited ---Pre-registration is required for both sessions

CORE TRAINING

WHEN: Wednesday, March 28, 2018 from 9 AM to 12:15 PM

WHERE: CLEREL Meeting room

COST: \$15

3.0 Pesticide recertification credits in the CORE category have been applied for.

The CORE training session is also designed as a review prior to taking the Commercial or Private Pesticide Applicator exam but is not required prior to taking the exam.

Preregistration for the training using the enclosed course registration form is required by **March 26, 2017.**

Or sign up on-line at <https://lergp.cce.cornell.edu>

Questions on the training session should be directed to Kate at (716) 792-2800 ext 201

PRIVATE AND COMMERCIAL NYS PESTICIDE EXAMINATIONS

WHEN: 1 PM

WHERE: CLEREL Meeting room

COST: \$100

REGISTRATION: NYS Department of Environmental Conservation (DEC) requires you to register for entrance to the exam session with the Buffalo DEC office at (716) 851-7220.

DEADLINE for registration to take the test is March 9, 2018. To register, call the DEC at (716) 851-7220. You will then be sent an exam application form and test instructions by the DEC.

Any questions about your eligibility to take an exam or the status of your current certification should be directed to the Buffalo DEC office at (716) 851-7220.

Commercial Applicators: You will need the “Core Manual” and the category manual for the area(s) in which you will be certifying.

Private Applicators: You will need to get the “Core Manual” plus the private category manual for the area in which you will be certifying.

CORE and category training manuals are available through the Cornell Store by calling (800) 624-4080 or the [web-site link: http://store.cornell.edu/c-876-manuals.aspx](http://store.cornell.edu/c-876-manuals.aspx)

Questions on Pesticide Examinations should be directed to the NYS DEC at (716) 851-7220.

**2018 CORE PESTICIDE TRAINING
REGISTRATION FORM
Wednesday March 28, 2018**

Space is limited – pre-registration is required.

To register for the training, fill out and return registration form to:

ATTN: Kate
Lake Erie Regional Grape Program
CLEREL
6592 West Main Road
Portland, NY 14769

Name(s) _____

Address _____

Phone _____

Number attending _____

Registration and payment by Monday, March 26, 2018 (\$15 per person)

Make Checks Payable to: Lake Erie Regional Grape Program

IMPORTANT: This registration is for the CORE training session only.

If you wish to take the exam for a NYS DEC Pesticide Applicator's License you must contact the Buffalo office of the NYS DEC by calling Mike Nierenberg or Shaun Conrad at (716) 851-7220 no later than March 9, 2018 to provide ample time for them to provide you with an exam application form and test instructions.



LERGP

2018 COFFEE POT MEETING SCHEDULE

Date	Time	Location	Address
May 2, 2018	10:00am	Clover Hill Farm	10401 Sidehill Rd. North East PA 16428
May 9, 2018	10:00am	Ann & Martin Schulze Winery	2090 Coomer Rd. Burt NY 14028
May 16, 2018	10:00am	Sprague Farms	12435 Versailles Rd. Irving NY 14081
May 23, 2018	10:00am	NE Fruit Growers	2297 Klomp Rd. North East PA 16428
May 30, 2018	10:00am	Double A Vineyards	10277 Christy Rd. Fredonia NY 14063
June 6, 2018	10:00am	Fred Luke Farm	1755 Cemetery Rd. North East PA 16428
June 6, 2018	3:00pm	Thompson Ag	Corner of Hanover and Dennison, Silver Creek NY 14136
June 13, 2018	10:00am	Jim Vetter Farm	12566 Versailles Rd. Irving NY 14081
June 13, 2018	3:00pm	Jerry Chessman Farm	11725 Middle Rd. North East PA 16428
June 20, 2018	10:00am	Duane Schultz	3692 Wilson Cambria Rd. Wilson NY 14172
June 20, 2018	3:00pm	Brant Town Hall	1272 Brant Rd. Brant NY 14027
June 27, 2018	10:00am	Betts Farm	7365 East Route 20 Westfield NY 14787
June 27, 2018	3:00pm	Beckman Farms	2386 Avis Dr. Harborcreek PA 16421
July 11, 2018	10:00am	CLEREL	6592 W. Main Rd. Portland NY 14769
July 18, 2018	10:00am	Tom Tower Farm	759 Lockport St. Youngstown NY 14174
July 25, 2018	10:00am	Ziesenheim	8760 W. Lake Rd. Lake City PA 16423



INSURING GRAPES

NY, 2017

Crop insurance is a safety net for farmers that helps you **manage risk**. If you have a crop failure, crop insurance can help you farm again next year.

Important Insurance Deadlines

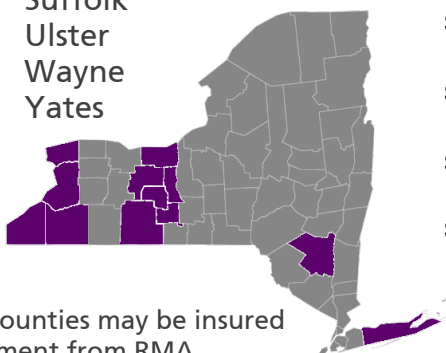
- **Aug. 15, 2017:** Premium Billing Date
- **Nov. 20, 2017:** Sales Closing, Policy Change, Cancellation, Termination Date
- **Nov. 20, 2017:** End of Insurance Period
- **Jan. 15, 2018:** Acreage / Production Report Date



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Grapes in other counties may be insured by written agreement from RMA

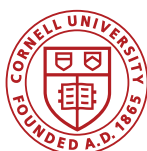
NYS Grape Crop Insurance Performance



for every \$1 grape producers spent on crop insurance premiums from 2012 to 2016, **they received \$2.07** in losses paid, on average

Learn more & sign up:

Explore your personalized crop insurance costs and loss payments under different yield outcomes at ag-analytics.org. To sign up, contact a crop insurance agent. Find an agent using the Agent Locator tool at rma.usda.gov/tools/agent.html



LERGP Links of Interest:

Go to <http://lergp.cce.cornell.edu/> for a detailed calendar of events, registration, membership, and to view past and current Crop Updates and Newsletters.

LERGP Web-site:

<http://lergp.com/>

Cornell Lake Erie Research & Extension Laboratory Facebook page

<https://www.facebook.com/Cornell-Lake-Erie-Research-and-Extension-Laboratory-678754995584587/?fref=ts>

Efficient Vineyard Web-site:

<https://www.efficientvineyard.com/>

Table for: Insecticides for use in NY and PA:

<http://lergp.cce.cornell.edu/submission.php?id=69&crumb=ipm|ipm>

Crop Estimation and Thinning Table:

http://nygpadmin.cce.cornell.edu/pdf/submission/pdf65_pdf.pdf

Appellation Cornell Newsletter Index:

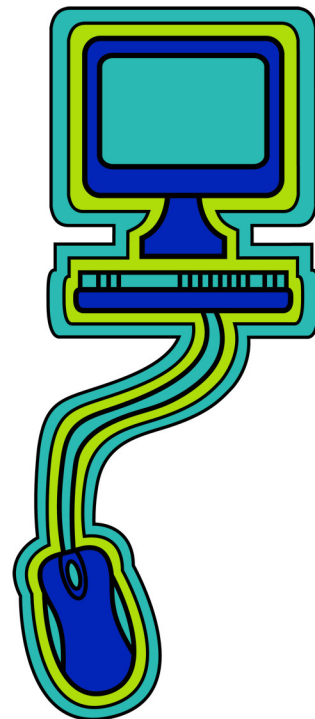
<http://grapesandwine.cals.cornell.edu/cals/grapesandwine/appellation-cornell/>

Veraison to Harvest newsletters:

<http://grapesandwine.cals.cornell.edu/cals/grapesandwine/veraison-to-harvest/index.cfm>

NEWA:

<http://newa.cornell.edu/>





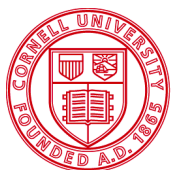
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