

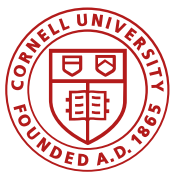
Cornell Cooperative Extension Lake Erie Regional Grape Program

Annual Report 2020

A cooperative program between Cornell and Penn State Universities, Cornell Cooperative Extension Associations in Chautauqua, Cattaraugus, Erie and Niagara Counties, Penn State Extension – Erie County, NYS IPM Program, National Grape Cooperative, Constellation Brands, Walker's Fruit Basket and growers of the Lake Erie Grape Industry



*Grape gold at the end of the rainbow?
Madonna Martin*



Cornell University



PennState Extension

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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.

Viticulture

Jennifer Russo, Viticulture Extension Specialist, LERGP

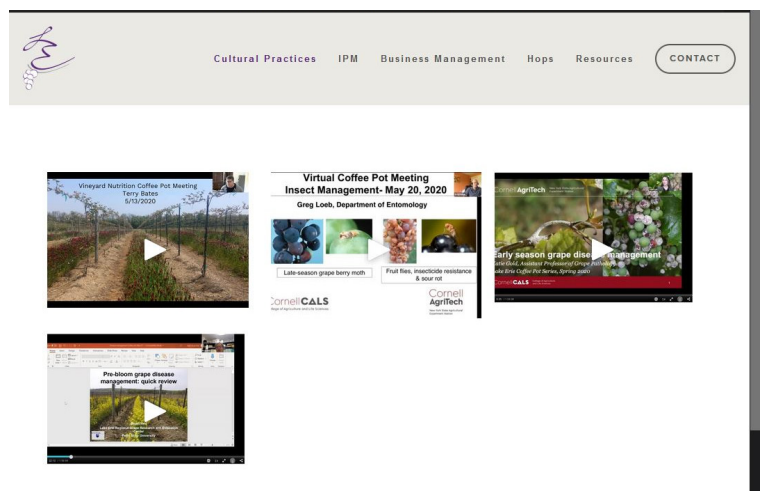
Seasonal Bud Low Temperature Exotherms

The Lake Erie Regional Grape Program received funding to purchase a Tenney 2 freezer to conduct Low Temperature Exotherms (LTE) work at our lab. With funding from the New York Wine and Grape Foundation, we are posting bud cold-hardiness and seasonal bud mortality information for four representative varieties on both websites, <https://grape-sandwine.cals.cornell.edu/extension/bud-hardiness-data/> and <https://lergp.com/>. The cultivars sampled at Cornell Lake Erie Research and Extension Laboratory in Portland, NY were Concord, Niagara, Riesling, and Traminette. Winter low temperatures that fall below a critical value can damage grapevine buds. The critical temperature for bud injury varies over the dormant season, and responds to daily changes in temperature. We can measure this critical temperature through a procedure called differential thermal analysis, which involves controlled freezing of a sample of buds collected from vineyards. This is a valuable tool for our growers to use along with daily weather information to compare the daily low temperatures and the bud hardiness data from our region so they can make risk management decisions in regards to pruning levels, delay pruning (pruning timing), and shoot thinning. The cultivars were sampled weekly after successful installation of the bud freezer mid-January 2020. The Buds were subjected to differential thermal analysis (DTA), with approximately 50 buds total for each variety for every run collected. The LT50 (Median Bud Freezing Temperature) values for each variety are listed in tables on each website listed above.

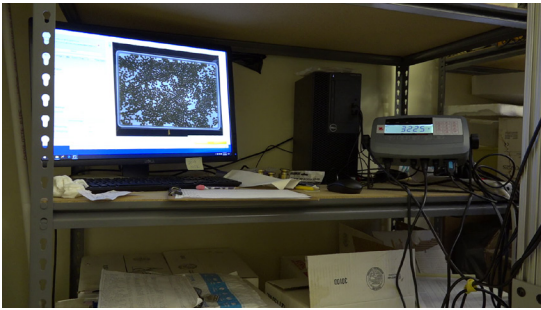


Virtual Coffee Pot Meetings

Coffee Pot meetings were started years ago in an effort to connect with local growers to address their needs during the growing season. These meetings are typically hosted by grape growers in the region that are willing to invite the group into their barn/garage. LERGP brings coffee, doughnuts, the latest research information, and pesticide applicator recertification credits. This year, due to the restrictions in place from the COVID-19 pandemic, the group was unable to conduct business as usual. In an effort to continue the sharing of important research, as well as maintaining the collaboration of ideas from the growers, the LERGP team was successful in setting up Virtual Coffee Pot meetings. Each meeting featured a management topic with faculty and extension panelists. In addition, the New York State Department of Environmental Conservation (DEC) and the Pennsylvania Department of Agriculture (PDA) have both approved offering pesticide recertification credits at these meetings to aid our growers. For each meeting one credit was available to both New York and Pennsylvania licensed pesticide applicators. The



LERGP offered 13 opportunities to receive pesticide recertification credits in 2020. There were 13 Virtual Coffee Pot Meetings total with 13 Guest Speakers and 457 total participants in the meetings with 183 attendees in the third quarter. This unintentional platform was so well received by our stakeholders, that they have requested we continue to offer Virtual Coffee Pot Meetings in the future. This success story was not without its trials and tribulations. The LERGP staff dedicated the first 10 minutes of every meeting to walk participants through the virtual platform to ensure that all of the DEC and PDA requirements were met. The average age demographic of our grower base is 65 years. I commend all of the attendees' willingness to embrace technology and I am proud of the work that we all accomplished together. The Coffee Pot Meetings are discussions on timely viticulture, business management, and integrated pest management. In addition, special guest speakers with expertise in viticulture and enology from all over the country have been invited to present their research in this informal setting and answer grower questions face-to-face since traveling isn't an issue with the virtual platforms. The LERGP is excited to be able to continue to offer educational outreach and pesticide recertification credits to our industry stakeholders during this pandemic time.



Crop Estimation with the Cornell Grape Counter

The Cornell Grape Counter (CGC) Machine 2.0, with the incorporation of digital scale for instant sample weights and accurate berry count, aided with industry stakeholder crop estimation and generated funds for our program. The principal outcome of improved crop estimation is savings to stakeholders including optimized scheduling of labor, efficient coordination of space for fruit and juice, improved delivery scheduling, reliable reporting to government agencies and

distributors, early projection of revenues, proactive filing of crop insurance claims if the estimate is critically low and a reliable basis to make crop reduction decisions if the estimate is critically high.

National Grower's Coop (Welchs), contracted our services to aid in their Lake Erie and Finger Lakes regional crop estimation in 2020. Their goal was to be under 7% variation in their final crop weights from their earlier crop estimation. With the use of the Cornell Grape Counter Machine 2.0 (developed at CLEREL), their crop estimation only varied by 6% of the final crop delivered.

The CGC system employs computer vision to automate the tedious process of counting and sizing grape crops and accurate weights. A custom image-processing algorithm was developed to automate the grape counting process. Software was created to export data for user analysis and as a viticulture tool. With manual assist, the CGC machine can achieve >99.5% accuracy and takes 2-5 minutes to count a tray of 3-5k grapes, which historically was counted by hand.

Often, the most practical way to decrease the margin of error is to increase the sample size. The time savings that the CGC allows could be allocated to the collection of more samples to obtain a more precise crop estimation. Though this work is tailored to Concord growers, it would be easily applicable to other juice, wine, or table grape production systems. The development of an accurate automated berry counting machine with accurate sample weights would streamline the estimation process improving efficiency with savings in labor improving profits.

2020 Pest Management Spray Schedule – What's Your Plan?

In preparation for the 2020 season, a virtual (online) meeting was conducted via Zoom to assist growers in developing a pest management plan in the 2020 growing season. This meeting was interactive so that growers had the ability to ask questions concerning specific pest problems or potential problems in the 2020 season. Topics that were addressed include: timing of spray applications at critical growth stages; pesticide options, efficacy and cost; and resistance management. There were 18 attendees.

NEWA/VIP

Kim Knappenberger, Program Aid, LERGP

Vineyard Improvement Program

2020 added ten new applicants to the Vineyard Improvement Program bringing the acreage to almost 322 acres of Concord vineyard to be removed by 22 applicants. Of these 10 new applicants nine are from Chautauqua County representing about 155 acres, and the tenth one is from Erie County representing about 8 acres. Initial site visits were performed with the added precautions in place to stem the spread of COVID-19. Many were performed without the applicant present. If the applicant was present masks, social distancing and hand sanitizer were all used.

An applicant posed a question about using the program to clear a vineyard to put solar panels up as a part of a project. We were unsure how to answer so passed it off to Emily Cook at Ag and Markets. She quickly notified us that that would be an appropriate use of the project. Armed with this information a notification was sent out to our growers. As with all of the applications, details will have to be examined prior to acceptance. The larger projects may already include clearing the land which would nullify use of this program.

A workflow guide was created to aid in keeping the applicants on track during the process and to expedite project completion. Seven final expense sheets were put together during this year as applicants neared reimbursement. Seven final site visits were conducted. Eight reimbursements were completed in 2020, one of which was submitted in 2019 but was delayed due to the holidays and the CCE Chautauqua office move. The total amount reimbursed in 2020 is \$104,003 which accounts for 77.74 acres of Concord vineyards removed. 26.96 of those acres were replanted to other grape varieties, and the remaining 50.78 acres were planted with field crops. The breakdown of acreage for all applicants in counties is: 19 from Chautauqua County and 296 acres, 1 from Steuben at 2.69 acres, 1 from Schuyler at 5.66 acres, 3 from Niagara at 39.92 acres, and 2 from Erie County (NY) at 12.48 acres. The crops replanted are: Aurore, Elvira, Ives, Foch, Chambourcin, Itasca, Seyval, Concord, Vincent, and Gruner vineyards for a total returning to vineyards at 110.02 acres; cover crops are intended for 25.16 acres; apples on 4 acres; field crops on 97.3 acres; strawberries on 0.5 acres; rhubarb on 0.5 acres; asparagus on 1 acre; vegetable crops on 2.5 acres; and potentially 90 acres to become a solar farm.

The program was presented to growers present at the July 22nd virtual coffee pot meeting and can be viewed on our website at <https://lergp.com/2020-virtual-coffee-pot-meeting-guest-speakers>. In addition, information has been included in Crop Updates and Newsletters, and a press release was written to encourage attendance at the virtual coffee pot meeting where it was presented.



NEWA

The year began with a number of stations not reporting data in both the Lake Erie region and the Finger Lakes region. After speaking with the owners of the stations and technical support from Rainwise it was determined that there were a couple of reasons for the outages. Rainwise itself had experienced some system wide outages that were noticed, but generally the data was backfilled once the servers came back online. In addition, some of our more remote stations, specifically Portland

Escarpment and Silver Creek, experienced some internet connectivity problems. While troubleshooting it was noticed that a number of our area stations are getting to a point that Rainwise recommends replacing the station versus making temporary fixes. With our aging network of Rainwise stations in the Lake Erie Region, we have been experiencing occasional sensor issues. These Rainwise stations are recommended to be replaced every 5 years to ensure the collection of accurate data. East Westfield is a cellular station that required that the TeleMet to be sent in to be updated. This unit arrived back at the lab at the end of the year and will be set up in January. The LERGP purchased a HOBO station from Onset Computer Corporation in February and it is now installed and receiving data. This data is linked to the NEWA network as Portland (LERGP West). The rationale behind installing this additional weather station is to become familiar with both systems and be able to assist local station owners with questions on either one. Soil temperature and moisture sensors were added to the Onset station at CLEREL in the second quarter. These can be seen on the NEWA website at the Portland (LERGP West) station. Quotes were obtained from both Onset and Rainwise regarding replacing some of the older stations in our network. There are pros and cons to both, but for this year while money is tight there were no new stations. In February, Kim began assisting Dan Olmstead with the NEWA help desk. This frees up some of Dan's time to address the more difficult NEWA related questions and situations, while ensuring that the day to day questions to the help desk get answered.

One thing that was noticed is that the Rainwise and Onset stations are recording data with some variance that results in a differing accumulation of growing degree days. These numbers are also slightly different than those collected by the Mesonet stations. Suggestions for the reason behind this might include that the stations are calibrated differently between the three sources. Also, the timing of the collection, height at which the temperatures are recorded, and the ground cover present would all contribute to varying results. These data are used in disease models presented on the NEWA website. Growers are encouraged to consult their local stations to best assess the pest and disease exposure and the need to spray for those pests. Spray recommendations can be made around what has worked better historically in that area. If control has not been maintained, perhaps using data from a different sensor would help.



Grape Commodity Survey (CAPS)

108 traps were set up in 8 vineyards and 2 nurseries in the Lake Erie Region. This year the target moths include *Cryptoblabes gnideiella* (Christmas Berry Webworm), *Lobesia botrana* (European Grapevine Moth), and *Eupoecilia ambiguella* (European Grape Berry Moth). The traps were set on June 9th and 10th, there was a slight delay of set up in two vineyards due to reentry restrictions from a spray application. These traps remained in the vineyards and nurseries for 14 weeks and were serviced (surveyed for the presence of moths) every two weeks for a total of 7 times. These traps that are loaded with pheromone lures are initially screened in the field. Traps that contained moths of any kind were collected and further screened at the

lab. No target moths were collected during the entirety of this survey. A record of negative samples was recorded and these results were shared with the project coordinator, Juliet Carroll, via google sheets. In addition, no Spotted Lanternfly adults or egg masses were observed when scouted for in connection with this project.

COVID-19 PPE

CLEREL has been one of two pick-up locations in Chautauqua County for the free PPE supplied by New York State Department of Agriculture for producers in the county. 944 gallons of the NYS Clean hand sanitizer was distributed during 2020. Also distributed were 895 2-ounce spray bottles and 4,460 face masks.



Business Management

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

Labor and Price Trends

Growers were provided with labor and input cost trends throughout the winter months as pre-buying materials occur through February. Winter fertilizer costs reflected current trends in soil tests and lower fertilizer prices, that created some opportunities for growers that were shared in newsletters, crop updates and video blogs. The labor situation in NY evolved rapidly with changes in regulation that growers needed to respond to. Through similar delivery methods, press releases and a live presentation at CLEREL we provided growers with both regulatory compliance information and cost estimates. Programming was supplemented by Cornell agricultural workforce development program. Further enhancements to strategy were to be presented at the now rescheduled grower conference.

COVID-19

As mentioned, the winter conference had to be rescheduled due to COVID-19. LERGP has since rescheduled the conference, provided relevant business management updates to growers through usual electronic methods



and taken virtual office hours live twice a week. Growers have particular concerns about impacts on grape prices, finances, and the availability and cost of materials. Given the rapidly evolving situation, the focus has been managing risk. By entertaining the possibilities of material shortages and lower grape prices, growers can focus on purchasing the things they'll need before there is an issue. With prices of things relatively low, this risk management strategy has little downside (other than a hit to cash flow) until prices move upward. Along with this strategy there have been a number of government programs that have or will soon make inexpensive credit available. That inexpensive credit

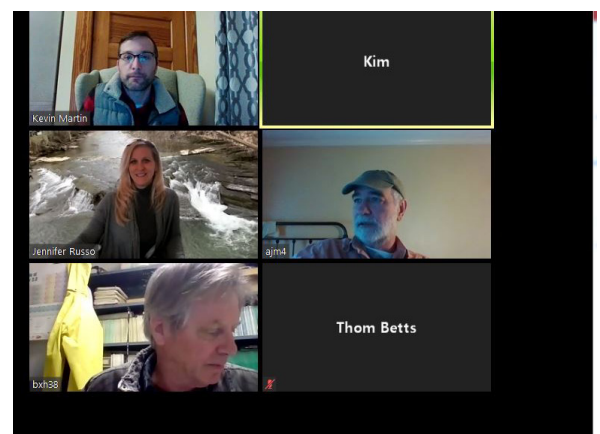
is the second leg of the strategy we've shared with growers to make sure that stock-piling 2020 supplies does not interrupt cash flow. The third part of risk management we've shared with growers is to take the issue seriously. Their workforce and business model for labor supply is vulnerable to interruptions. Following CDC and DOH guidelines to minimize risk has been encouraged by illustrating the potential costs and damages to the operation, if just one full time person is forced to quarantine. As everyone has mentioned far too many times this situation has evolved rapidly. At this time, we are hoping these changes to programming a curriculum are relevant, effective and topical but evaluations to COVID-19 relevant programming will take some time to complete.

Virtual Office Hours

In response to COVID-19 Restrictions LERGP hosted virtual office hours via Zoom. Office hours were conducted two to three times per week in March and April. Field rep meetings were also conducted virtually to maintain access between educators and industry. There were 153 total attendees.

NY Moving Forward

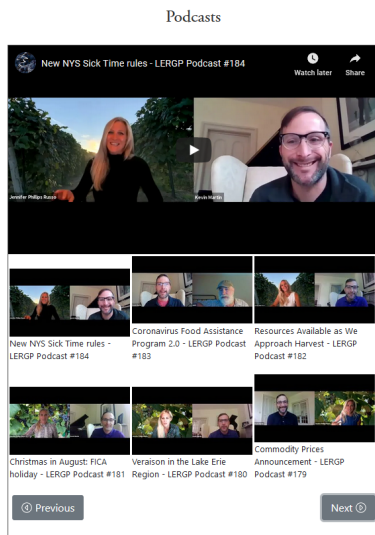
Work with Cornell Agricultural Workforce Development helped develop training materials and webinar curriculum to help growers respond to COVID-19 safety, including NYS regulatory requirements associated with operations remaining open.



Webinars included best practices that PA growers also attended to ensure safe procedures for their customers and employees. The two webinars I co-hosted were attended by 145 industry representatives, farm owners and employees.

Podcast Series

Our weekly video update has continued. Topics have included updates on in-person and virtual events, berry moth, frost, canopy management, COVID-19 and capital costs. Interest in the video updates remains steady with most views coming within the first 10 days after posting. We reach an audience of 30 – 60 and often discuss similar topics that are included in the crop update.



COVID-19 and Labor Relations Focus Continues

Covid-19 and Labor Relations have been the underlying theme of education this quarter. Delivery of information followed traditional methods of podcasts, newsletters and crop updates. Additional e-mail contact was occasionally utilized as much of the information has been time sensitive. With limitations on our ability to deliver information to large groups in person, podcasting and e-mail has been essential to notify growers of timely information. Federal and state programs introducing paid sick time were one topic of focus. CFAP 1.0, PPP, Tax Credits and SBA funding all rolled out or continued this quarter. The ability of growers to receive funding was a mixed bag. The fast pace of Q2 was gone and Q3 provided an opportunity for growers to apply for less competitive funding sources, begin to work through loan forgiveness plans, while doing day to day crop management. Over-time policies in NY were also reviewed. Harvest may be the first time grape growers pay over-time under revised 2020 labor laws. More programs were rolled out toward the end of

Q3 and additional educational information is being provided in Q3. CFAP 2.0, and NYS paid sick leave are the highlights thus far.

PA Update

Andy Muza, LERGP Extension Educator, Penn State University

2020 New York and Pennsylvania Pest Management Guidelines for Grapes

Each year the “New York and Pennsylvania Pest Management Guidelines for Grapes” is updated to provide commercial grape growers in both states the most relevant information concerning vineyard pests and pest management schedules. Annual revisions concerning herbicides, insecticides and fungicides are included along with pertinent research- based information. The “New York and Pennsylvania Pest Management Guidelines for Grapes” is a cooperative effort involving both faculty and staff from Cornell and Penn State Universities.

Vineyard Scouting for Crop Updates

Vineyard scouting was conducted weekly at various sites extending from Girard/Lake City area to North East, Pennsylvania. The objective was to provide timely information, throughout the season, on potential/developing pest problems in vineyards. Monitoring of vineyard blocks began in May and continued until mid-September. Scouting information along with accompanying photos of pest problems, obtained during the weekly monitoring, were reported in the Crop Updates.