FINGER LAKES
Vineyard Notes

Cornell University
Cooperative Extension
Finger Lakes Grape Program

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Tim Martinson, Senior Extension Associate—Cornell University

Note: While this article discusses injury to varieties that are generally not grown in the Finger Lakes or Lake Erie regions, the recommendations for managing different levels of injury can still be applied to other hybrid and vinifera varieties.

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The polar vortex brought record low winter temperatures to the Midwest and northeast early in 2014, along with multiple low temperature episodes over several weeks. Many vineyards suffered a wide range of bud injury, and an unknown amount of trunk injury – even with cold-hardy 'Minnesota' varieti[redacted] budbur[redacted] occurred, growers have a better idea of what they are dealing with and how severe the damage is. It's time to deal with the injury. So what are the consequences, and what should growers do to manage injured vines?

Shoots from secondary and tertiary buds. Primary bud (circled) did not push. Note there are no visible clusters.

A c h - A week or two after budburst, it's easy to assess how many shoots have 'pushed,' but those that have will be a mixture of primary (normally highly fruitful), secondary (much less fruitful, with fewer, smaller clusters) and tertiary (fruitless) buds. Often, latent buds from the trunks, cordons, and particularly the base of the vine (suckers) will push instead of 'count buds' – those intentionally left after pruning on one year canes.

S h - The phloem, vascular cambium, and xylem (tissues that conduct water and nutrients) are right below the bark, and also subject to winter injury. Damage is often hidden and sometimes delayed. Buds may push and vines with trunk injury may suddenly collapse in mid-season or later – or next year. Trunk injury is hard to evaluate.

H b ed g b - Winter injury leaves the vines with a largely intact root system, but fewer growing tips to channel spring and summer growth into. Even vines with close to an optimal number of shoots (5-7 shoots per linear foot of canopy, or about 30-40 shoots for a vine with 6 ft. spacing), will have much less fruit than normal. The bottom line: Vines will have the same growth potential, but less crop and fewer

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shoots to 'hold them back.' Expect more vegetative growth, which can lead to more shading and less fruitful buds the following year.

L fd d h d09Kd h f d fg g . Growth potential can be channeled into a few, long, rapidly growing canes, or several moderately growing shoots. The challenge with winter-injured vines is to leave enough shoots to distribute the growth potential among many, rather than a few.

L fd d h d19S d d - Regardless of the severity of winter injury, growers need to be prepared to replace trunks following significant winter injury. Existing trunks that have only a few buds pushing on the top will fail to produce even growth of new vascular tissue around the trunk. Cambium activation and cell division to produce new xylem and phloem tissue is triggered by hormones that come from the shoot tips. No green shoots, no reactivation.

Here are a few scenarios with a range of injury severity:

1. **M g ad cd d b d f g9** These TWC-trained Marquette vines have 30-50 shoots, and shoot growth is very even. There are a few suckers growing out of the base of the vine. Cluster number is reduced (many of the shoots that pushed were secondaries), but the trunks and cordons should be in good shape, and produce a normal complement of shoots next year. Prime management goal: Spurs for next year that are evenly spaced. Retain 2 suckers for potential trunk renewal.

Scenario 1

1- L g a d b d f g- On this TWC-trained Frontenac, more and longer suckers are present at the base of the vine. Even though there is ample shoot number on top, some of the shoots are weaker, and the potential for trunk injury is higher. Management goal: maintain top growth, retain 2-4 suckers for potential trunk replacement, observe vines for signs of trunk injury and crown gall in mid-season.

Scenario 2

2- Ed g b d 9 This VSP-trained Frontenac vine has less than 50% of target shoot number, and a high number of shootless or 'blank' nodes, so trunk renewal is a must. Management goal: Retain top shoots and suckers to have enough growing tips to produce 'right-sized' trunk renewals. Retain all suckers through mid-season; tie loosely together with twine to keep shoots from spreading over ground.

Scenario 3

3- M f g lf b d - Marquette at a different site: Trunks are dead, but vine can be renewed. Retain suckers. Trunks can be removed during season, or during dormant pruning. Draw suckers together loosely with twine to promote

upward growth and keep them off the ground. Keep as many suckers as you can. Choose the best-positioned ones for trunk renewal the following season.

Scenario 4

4- M f g b d d b d f g- These La Crescent vines will probably need replacement. There is no visible growth on top, and no vigorous suckers at the base of the vine. Order replacement vines, or plan on 'layering in' long shoots from adjacent vines the following year.

Scenario 5

Eh g fg 9

- **Rhd c h h f 9** Winter injury episodes can provide a good opportunity to take a hard look at your site and training systems. Patterns of shoot and bud survival can reveal issues with air drainage (frost pockets) or internal soil drainage. It is also a good time to re-evaluate your training system and make decisions about what should be done differently.

- **Mh f d 9** Without a full crop N requirements will lessen, and supplemental N fertilizer should be minimal or skipped.

- **Chd dL f d d 9** Even without a crop, it's important to keep the foliage healthy. Powdery mildew, downy mildew, phomopsis, and black rot can all be present on the foliage. Maintain appropriate shoot density (4-7 shoots per foot of canopy) and use shoot positioning ('combing' on high wire training systems; VSP will still need to be positioned) to maintain airflow through the canopy, minimize disease pressure, and produce quality, fruitful buds for next year.

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Luke Haggerty, LERGP Viticulture Extension Associate

With temperatures dipping down to -10 to -13°F for most of the region, winter injury was inevitable. The winter's extremely cold temperatures have left most of the Lake Erie grape region in a varied state of damage. *V. vinifera* cultivars suffered the majority of the loss/damage with some 'hybrid' and 'native' cultivars also suffering winter injuries. As the growing season progresses, the apparent bud and vine vascular damage can be seen by dead or stunted shoots on injured vines. Depending on the severity of the damage, growers are taking action by replanting dead vines or renewing vines/trunks that have suffered damage.

Now that bloom has occurred, all trunk and cordon vascular tissues (phloem, vascular cambium, and xylem) should be functioning. Trunk damage occurs from the outside in; making the phloem first tissue to show sign of injury. Damage to the phloem (Fig. 1A) will prevent the flow of carbohydrates needed for shoot development. Damage to xylem (Fig. 1C) will restrict flow from the roots to the canopy resulting in stunted, chlorotic (yellowed), or dead shoots (Fig. 1B). Phloem and xylem damage can be assessed by cutting a shallow strip off of the trunk, cordon, or canes and examining the amount of oxidation (browning).

Figures 1 and 2 show a good comparison in shoot development between healthy and damaged vines. Pictures of the vines were taken on the same day. Shoots on the vine in figure 1 (damaged) had an average length of 11 inches, the healthy vine in figure 2 had an average shoot length of 32 inches.

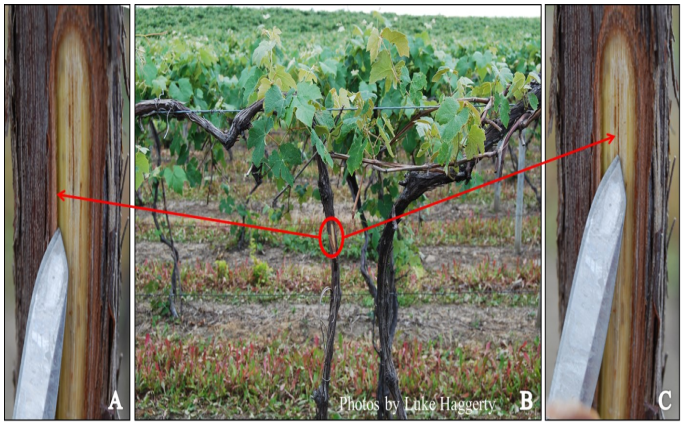

Figure 1. Winter damage on a 'Niagara' vine (A) damaged phloem (B) combination of dead buds (blind nodes) and stunted yellowed shoots (C) brown streaking indicating xylem damage.

Figure 2. (A) Healthy 'Niagara' vine (B) shallow cut exposing phloem and xylem.

In cases of severe trunk damage, the xylem and phloem no longer function and the vine can collapse (Fig. 3A). Vine collapse occurs when expanding leaf size and overall canopy size demand more water than the trunk can supply. Timing of vine collapse is unpredictable and can even happen the following growing season. Depending on the location of the vascular damage, 'partial vine kill' can occur on one side of the cordon or select canes. In cases of partial vine kill, vines can be managed by pruning out the affected areas. However, when there is obvious or

Figure 3. Severe winter damage to 'Pinot gris' (A) vine collapse (B) stunted shoots with chlorosis.

suspected trunk or cordon damage, suckers should be retained with the purpose of vine or trunk renewal. The overall goal of trunk renewal is to balance the amount of living tissues above ground with the potential of the roots below ground.

Trunks should be renewed on any vines that are suspected of trunk injury. Protected below the soil line, root systems are generally unharmed by winter injuries and readily supply carbohydrates to the awaiting plant tissues above ground. When there is trunk damage, hidden buds at the trunk base awake from dormancy and produce 'suckers'. A vigorous eruption of suckers has long been a sign of trunk damage, and the typical response from most growers is to save the sucker to replace the existing trunk which renews the vine. The amount of sucker and fullness of canopy are cues for guiding decisions on how to balance the vine. If viable, 4 to 6 suckers should be retained to balance the root support when the canopy is severely stunted and or showing visible nutrient deficiency. In vines that have full canopies and produce large vigorous suckers, only 2 to 4 suckers should be retained to obtain balance. Although balance is difficult to put into words, a different decision will need to be made for every vine. The goal of vine renewal is to manage the existing root structure with the amount of living plant material above ground.

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Kevin Martin, Penn State University, LERGP

The extent of winter damage is starting to become clear. The impact has been variable dependent on site, variety and vine health. We have seen significant economic damage in everything from Concord to Vinifera. Quite a few growers have expressed an interest in retraining or replanting these damaged vineyards. A few have already made their decisions and begun. Many Concord and Niagara growers realize the value of crop insurance and will postpone this management decision until after harvest.

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In the event a vineyard has enough potential damage to be removed, it does make sense to manage it through this crop year if a crop insurance claim will be on the larger side. Most growers do not include winter damage as a major potential risk for hybrids and natives. Depending on the variety, it makes sense. If you're seeing frequent winter damage in Niagara, it is probably time to find a better site or select a different variety. For that reason, we see these growers more apt to replant with less damage than Vinifera growers.

Replanting a vineyard can be significantly cheaper than establishment. Many growers successfully recycle 30% - 50% of posts and nearly 100% of wire. This is particularly true for wine grape vineyards, which tend to be younger. Land preparation costs are significantly lower. Nutrient applications, drainage installation and clearing may all be unnecessary. This can save $1,000 - $5,000 per acre. Though, if additional drainage were needed, now would be a perfect time to make that investment.

Removal costs of an existing vineyard will depend significantly on salvage goals. Growers report post and wire removal costs of $145 and $70 respectively. Without salvage, costs were $150 per acre. The cost of removing vines also varies considerably based on practices. Generally, the greater percentage of roots removed, the greater the cost. Costs ranged from $75 - $250 per acre. Removal of roots may be one way of helping to manage against future rootworm problems. Total removal costs: $320- $400.

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Land preparation costs will typically include three or four passes for full tillage, along with an additional pass for marking the row. A pass with a sub-soiler for zonal tillage is also recommended. For growers that did not remove roots, an extra pass with tillage equipment can help to remove a percentage. As previously mentioned, most preparation costs are eliminated in a replant situation.

Total preparation cost: $60 - $90

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Planting costs run as high as $2,200 per acre for custom hire with a laser or GPS guided planter. A typical grower will spend $225 per acre. Vines will add an additional $1000 per acre, depending on vine spacing.

Total Planting Cost: $1225

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Trellis costs will vary based on salvage of prior vineyard, post type, wire type and anchor type. Even amongst native growers on top wire cordon, there is no industry standard. Posts will range from $950 - $2,100 per acre. Wire costs will range from $0 - $275 per acre, with most growers at $130 per acre. Expenses for anchors, crimps, and staples will total $170 per acre.

Locust posts tend to be cheaper but result in slightly higher labor costs, unpredictable supply, and curing time. Treated posts are typical but growers use varying diameters to balance upfront cost with longevity. Wire is universally crimped in NY and larger in PA. PA wire has a higher upfront cost, may require additional annual maintenance, but typically lasts longer. A second wire has mostly fallen out of favor since the industry has moved to top wire cordon. The considerable variance in trellis construction can undermine the profitability and

sustainability of vineyard operators that over-invest in their trellis.

Labor and tractor costs for trellis construction have two levels. Auguring in posts would be considered an expensive method of installation. Pounding or baring posts is less expensive if timed correctly on most soil types. However, for the sake of accuracy and operator comfort, auguring is a preferred method for the majority of growers. It increases costs by $200 per acre.

Total Trellis Cost: $1,850 - $2,600.

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Tying, fruit thinning, and weed control tend to be important practices that inflate the cost of vineyard management prior to first harvest. Total costs, including labor do vary based on weed and disease pressure. $1400 per acre for the first three years is fairly typical. While other studies include costs of overall capital, as this is additional acreage, only the marginal costs of equipment are included. These costs compare favorably with custom rates. For smaller growers hiring custom operators, costs will be somewhat higher.

Preproduction: $1,400 -1,800

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Including interest costs, the total cost of reestablishment would run the range of $5,023 on the low end to $6,487 on the high end. Keeping costs down can be important, as cash flow for smaller and newer operations is a significant obstacle. These establishment costs often exceed the cost of purchasing additional acreage.

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In the end it can often make more sense to retrain if the site is acceptable and the winter injury is unusual. Even if 100% of vines will have trunks renewed over the course of three years, it is often less expensive to retrain. Retraining can have the additional benefits. Cash flow is less of a concern, crop insurance can provide revenue, and vineyards recover faster.

While retraining 100% of vines in the first year would be less expensive, depending on the nature of damage, carrying a crop and drawing out retraining for a period of six years can be more profitable. For a period of three years, growers will find their herbicide program to be more expensive.

The total cost of retraining per vine is typically $3.50. That cost includes enhanced weed spray programs, trunk removal, dippers and sucker training. Total cost can be higher when damage is less than 100%, as the herbicide program is still applied to the entirety of the block.

The economic viability of the retraining process requires no winter damage to occur over the next four to six years. An analysis of historical temperature data and grower experience on a specific site is required to make this decision. If the probability of significant winter damage is relatively high it makes sense to replant elsewhere. This analysis is less important on higher end varieties. If established in a high quality site, winter damage still happens. It simply needs to be included in the cost of production.

When vines do not sucker, spot replanting can be challenging in existing vineyards. At $12 an hour, weed spray applicators can hit between 30% and 60% of new vines. While we have not seen many sites that exhibit poor sucker growth, if 30% of vines do not have suckers it is time to consider replanting. This can be particularly practical if it occurs in a zone at the end of rows or across a number of rows. If poor sucker growth is spread across a block evenly, the decision is more of a grower preference.

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Rather than reinvent the wheel, take a look at this publication for more regarding the costs of establishment:

Yeh, Adeline D., Gomez, Miguel I., and White, Gerald B., *Cost of Establishment and Production of V. Vinifera Grapes in The Finger Lakes Region of New York. (February 2013).* Retrieved From: http://dyson.cornell.edu/outreach/

extensionpdf/2014/Cornell-Dyson-eb1401.pdf

To put that publication in context, the cost of reestablishment will be lower. Costs in the Lake Erie Region tend to be lower as well.

In short, it will be considerably more expensive to replant. Despite that expense, damage that limits sucker growth on more than 30% of vines will necessitate a replant. Given the average age of these plantings it will make more sense to invest time in salvaging the trellis. It will also make sense to think critically about the variety selected as they all respond differently to winter stress.

If the variety is particularly vigorous, it is more practical to replant within the existing vineyard. With no suckers on 15% - 35% of vines, a grower may successfully rehab a vineyard this way. If vigor is lacking, this will be more problematic. Costs will rise considerably if a crop is not obtained by the fourth year.

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The Tree Fruit Assistance Program was designed to provide a financial cost share to growers with vineyards that show significant damage. Qualifying for the program has recently been modified. The FSA now requires:

16% of vines dead above and below the ground **MC**

15% of vines damaged

Despite these onerous requirements some growers will qualify. Financial assistance is limited to $125,000 per person and/or legal entity owned by that individual.

It is possible to file a claim with your local USDA office at this time. It probably makes more sense to wait, as documentation of vine death or damage will be easier as the growing season gets underway. However, if the significant frost/freeze damage on the 2012 crop resulted in vine mortality, consider making a claim immediately. Low vine mortality will limit the reimbursement for vines but the costs for retraining an entire block would qualify for TAP reimbursement (if the mortality threshold is met).

TAP reimburses growers for 65% of actual replanting costs, above the 16% mortality. TAP also provides for 50% of actual rehabilitation costs, in excess of 16%. Growers with as few as 25 acres of closely spaced Vinifera may reach the maximum threshold limitation of $125,000. This cost sharing program applies to most expenses you can imagine, as long as documentation is provided. For example, Fertilizer, trellis construction and materials are all fair game when replanting. Irrigation and drainage are excluded.

While some sites have acceptable bud losses in Niagara vines, vine collapse remains a risk with this variety and similar natives. In the event of significant Niagara damage or death, the economic impact of this disaster, especially the number of growers impacted, has the ability to expand significantly.

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Tim Weigle,, NYSIPM, LERGP Team Leader

Note: This is an updated version of a Lake Erie Crop Update article that hit email boxes on May 21, 2014. I have updated it a bit to fit the post bloom time of year.

During conversations with growers this spring, it occurred to me that I have been talking about grape IPM for 25 years. And while things have changed a bit over the years, I find that when I talk to successful growers they all talk about the basic components they use in their vineyard IPM strategies. Below is a list of the most common components as they apply to the bloom and post bloom periods.

d – Knowledge of pest identification and life cycles will ensure the proper materials are applied at the correct time. The NYS IPM Program has a series of fact sheets on grape pests at: http://www.nysipm.cornell.edu/factsheets/grapes/ . Also, keep up with the research that has been done on each pest, especially the primary pests

you deal with every year. I spoke with Andy Muza on Tuesday, June 24, and he let me know that he was finding grape berry moth and webbing of the clusters along with powdery mildew cluster infections and downy mildew foliar infection on suckers. None of this was a surprise; you should expect to be able to find evidence of pests if you are out looking in the vineyard. Knowing your pest will tell you that we have had weather conditions that have been very favorable for both powdery and downy mildew infections and that there is a continued need for protection through at least the post bloom period. Also, research has shown that insecticide applications timed for grape berry moth during the post bloom period will not significantly reduce the amount of damage at harvest. So unless you have an extremely high risk vineyard, where you will be applying insecticides every two weeks to maintain coverage, you can save your money on an insecticide now to invest in a better active ingredient later, when the GBM Phenology based Degree Day model on NEWA calls for it.

R d b h h – Whether it is a weed sprayer or a sprayer used for applying fungicides and insecticides, it should be calibrated at the beginning of each season, and whenever the amount of water per gallon applied per acre is changed. Materials cost too much to have a poorly calibrated sprayer either applying too much or too little per acre. As you move from the pre bloom to the post bloom take a good look at the size of your canopy in each block and ask yourself if you should be changing the amount of water used per acre to ensure coverage. If so, this will require a recalibration of your sprayer. While the New York and Pennsylvania Pest Management Guidelines for Grape is no longer available on line, you can still access Dr. Landers work on sprayer calibration on his web pages at: http://web.entomology.cornell.edu/landers/pestapp/grape.htm

D d cd db d fd dd fg d d b d – plainly put, if it isn't making it to the target in adequate amounts, you are throwing away money with each tank applied. Water is the cheapest component in a tank mix. Work done in the past has shown that the extra time taken to fill a spray tank is more than paid for by increased control of insects and diseases.

R d d – Research conducted by Andrew Landers, Wayne Wilcox and Greg Loeb proved that coverage was improved by spraying every row (as opposed to every other row) resulting in improved disease and insect control. Once you hit the immediate prebloom to postbloom period, you should not even consider to spray every other row. If you cannot get a timely pesticide application on your vineyard when spraying every row, please contact Kevin Martin, Business Management, LERGP, to see if you can optimize your spraying operation through multi-row sprayers, extra equipment and man power, or other options.

L h h h d – while especially true for fungicides, there are times when this works for insecticides as well. Once you make a pesticide application, continue to maintain spray intervals, shortening them if excessive rainfall occurs, to ensure there is continuous protection against the pest. Exceeding spray intervals can create gaps in coverage limiting the effectiveness of earlier sprays on controlling the pest population. If you feel your vineyard blocks are being overrun by grape berry moth, it may be time to make multiple applications per generations to get both the beginning and the end of the generation.

A b a ,a b f d d – With an operation of any size, treating all vineyards the same can lead to over, and under, application of management tools. Knowing the size of each block will also help to fine tune pesticide and fertilizer applications. If you do not yet have a GIS map of your vineyard operation, contact Kim at (716) 792-2800 ext 210 or by email at: ksk76@cornell.edu

d a a – This is the most critical time for powdery mildew, downy mildew, black rot and Phomopsis fruit infections. Primary inoculum is

peaking at this time so continuous coverage with the appropriate materials is a must during this time. Don't skimp on spray intervals or materials at this time!

d h bd f d d – To avoid the loss of effective materials; you need to know what active ingredient(s) are being applied each time you spray. This will help you make a conscious effort to rotate active ingredients during the growing season to reduce the risk of resistance development. Resistance management is important for fungicides, insecticides and herbicides. Knowing the active ingredient is critical when looking at resistance management. Using different brand names of the same active ingredient is not resistance management. The label provides you the active ingredient of the material so you can be sure you are not using the same material over and over in your spray program.

d c gd ad h gd – The label will give you the active ingredient, the pests it can be used for, the rates per acre, required personal protective equipment (PPE), spray intervals, reentry intervals and days to harvest restrictions. Reading the label provides the base information needed to make safe and intelligent pesticide applications.

Rb – Make it a habit to get out into vineyards on a block-by-block basis to identify any problems early. It is very difficult to control pests, especially diseases, once they become established. It is important to scout after a pesticide application to make sure the desired effect was achieved. Spraying and walking away can be a recipe for disaster. If you are not saying "What's that?" at least once per season you are not out in the vineyard enough.

T d gd d H L h e h – The latest weather and pest model information is available through the Network for Environment and Weather Applications (NEWA) http://newa.cornell.edu/ With an increasing number of stations coming on board each year there is a great chance that there is a weather station near you. And if not, you can purchase a station and join the network. The weekly Lake Erie Regional Grape Program Coffee Pot meetings held across the Lake Erie grape belt during the growing season are also a great way to stay current with what is happening in the vineyards. Check out the schedule in the upcoming events section of our website and in this newsletter for locations.

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Dr. Terry Bates, director of the Cornell Lake Erie Research and Extension Laboratory (CLEREL) and senior research associate at Cornell University, is the first recipient of the American Society for Enology and Viticulture's (ASEV) Extension Distinction Award. This honor recognizes a current extension educator for outstanding contribution to an extension program or the advanced translation of novel research findings into commercially applicable tools for enologists or viticulturists. Dr. Bates, who has also served as president of ASEV's Eastern Section chapter, received the 2014 Extension Distinction Award following his presentation, "Concord Fruit Thinning: Using Vine Biology and Mechanized Management to Address Market Demands in New York," on June 25, 2014, at the 65th ASEV National Conference in Austin, Texas.

Dr. Bates is a leader in the field of vineyard mechanization and is widely recognized for his work on Concord grapes in the Lake Erie region. Based on his research trials, growers now have a new, proven tool – mechanical crop estimation and thinning – to adjust cropping levels to seasonal conditions. Additionally, Dr. Bates directs CLEREL, which since opening in 2009 has provided a revolutionary model for integrating research and extension for the industry. His ongoing research efforts involve educating the industry on economic impacts, demonstrating how the tool can work in commercial vineyards and sharing his findings

through field meetings, annual conventions and newsletter articles.

Dr. Bates has authored or co-authored over 20 technical articles in various trade and extension publications. His collaborations have had a nationwide impact as well as a direct economic impact on the Lake Erie region and its grape producers. In 2008, the New York Wine and Grape Foundation recognized him for his contributions to research and education.

"Terry exemplifies the Society's vision for the Extension Distinction Award," said Lyndie Boulton, ASEV executive director. "His significant contributions in viticulture have made an indelible impact on the industry. We believe his work will serve as foundation for other extension research endeavors."

Terry Bates receives the ASEV Extension Distinction Award for 2014 from ASEV President, Jim Kennedy.

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Hans Walter-Peterson, Finger Lakes Grape Program

When Thomas Jefferson planted European grapevines in Virginia more than 200 years ago, they quickly succumbed to pests and diseases. Grape varieties that were native to the area like muscadines and those related to *Vitis labrusca* could survive in this environment, but for the *Vitis vinifera* varieties that made the wines that he loved to drink, the environment presented challenges that they had no defense against.

Today, most North American vineyards, and particularly those in the East, face many of the same challenges as those planted by Jefferson. Fortunately, we understand much more about managing pests like phylloxera, and diseases like black rot and anthracnose, and have tools available to keep them in check. But the basic fact still remains – we're trying to grow many grape varieties in conditions that are different from those where they evolved and are genetically adapted to.

For over one hundred years, grape breeders have worked to develop new varieties that include desirable traits like resistance to mildew infections or being better able to tolerate cold temperatures in the winter. The problem is that the species with traits that we want also have characteristics that we don't want, like undesirable aromas, flavors, or color compounds. It can take decades to develop a new variety that has the desired characteristics and also minimizes the undesirable ones (the second challenge is to get consumers to recognize and accept a new variety, but that's a whole other story). It would be great to give breeders the tools to quickly and accurately identify seedlings that have the traits that they want, and discard those that don't.

Enter VitisGen

Launched in 2011, thanks to a grant from the USDA's National Institute of Food and Agriculture Specialty Crop Research Initiative (NIFA-SCRI), VitisGen brings together scientists from 11 different research institutions across the United States, and is supported by private industry. Their shared goal is to accelerate the development of the next generation of grapes.

VitisGen marks an important advance in traditional breeding programs. The techniques and technology

being used as part of VitisGen will speed up the development of new grape varieties with advantageous qualities for both producers and consumers. In consultation with public agencies and private industry, VitisGen identified three priority traits to focus its initial efforts on: resistance to powdery mildew, improved low temperature tolerance and fruit quality. VitisGen will identify molecular markers – pieces of DNA that are part of, or located very close to, the actual genes of interest - that will help grape breeders to select grapevines favoring the priority traits to use in new crosses. Project scientists are using new technology that will decrease the time, effort, cost and space necessary for developing these new markers, and thus new varieties. For example, VitisGen could lead to a new grape variety that tastes a lot like Cabernet Sauvignon or Riesling, but is highly resistant to powdery mildew, the most important (and expensive) fungal pest of grapes.

It is important to note that VitisGen is focused on improving the tools and the processes used in traditional breeding programs, and not on developing transgenic, or 'GMO', grapes. Using a wide range of grape varieties and species, the breeders, geneticists, pathologists, food chemists and others involved in the project are trying to identify the genes that influence disease resistance, cold tolerance, and aromas and flavors that are already found in other grapes (as opposed to those from fish or peanuts or other organisms). Once those genes are identified in young seedlings, breeders can make better and faster decisions about which seedlings to keep and use in new crosses, utilizing traditional breeding techniques used by professional scientists and hobbyists with flowers, tomatoes, apples and most other agricultural crops. The result will be new grape varieties that are better adapted to withstand a range of environmental and biological pressures while producing high quality fruit, which benefits farmers, consumers and the environment.

For more information about VitisGen, you can visit the project's website at http://www.vitisgen.org.

The VitisGen Extension & Outreach team has developed two videos describing some of the work by the project's scientists:

"How Grape Breeders Make Crosses" (http://www.youtube.com/watch?v=z-Pranxd9fw) - describes how breeders like Dr. Bruce Reisch from Cornell choose varieties or species to cross to get new grapevines, and how they actually make those crosses.

"Researching Powdery Mildew Resistance" (http://www.youtube.com/watch?v=eFSqfL946j4) - discusses why evaluating grapevines for powdery mildew resistance in the field is difficult to do, and the lab techniques scientists use to do those evaluations instead.

Scientists from the following institutions are part of VitisGen:

- Cornell University
- Dalhousie University
- Florida A&M University
- Mississippi State University
- Missouri State University
- Oklahoma City University
- Oklahoma State University
- South Dakota State University
- University of California – Davis
- University of Minnesota
- USDA – Agricultural Research Service

Private support for VitisGen is being provided by:

- E&J Gallo Winery
- National Grape & Wine Initiative
- J. Lohr Vineyards & Wines
- California Table Grape Commission

T b h f D d

Don't forget to check out the calendar on our website (http://flgp.cce.cornell.edu/events.php) for more information about these and other events relevant to the Finger Lakes grape industry.

EKF S hf d L dd h f

Tuesday, July 8, 2014 5:00 – 6:30 PM

Egresi Vineyards

10887 County Road 78

Pulteney, NY 14873

Our next Tailgate Meeting will be held on Tuesday, July 8th at 5:00 PM at Egresi Vineyards in Pulteney.

These meetings are held every other week at various grape farms around the Finger Lakes, and are intended to be informal, small-group meetings where FLGP staff and growers can ask questions and discuss issues about vineyard management, IPM strategies or other topics appropriate for that point in the growing season. Growers are eligible to receive 0.75 pesticide recertification credits at each meeting this year.

Here are the dates and locations of the rest of our Tailgate Meetings this season.

C d	cc d
July 22	Dalrymple Farm, 7890 County Rd. 131, Ovid NY 14521
August 5	Hunt Country Vineyards, 4021 Italy Hill Road, Branchport NY 14418
August 19	Dr. Frank's Vinifera Wine Cellars, 5230 Route 414, Hector NY 14841

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