


FINGER LAKES VINEYARD NOTES



Newsletter 3

April 2, 2002

 **CORNELL** Cooperative Extension
Finger Lakes Grape Program

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PLANNING A NUTRITION PROGRAM FOR YOUR VINEYARD

In Depth Nutrition Mini-Workshop

8:30 AM – 12:00 Noon.

April 16, 2002, Branchport Fire Hall, Rt 54A,
Branchport, NY

Have you ever wondered what Cornell's tissue and soil standards for vineyards are based on? How lime recommendations are made? Why petiole and soil tests don't give the same recommendation? How the soils of the Finger Lakes originated? Whether foliar feeds are useful? How to use this information to plan your fertilization program? Join us for an in-depth look at what goes into planning a nutrition program for your vineyard, starting with soil characteristics and ending with using information about your soils and vines to plan your fertilizer program.

We're fortunate to be able to bring together several Cornell Research and Extension specialists for this half-day program. Nate Herendeen has over 25 years experience with W. New York soils as a field crop specialist, and has an excellent slide set showing how glaciers shaped our soils. Dr. Terry Bates has been a Research Associate for the past 4 years, and has worked extensively with Concord grapes and root biology during that time. Yours

truly (Tim Martinson) will draw upon his 5 years of experience interpreting soil and petiole tests and puzzling over standards, recommendations, and grower inquiries. Finally Dr. Lailiang Cheng will provide his perspective on using the information you have about your vineyard to plan a fertilization program.

There is no charge for this program, but Preregistration is required. Please preregister for this program by calling our office at 315-536-5134. Registration will be limited to 30, with preference given for grape program enrollees from the five-county region (Ontario, Schuyler, Seneca, Steuben, and Yates Counties).

AGENDA

- 8:25 Introduction Tim Martinson
- 8:30 Soils of Western NY. Nate Herendeen, Cornell Cooperative Extension Northwest NY Dairy Team
- How soils formed in the Finger Lakes
 - Major soil associations and their origins
- 9:00 Soil characteristics and nutrient availability. Dr. Terry Bates, Senior Research Associate, Cornell University
- soil pH and mineral nutrient availability
 - soil texture and nutrient availability
- 10:00 Coffee Break
- 10:15 Diagnosing vineyard nutrient status Tim Martinson, Cornell Cooperative Extension, Finger Lakes Grape Program
- Visual deficiency symptoms
 - Interpreting soil and petiole analysis
- 11:00 Developing a fertility program. Dr. Lailiang Cheng, Dept. of Horticulture, Cornell University
- Vine nutrient supply and demand
 - Foliar feeds: what works?
 - Timing and rates – what's behind Cornell's recommendations?
 - Putting it all together

GRAPE CANE BORER BIOLOGY AND CONTROL

Timothy E. Martinson and Greg English-Loeb

Grape Cane Borer, *Amphicerus bicaudatus*, has once again been a topic of discussion among growers in the Finger Lakes. The consensus among growers I have spoken with is that problems seem to be increasing in area vineyards, not just in the Keuka area but also in some locations on Seneca Lake.

For those of you who are unacquainted with the cane borer, the damage comes from adults that bore into live canes – generally but not always in nodes near the base of the cane. Although these holes are about 3/16" in diameter, they are hard to see without searching closely. Retained canes often die past the entrance hole, and canes with borer in them often break during the tying operation. In a cane pruned vineyard with '4 cane' vines, loss of one cane would amount to 25% of the potential crop. In cordon/spur trimmed vineyards, damage would be somewhat less, but may make it more difficult to maintain permanent cordons.

Biology. What we know about cane borer comes from a study done by Dr. George Shaefers and Zeke Mendel, of Taylor Wine Company between 1981 and 1983. In a literature search, we found only a couple of papers on this pest, along with a reference to an unpublished thesis from Texas. Dr. Shaefers' study looked at economic impact in an 'Aurore' vineyard, and included a very preliminary laboratory insecticide trial.

Life Cycle. Adults are brown to black in color, shaped like a cylinder, and 3/8" long. Cane borer overwinters in the adult stage, within burrows made in live canes. As weather warms, they become active in late April and early May, and tend to fly around in evening hours near dusk (the report mentions 8:30 PM). At this time, they are thought to make few new entries, with most limited to dry wood. Presumably adults mate around this time of the year.

Egg laying starts in mid May, and peaks in mid-June. Eggs are reportedly laid singly under loose bark – either on live vines or pruned wood on the vineyard floor. Eggs hatch around mid-June, and larvae burrow 'directly into the dead or dying canes'. Early feeding is just below the bark, while older larvae enter the pith (spongy area in the middle of the cane), leaving a sawdust-filled channel behind. Larvae complete their development and form pupae in mid-August, and adults emerge in mid-

September. As canes harden off and form periderm, the adults enter one-year-old wood and the current year's canes, and again feed in channels in the middle of the canes. This is when the economically significant damage to healthy wood occurs.

Economic Impact. Shaefers reported that in one heavily infested Aurore vineyard, 30% of the dead canes showed evidence of cane borer feeding, while a less-heavily infested area within the same vineyard had about 19% of the dead canes attacked. He also reported that 'Counts revealed that 1 out of 9 vines had a dead cane, and 1 out of 47 vines had one cane attacked by borer'. What I interpret this to mean is that although 1/3 of the 'dead canes' may have died due to borer feeding, only 10 percent of the vines had a dead cane, and only 2% of vines had one cane borer in them. If these figures were accurate for a cane-pruned vineyard with 4 canes per vine (the training system was not mentioned), the potential crop loss would have been 1 cane of 188 = 0.5% crop loss.

Shaefers Insecticide Trial. Shaefers tested 8 insecticides in the laboratory, several of which are no longer available. The exact testing method was not indicated, and each material was tested on only 10 adults. Of currently available insecticides, Imidan treatment after 48 hours resulted in 10 dead adults (100% of those tested), while Sevin (carbaryl) resulted in 5 dead (50%) mortality. Its important to keep in mind that these were laboratory tests, and the results may not translate into effective control at the field level.

Controlling Cane Borer. To my knowledge, no rigorous insecticide trials for cane borer have been done. There are reasons for this – the main one being that the life cycle of this pest does not lend itself to conventional small plot trials. The insect is protected for most of the year within the vine (and not likely to contact insecticides), and the only way to evaluate efficacy (e.g. of a spring application) would be to look for adults the following winter. Presumably, they move around a bit, and they have several woody plant hosts (all common in the area), so its hard to predict how large an area you would have to treat to see any effect.

Given the lack of research, the best guidelines we can offer at this time are based on educated guesses of what might be important:

- **Remove or Chop Brush.** Dead canes and wood remaining on the vineyard floor may serve as a reservoir for adults, and also may harbor larvae throughout the season. Thoroughly chop brush, or remove and destroy as much as possible before

adults become active in the spring. Consistent with this recommendation is the result of a study conducted in Italy where they found that by burning pruning material before the next field season helped eliminate a cane borer problem. Note that hedged pruned vineyards, with an abundance of old, dead wood, may provide good places for larvae to develop.

- **Timing Sprays.** If you decide to try an insecticide, it makes sense to target active adults before they lay eggs. Recall that adults are active from mid to late May, and are most active in the evenings. Another potential target would be the larvae after eggs hatch but before they burrow into the wood. Again, Shaefers' study indicated that the peak timing for eggs would be from early to mid June. Its possible that with thorough coverage, a spray at this time might significantly reduce the number of larvae that develop. Again, this is all guesswork.
- **Insecticides.** The only insecticide currently registered for cane borer in New York is Imidan 70 W, although we have conducted no trials to test its efficacy – and thus no reason to recommend it over other materials. Its possible that broad spectrum insecticides applied for other labeled pests might also provide some control of cane borer, if applied at the appropriate time. Narrow-spectrum materials such as miticides, BT (Dipel, biobit) and Provado (imidacloprid) will not provide control. As this pest has not been exposed to many insecticides, we presume that resistance is not a problem.
- **Evaluate Objectively.** Be careful in assessing the extent of the problem. Its easy to overestimate how many cane borers are out there and how much damage they are doing. It's dismaying to have a cane snap off during tying because of cane borer injury. But it makes a difference whether or not damage is present on one cane in 100 or 5 in 100. Remember that its the infestation in the canes you leave, not in the canes you trim off, that will affect yield. Think of the numbers you find in relation to the size of your vineyard, and don't overreact. In the few vineyards I have surveyed, I've generally been surprised at how few I find, although I recognize that each individual can destroy a carefully selected cane or cut short the useful life of a cordon arm.

I understand that the information we have for this pest is incomplete, particularly where effective control measures are concerned. Greg English-Loeb

is making some informal observations of cane borer behavior at his lab in Geneva. I also think it would be useful to attempt to test a few of the registered insecticides at an appropriate site, even if there's a chance that a formal trial won't work. I'll be looking for cooperators to set up an informal trial this spring. If you think you have a block with enough cane borer damage to attempt a trial, please give me a call at 315-536-5134, or e-mail at tem2@cornell.edu.

QUESTION BOX ANSWERS

*Martin C. Goffinet
Horticultural Sciences*

[Ed. Note: We couldn't get to all the question box questions at the 53rd Annual Finger Lakes Grape Growers Convention. Here are responses to the questions we didn't have time for at the convention. My thanks to Martin Goffinet, and those who answered the questions, including Bob Pool, Thomas Henick-Kling, Tom Burr and Michelle LaDue Benjamin]

Q. Is there a better training system than Smart-Dyson for NY 73-136-17 for NY 70-809-10 and for Traminette on a moderately high-potential site?

A: There should always be a better system than Smart-Dyson for grapes. Smart-Dyson and other divided training systems are designed to correct mistakes made when planting the vineyard. That said, how does one decide on a training system? Basic considerations are growth habit (procumbent, semi-erect or erect), fruiting habit (highly fruitful, fruitful or less fruitful), trunk and wood cold hardiness, disease susceptibility, shade tolerance and estimated vine size.

Erect varieties are well adapted to up-right vertical training, procumbent varieties are almost impossible to grow in a VSP-like system and semi-upright varieties can be trained upright, but are also adapted to wide, tree-like canopies such as formed with mid-wire cordons or horizontal cane training. The three varieties you named are all pretty much semi-erect.

Fruiting habit is especially important. Many American varieties have low fruitfulness. It is difficult to produce satisfactory crops with them when only basal nodes are retained. Many hybrids are excessively fruitful. They produce several large clusters on basal nodes, and also produce "extra" clusters on fruitful base shoots. These base shoots develop both at the base of bearing units and on pruning wounds where canes have been removed.

Long or at least medium cane rather than spur pruning is best for the varieties with low fruitfulness. Spur pruning, especially when combined with cordon training, is also a problem with highly fruitful varieties. Those "extra" or non-count clusters prevent the grower from controlling crop size by pruning alone. Because Smart-Dyson uses spurs on cordons, it is not suitable for varieties with either high or low fruitfulness. Varieties with intermediate fruitfulness can be pruned either to spurs or canes.

If the site/variety combination suggests that trunk renewal might be frequent because of cold injury, then cordon systems such as Smart-Dyson should be avoided. Cordon training trades initial investment in labor for long term returns because of lower pruning and tying costs. If there is need for frequent trunk renewal, then the higher initial investment cannot be recovered.

Less disease resistant varieties are more sensitive to within canopy shading. Growers have more difficulty applying pesticides to dense canopies and dense canopies have fruit environments more favorable for disease development.

Shade tolerance refers to the effect of low light on bud fruitfulness (varieties with low fruitfulness do not tolerate shade in the renewal zone), and the impact on fruit composition. Some varieties need light to fully develop color or other varietal characters desired in the product. This is most important for red wine varieties. However, it has been shown that these same varieties will lose color and flavor when exposed to excessive light (and associated high fruit temperature).

Finally expected vine size is important. For non-divided vertical systems, a desirable range of vine size is 0.15 - 0.3 lbs of cane pruning per foot of canopy. The desirable portion of the range is a function of price expectation and growth habit. For shade sensitive varieties, canopy density much higher than 0.3 lbs/foot of canopy, must be reduced by cultural practices or by canopy division. Divided canopy vineyards are more expensive to establish and maintain than are simple canopy vineyards. Thus the goal should be to create vines whose vigor is matched to the vineyard, so that simple trellis/training systems can be used.

Now as to the varieties you mentioned. They are all hybrids. Dr. Reisch indicates that one of the red hybrids is a "typical" hybrid. It has highly fruitful buds. I would not recommend a cordon system for it unless there was a compelling reason. The other variety tends more toward *vinifera*. I suppose it could be VSP trained or trained to a vertically

divided system such as Smart-Dyson. The white muscat variety has low vigor and moderate (at best) fruitfulness. At wide spacing a divided canopy might be useful to increase overall canopy size. However, a horizontal rather than vertical system would be more efficient than a vertical system. Because of the low vigor, very close spacing would be needed if the vine was expected to fill a divided canopy. [Dr. Bob Pool, Dept Horticultural Sciences, NYSAES, Geneva, NY 14456]

Q. Which training system(s) besides VSP, should be considered for NY 162-122-01 on a moderately high-potential site?

See above discussion. NY 62.122.01 has low to moderate fruitfulness, a semi-erect growth habit, and is low in vigor (even when grafted to a phylloxera resistant rootstock). Any of several systems could be considered. Umbrella Kniffin or Modified Keuka High Renewal are two that come to mind. These would not require catch wires. [Dr. Bob Pool, Dept Horticultural Sciences, NYSAES, Geneva, NY 14456]

Q. I have Seyval on 5BB on gravel soil and the vigor is low; pH is ok. Is 5BB the problem?

A: Possibly, 5BB was selected for tolerance of high pH soils. That doesn't mean that it would not tolerate low pH soil (as most gravels are). However, in rootstock tests of Riesling grafted to different rootstocks we carried out in Fredonia and Long Island on acid soils, Riesling on 5BB showed above average acid soil leaf symptoms, but 5BB also produced the largest vine size of the 7 stocks tested. Seyval is one of the highly fruitful varieties. In my experience the four main factors associated with low Seyval vine size are phylloxera, virus infection, cold injury and excessive cropping. Vines on 5BB should not be affected by phylloxera or ringspot virus. The trunks and buds of 5BB have much below average cold hardiness. If you see evidence of galling or dead roots below the graft union, you might have a cold problem. If none of those factors are to blame, you can look at your pruning and thinning practices. Flower cluster thin a row or so to 1 cluster/shoot, and even take all the crop off a vine or two. If you get a good increase in vine size, then suspect your cropping practice. If you don't look to nutrition and possible disease problems. [Dr. Bob Pool, Horticultural Sciences, NYSAES, Geneva, NY 14456]

Q. Which is best on Cabernet Sauvignon, cordon or cane pruning?

A: If there was a direct answer to that question, then all Cabernet Sauvignon would be handled the same

way. Cabernet Sauvignon is in the moderately fruitful category. Pruning to spurs should produce sufficient crop so long as your yield objectives are not too high.

Cordon/spur pruning offers one great advantage for Cabernet Sauvignon. Cabernet Sauvignon is a very high vigor variety. When vines are cane pruned, the vigorous growth from apical nodes tends to suppress development of nodes lower on the cane. It is common to see Cabernet Sauvignon canes where there are two or three strong shoots at the end of the cane, two or three strong shoots at the base of the cane and no or weak shoots in the middle of the cane. With spur pruning all nodes are apical nodes, and poor bud break due to correlative inhibition is absent. On the other hand, with cane pruning, you only need 2 - 4 good canes on a vine. With spur pruning you need good canes at every spur position to maintain the cordons. There is also the cold damage issue. If you anticipate trunk injury, expect to spend a lot of time and money re-building cordons.

Personally, if I had Cabernet Sauvignon planted in a site with low cold hazard, I would try cordon/spurs. If I found myself doing too much renewal, I would switch to cane pruning. [Dr. Bob Pool, Dept Horticultural Sciences, NYSAES, Geneva, NY 14456]

Q. Is there in existence an organization along the same line as the "Grape Growers" for winemakers to share and disseminate information?

A: There is a viticulture discussion group on the web. The web address is: <http://berrygrape.orst.edu/communicate/viticmail.htm>. Tim Martinson, Finger Lakes Regional Grape Extension Educator, also sends out an electronic newsletter. Contact him for further information. I also send an occasional letter to NY winemakers, so you can contact me via email for more information at th12@cornell.edu. [Dr. Thomas Henick-Kling, Dept. Food Science & Technology, NYSAES, Geneva, NY 14456]

Q. What do we do with old used (but not usable anymore) treated posts?

A: This question was also asked at the 2001 Finger Lakes Grape Growers Convention and the answer published in one of the winter "Vineyard Notes" issues, but the answer bears repeating. Old treated vineyard posts may be passed on to someone else who can use them. If they are unusable, they may be disposed of on agricultural land and will eventually

break down and compost. The treatment on the posts should have little leaching potential and should not pose a significant hazard to soil or water. Posts may also be landfilled. They should not under any circumstances be burned; the treatment on them would produce a toxic smoke. The same goes for old railroad ties. [Michelle LaDue Benjamin, Recycling/Solid Waste Coordinator, Cornell Cooperative Extension of Schuyler County]

Q. I am interested in biological control of crown gall. Does it work?

A: Crown gall is caused by a bacterium, *Agrobacterium vitis*. The biological control is also a strain of *A. vitis*, but it does not cause crown gall and when applied to wounds it protects them from becoming infected with crown gall. We do not know yet how the biocontrol is able to prevent crown gall. It works perfectly under controlled conditions in the greenhouse. We are now applying it in experiments at grafting time and on vines before they are planted in the field. The results are encouraging thus far but more field experiments are needed. [Dr. Thomas Burr, Dept. Plant Pathology, NYSAES, Geneva, NY 14456]

NEW PUBLICATIONS

Cost of Establishment and Production of Vinifera Grapes in the Finger Lakes Region of New York – 2001. Gerald White and Mark Pisoni. This publication provides detailed descriptions of expected costs and returns for planting *V. vinifera* cultivars in the Finger Lakes, including specific breakdowns for White Riesling, Chardonnay, Cabernet Franc, and Pinot Noir. Cost data on specific cultural and establishment practices, provided by a panel of Finger Lakes growers, is included and should provide a good starting point for financial planning for both established and new vineyard operations. Available through the Finger Lakes Grape Program for \$10 postpaid.

Growing Table Grapes in a Temperate Climate. Thomas Zabadal, Michigan State University. This new publication provides a comprehensive description of both general and specialized practices used in quality table grape production. It includes discussion and illustration of cluster thinning, gibberelic acid sprays, girdling, shoot positioning and cluster 'brushing' – all practices designed to produce desirable fresh-market fruit. This 44 p. publication (E2774) is available for \$7.00 from the Michigan State University Bulletin Office, and can be ordered by phone (517-335-0240) with a credit card.

UPCOMING EVENTS

April 16, 2002. Nutrition Mini Workshop. Branchport Fire Hall. Details in newsletter.

May 23-25, 2002. Bacchus to the Future. Brock University, St. Catherines, Ontario. Science and technology (including: wine and health, sensory evaluation, and modern trends in winemaking) Business and marketing of wine (including: wine tourism) Culture of wine (including: education, consumption patterns, health, history of wine) Please visit their web site for more information, <http://www.bacchustothefuture.com/>

July 10-12, 2002. American Society for Enology and Viticulture Eastern Section annual meeting in Baltimore, Maryland at the Sheraton in Towson. Program will focus on Merlot, Cabernet Franc, Syrah and Chambourcin. Growers and researchers will make presentations. More information to come. <http://www.nysaes.cornell.edu/fst/asev>.

August 7-8, 2002. Third Annual Eastern Pinot Noir Conference. Finger Lakes region. Technical meeting and tasting. If you are a commercial grower or vintner of Pinot Noir, please attend. Contact Mark Chien at 717 394-6851.



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