

FINGER LAKES Vineyard Notes

Newsletter 2

February 15, 2006

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TWO-DAY CONVENTION FOCUSES ON SOILS, WEEDS, NEW HYBRIDS, NEW GROWERS AND FARM FINANCIAL MANAGEMENT

Timothy E. Martinson

Last year's two-day convention was well attended on both days. Members of the Program's Grower Advisory Committee (a group of 13 growers representing all 5 counties and an at-large representative from Canadaigua Wine) decided that we should do it again. They provided a long list of topics that touch on current issues important to growers in this region, with enough topics to fill up 4 days of talks.

The result is the program described on the next seven pages. If the big theme for last year's meeting was how to cope with **winter injury**, a major theme for this convention might be how the **soil environment** and things we do to it affect vine management. The first session deals directly with soils, root growth, and nutrient cycling, while the following session takes a broader look at **weed control**, and some alternatives.

A second theme is **farm business planning**. A near-record Concord crop, along with an estimated nationwide excess Concord capacity of about 15% of current

tonnage will put downward pressure on prices for the 25% of our acreage that is Concords. How will this affect your business? Now is the time to use financial planning to preserve assets and make informed decisions about your vineyard. Three sessions on Friday will address financial planning.

For those interested in planting vineyards, an all-day **New Grower Workshop** will cover all aspects of establishing new vineyards, including economics and markets, site selection, planting and early care, trellis and training systems, and selecting equipment for startup vineyards. A separate session will focus on **New Hybrid Releases**, to be named and released by Cornell's grape breeding program later this year. Commercial and research wines will be tasted, and growers, researchers and winemakers will discuss how these varieties grow and where they fit commercially.

Growers constantly come up with new techniques and equipment to carry out vineyard management tasks. The **grower innovation** session will highlight techniques and equipment for burying vines, retrofitting tiling in existing vineyards, replanting vines, and mechanizing vineyard tasks.

Two **TracGrape** training sessions will cover how to use this pesticide record-keeping tool to track applications and generate reports for processors and the DEC.

The annual **Wine and Cheese** reception will follow Friday's sessions.

Saturday will feature the annual **Trade Show**, with 42 vendors of equipment, vines, and supplies, and the **morning** and **afternoon** educational sessions, featuring talks on weed, insect and disease management, vine balance, the Wine and Grape Foundation, and the traditional **question box** session, where we address YOUR questions.

We hope these topics will provide you with timely information to help manage your vineyard business in 2006 and beyond. See you at the Convention!

New York and Pennsylvania Pesticide Recertification credits will be available at these conference sessions:

Friday:

Soil Health and Nutrition: Session 1A – 1.00 credits
Weeds: Session 2A – 1.50 credits
Grower Innovations: Session 3A – 0.50 credits
New Hybrid Varieties: Session 4A – 0.50 credits
New Grower: Session 1B – 0.50 credits
New Grower: Session 2B – 0.75 credits
New Grower: Session 3B – 0.75 credits
New Grower: Session 4B – 0.50 credits
TracGrape, Beginner: Session 1D – 1.50 credits
TracGrape, Advanced: Session 4D – 1.75 credits

Saturday:

Research Updates and Current Topics: Full Day Session – 3.25 credits

Challenges Ahead for Concord Growers

Tim Martinson

Note: This article will appear in the February issue of American Fruit Grower magazine. In a sidebar to the November column, I was asked to make 5 predictions for the future. One of them was that (I paraphrase here) - large plantings of Concord in China may impact the juice grape market in the future. - TEM

In the last column I wrote (for the 125th Anniversary Issue), one of my predictions was that plantings of Concord or other juice grapes in China might someday pose a significant threat to Concord producers. This drew a sharp response from several juice grape growers at processor meetings, and a few e-mails to yours truly. My prediction was based on nothing more than a reflection at the speed at which China captured the apple juice market. With 45% of the world's apple production and massive juice concentrating plants, the thought was "They 'own' apple juice, what will they turn to next?"

Well, China's not a big current threat, and there is little evidence of massive Concord plantings there. In fact, the top six grape juice exporters are Argentina (76%), Chile, Canada, Brazil, Mexico, and Italy (all under 10%). Imports were valued at \$69 million in 2004.

The real challenge is a drop in demand from industrial producers. Following high prices for Concord concentrate from 1999 to 2001, many of them reformulated products to include more neutral red and white concentrate from California, where overplanting

had lowered grape juice prices to the equivalent of \$50 to \$75 per ton. Prices have since rebounded to the \$200 range, but Concord - once sold at a premium to neutral California concentrate - has lagged. Juice marketers have apparently not switched back to Concord.

For evidence of this shift, you need look no further than your grocery store shelves. Welch's - a grower-owned cooperative - touts its use of Concord and Niagara grapes on their label. A look at ingredient lists for other nationally marketed brands shows that many have 'apple juice' listed as the first ingredient in their grape-flavored products. Much of the 'grape juice' listed as second ingredient is probably not Concord juice, but rather non-Concord California juice.

The end result is a net loss in demand for 60,000 to 75,000 tons of Concord grapes nationwide, according to my colleague Barry Shaffer of the Lake Erie Regional Grape Program. This amounts to between 15 and 20% of the annual 400,000 to 500,000 ton Concord crop.

Concord producers are facing prices well below the \$200 per ton cost of production as a result. Cash market prices have gone as low as \$140 per ton in the East and \$100 in Washington State, and Coop-based growers are seeing returns at about half of what they were a few years ago. Constellation Brand's Canandaigua Wine division - representing a relatively small amount of nationwide Concord production, but a major share locally - posted the best prices this year at around \$230 per ton, but will gravitate toward 'market-based' prices for the 2006 season.

The 2005 crop was unusual because it was both large (Niagara tonnage set a record) and also had high sugar content. For Concord, nine tons per acre at 17 brix was not uncommon. Inventories from this large crop will continue to exert downward pressure on grape prices.

Concord growers face tough times over the next few years. There are few changes growers can make that will dramatically lower production costs. Simply put, around 1 in 5 acres need to go out of production to balance current demand with supply. With Concord representing 3 out of every 4 acres of grapes grown in New York, the NY industry (along with NW Pennsylvania and Michigan) will probably see some major adjustments in acreage in the near future.

China is not the direct cause of the loss in market share for Concord products. But the availability of inexpensive juice ingredients such as apple concentrate from China affects pricing of all juice products in the supermarket. Concord's unique flavors have long set the standard for grape juice with American consumers, but price-conscious marketers are weaning consumers away from them.

Ultimately, marketers will have to convince more consumers that the Concord flavor is worth paying for. As a grower-owned marketing cooperative, Welch's has done this successfully for many years. New approaches - whether it be organic, sustainable, 'buy local', regional branding or another new marketing hook may need to be explored to lure consumers back to the unique Concord flavor.

Measuring and Maintaining Soil Quality in the Vineyard

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[Ed. Note - This article originally appeared in the January-February Virginia 'Viticulture Notes', Vol 21, #1, published by Tony Wolf's Viticulture Research and Extension program at Virginia Tech, Winchester Research and Extension Center. Most is very applicable to local vineyards, and it made me think of many of our older vineyards on hillside sites. How has the soil under your vineyard changed over the years? - TEM]

Is your soil ageing like a fine wine? During the winter season an agriculturalist has, perhaps, more time to delve into those subjects which tend to have more profound influence on improving vineyard quality. One such subject having long term implications on vineyard productivity and, therefore, sustainability is the maintenance of soil quality in the vineyard. One may consider seasonal vineyard practices, such as shoot positioning or fungicide applications, to be fixed to a vine's phenological stage or seasonal temperature and moisture. Other seasonal management decisions inflict changes in characteristics of soil such as tillage, application of fertilizer and organic matter, or cover cropping; all of which impose possible long term effects on soil quality. This article focuses on methods proposed to measure soil quality (often referred to as "soil health") and methods by which those attributes might be maintained over time.

Currently, there is no standard set of guidelines for measuring soil quality. Soil is often the first medium in a vineyard which is manipulated in order to initiate changes in growth patterns of vines. Growers will frequently till soil to manage weed competition or incorporate lime, add fertilizer and adjust soil moisture through irrigation. Many of those activities further inflict changes to soil structure, more obviously if compaction is caused by farm machinery. In order to understand the effects of vineyard management on soil quality, one must first have a means of measuring soil quality factors and a reference to interpret numerical data and physical evaluation. Soil pH and mineral nutrient levels are indeed very important for vine health and productivity, however those topics are generally well covered in existing literature and guidelines have been established for optimizing production by way of lime and fertilizer applications. Some of the less-frequently analyzed quantitative (numerical) measures are discussed here, including cation exchange capacity (CEC), soil organic matter (SOM), soil texture and bulk density and soil microbial activity (SMA). In a future article, the qualitative (physical/visual) evaluations will be discussed including those of soil structure, color and odor.

Soil Texture & Cation Exchange Capacity (CEC)

The cation exchange capacity (CEC) of a soil is often used as the primary measure of nutrient availability to plants. Cation exchange capacity is the total amount of negative charge a soil has to attract basic cations (K^+ , Ca^{2+} , Mg^{2+} , NH_4^+) and is defined on soil tests as the sum of the exchangeable basic cations plus total soil acidity. Soil texture, pH, and soil organic matter all influence the CEC. The texture, or percentage of sand, silt and clay content of a soil, does not change within the lifetime of a vineyard, provided erosion does not occur. A one-time measurement of soil texture is sufficient to understand the nutrient holding capability of a soil. For example, a soil with greater clay content will have higher CEC because the structure of clay offers more surface area than do silt or sand. Soil management practices that increase organic matter content or pH will also increase CEC as described below. Tracking soil CEC over time is therefore useful for understanding changes in soil quality with respect to nutrient availability. Fortunately, the CEC is almost always included in a standard soil analysis and, thus, old soil test records may be useful for tracking changes in soil health even if organic matter or other soil quality factors were not analyzed.

Soil Organic Matter (SOM)

I am surprised by how often SOM is not included in routine soil analyses. The cost for this assay is not always included in basic soil test packages but the extra expense is minimal (\$3.00 in-state at Virginia Tech Soil Testing Laboratory). The typical SOM of vineyards in Virginia falls within the range of about 2 to 6% and is most commonly measured by oxidation of carbon. Organic matter is a mixture of living organisms (roots, microorganisms), dead organisms (plant/root debris, dead microorganisms) and humus, which is a well-decomposed form of SOM. Humus is perhaps the more mysterious of those components in the mixture, consisting of large, complex, stable organic molecules that are resistant to further decomposition. The complex structure of humus holds more water, nutrients and chemicals than clay and strengthens soil structure, thus humus is very important to soil quality (2). The importance of humus is also important from the standpoint of sustaining soil fertility. For example, when organic matter is added to soil, a portion of that matter is reorganized into stable humus (one which is capable of exchanging nutrient cations). This process, called humification, acts to slow down mineralization (the return of a soil's organic components to their original mineral forms), thus reducing leaching of essential cations and increasing nutrient reserves available to roots.

A typical fertilizer regime that simply adds specific cations (i.e., Ca, Mg, K) may, in the long term, be less efficient than an approach which retains nutrients in the organo-mineral complex of the soil. Nutrients associated with clay minerals or humus are also less likely to become leached or eroded from surface soil. The idea of enhancing nutrient availability is already practiced by those growers who strive to maintain their soils near neutral soil pH (about 6.0 – 6.4) in order to improve availability of macronutrients in the cation exchange. As with soil pH, the humus component of SOM also indirectly affects nutrient availability by binding more strongly with aluminum and other heavy metals than with macronutrients, increasing nutrient availability even if soil pH does not change (1). Maintenance of SOM levels is an additional method for sustaining nutrient availability and, as with soil pH, frequent monitoring is essential to determine if SOM is affected by farming practices.

How is this helpful?

Let's review an example of how certain management practices influence SOM. A grower may decide to deep-plow a vineyard block prior to replanting in order to break-up an existing hard pan near the soil surface.

By mixing the top 16 inches of soil, the grower is exposing the area of greatest SOM to more oxygen, water, and carbon decomposing microorganisms than if left undisturbed. Just as in a pile of composting leaf litter, if left unturned, the rate of carbon decomposition will be significantly slower than that of a frequently mixed pile. Soil tillage will increase the decomposition rate of SOM, thus adding organic matter to frequently tilled soil would be a sound strategy for maintaining soil fertility and compensating for nutrients lost by mineralization.

These examples may appear as common sense to those who maintain SOM levels in their vineyard soil by occasionally adding composted grape pomace or manures, but even the most diligent in those practices will find difficulty in determining rates of organic matter to apply and in measuring impacts on soil quality. If a grower observes a decrease in CEC over time, a general rule of thumb states that every 1% addition of compost (by weight) increases the CEC by 0.05 meq/100g (1). General rules such as these will allow a grower to predict impacts of organic matter inputs to soil, although periodical measurement of the quantitative factors and good record keeping is the best method for tracking changes in soil health.

Bulk Density

The bulk density of a soil is defined as the mass of oven-dry soil per unit volume and is dependent upon soil texture components, SOM and small rock particles (3). Bulk density is measured from intact cores of soil. Intact, "undisturbed" soil cores retain their natural structure, allowing one to account for the volume of the soil composed of air space. Once the bulk density of a soil is known, additional calculations can be made to determine soil porosity and furthermore the water infiltration and drainage qualities of a soil. Drainage is debatably the most important soil quality factor associated with vineyard sites in the mid-Atlantic. Larger pores will drain excess soil moisture more rapidly than will small pores. As water drains from soil, pore space is filled by air and roots commence growth. If bulk density increases over time, it could be due to compaction of the soil. Additionally, continuous cultivation of soil may decrease the number of large pores in soil leading to decreased water drainage and decreased root growth (3). Management practices that encourage the growth of roots, earthworms and fungi in soil and decrease soil compaction are important for sustaining bulk density over time.

Soil Microbial Activity (SMA)

Occasionally grape growers will inquire about alternative laboratory analyses to quantify the soil microbial activity (SMA) of their vineyard, specifically that which is located in the vine row. Soil microorganisms play an important role in decomposing organic matter into humus, providing nutrients, and improving soil structure. Some soil laboratories will perform specific analyses to determine quantities of soil organisms which affect plant health; most notably, plant pathogenic nematodes. More recently, various analyses for determining total microbial activity or activity of specific groups of organisms are being added to the list of analyses. Analyses of the total mass of organisms in the soil or "soil biomass" encompasses activity of bacteria, fungi, yeast, actinomycetes and many other microorganisms that contribute to nutrient cycling whereas analyses of specific organisms measure functional groups, such as nitrogen-fixing bacteria. Soil microbial activity is more often measured as a whole due to complications with extracting and enumerating specific microorganisms, usually tied in closely with SOM. These types of measurements do not specify the types of active organisms and estimations are derived from measuring soil respiration, enzymes or molecules associated with active microorganisms.

Results from SMA analyses are not easily interpreted and are therefore often not included in routine soil test. There are no standard guidelines for target levels of microbial activity of soils nor are there for individual groups of organisms due to variability of one soil to the next. Additionally, the variability in soil conditions from one sampling occasion to the next, such as moisture and temperature, may cause fluctuations in SMA regardless of vineyard management practices. Another disadvantage to SMA analyses is the high cost for the analysis. Alternatively, grape growers who wish to compare soil management practices on treated compared to untreated rows for controlled, on-farm experiments may find utility in SMA analysis. For those interested in analysis of SMA, a list of laboratories is available online from the National Sustainable Agricultural Information (ATTRA) at: <http://attra.ncat.org/attra-pub/soil-lab.html>.

Long term monitoring of soil quality factors

It should be noted that changes in soil quality occur over a time frame of many years, and only the most extreme of events, such as massive erosion, are measurable within a shorter time frame. It may be the case that a soil proposed for your new vineyard is

below its potential quality due to previous land management. In the event that you wish to improve a highly weathered, mineralized soil, increasing (rather than maintaining) a soil pH and organic matter, and thus increasing CEC and MA may be desired. The emphasis of this review is not to determine the best numerical ranges for the soil quality factors discussed above. The objective, rather, is to encourage the assessment of soil quality at any phase of your vineyards lifespan (even before planting your vines) and the periodic tracking of those quality factors over time. Records of soil quality factors enable a grower to rate the effectiveness of current soil management practices and determine if long term quality objectives are being met.

Further information on measuring soil quality: Outreach activities, promotion of soil health issues and soil sampling protocols are currently being investigated by the Cornell Soil Health Work Team: <http://www.hort.cornell.edu/soilhealth/>

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Senator Clinton urges New York producers to apply for USDA Value-Added Producer Grants

Reprinted from Lake Erie Vineyard Notes, January 2006 Issue.

Senator Clinton is pleased to announce that the U.S. Department of Agriculture Rural Business-Cooperative Service (RBS) has just posted the availability of approximately \$19.5 million for the Value-Added Producer Grant Program (VAPG) for fiscal year 2006 and urges New York agricultural entrepreneurs to apply for these funds.

The primary objective of the Value-Added Producer Grant Program is to help agricultural producers, groups, cooperatives, and businesses develop viable business plans and create new marketing opportunities for their products through value-added activities.

Value-added can be achieved by changes in the processing, packaging, and marketing of agricultural commodities and can include economic benefits realized from the production of farm- or ranch-based renewable energy.

RBS will competitively award grants to fund one of the following two activities: 1) Planning activities needed to establish a viable value-added marketing opportunity for an agricultural product (e.g. conduct a feasibility study, develop a business plan, develop a marketing plan); or 2) acquire working capital to operate a value-added business venture that will allow producers to better compete in domestic and international markets. The maximum grant amount for a planning grant is \$100,000 and the maximum grant amount for a working capital grant is \$300,000.

New York State producers have received over \$1.5 million over the past three years from the VAPG program for a wide range of value-added activities including: \$47,000 to Butternut Farm Organic Coop for working capital expenses for marketing organic cheeses; \$250,000 to Martens Country Kitchen for the development, manufacture and marketing of a fresh extended shelf life potato product for the foodservice industry; \$53,000 to the Northeast Cervid Cooperation to conduct a feasibility study and develop a business plan for marketing and selling deer and elk meat products on the East Coast; and \$100,000 to Empire Biofuels to conduct a feasibility study and develop a business plan for marketing ethanol.

Applications must be received by March 31, 2006 to be eligible for FY 2006 grant funding with an anticipated award date of August 31, 2006. Application guidelines and materials for a VAPG can be obtained at <http://www.rurdev.usda.gov/rbs/coops/vadg.htm> or by contacting the USDA Rural Development Office for New York State at (315) 477-6409.

UPCOMING EVENTS

Friday, February 24, 2006, Grape Expo and Job Fair, Cornell University. Wineries and vineyard owners are invited to this new event, in which you will have a chance to meet students and discuss their needs for summer and/or full-time employment. For more information, contact the Finger Lakes Grape Program or Amy Benedict-Augustine, CALS Career Development Office, Cornell University, at alb44@cornell.edu or 607/255-2215.

March 12-15, 2006 30th Anniversary Wineries Unlimited, Lancaster Host Resort, Lancaster, PA. Trade show dates: March 13-14. The largest trade show and seminar program in the East. Information and online registration at: www.vwm-online.com/wu.

March 30. Lake Erie Grape Growers Convention. Fredonia State University, Fredonia, NY. Breakout sessions with information on process and wine grapes with a trade show. For information call Linda Aures at 715-672-5296 or visit <http://.lenewa.netsync.net/public/lergphom.htm>

April 5-7. 35th Annual New York Wine Industry Workshop. NYSAES, Geneva, NY. The program includes seminars on wine marketing hosted by NY Wine and Grape Foundation and the annual Unity Dinner. Also included is a trade show and technical seminar focus on wine bottling. Information and registration at <http://www.nysaes.cornell.edu/fst/faculty/henick/events.html>

Cornell Cooperative Extension

Finger Lakes Grape Program

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