PENNSTATE

College of Agricultural Sciences
Cooperative Extension

# Gathering Viticulture News, Information and Ideas in California

In the East wine growers are often so busy battling the elements that they do not have time to be serious viticulture innovators. I have always found it helpful to go to other wine regions, in particular Europe and California, to find information and practices that might help us to be better wine growers. These areas simply have the critical mass to support research and innovation that we lack. I recently traveled to California to attend the Unified Symposium, a National Grape and Wine Initiative board meeting and visit vineyards in the Santa Cruz Mountains and Santa Barbara County. The trip was enlightening for me and I'll share some of the highlights.

## NGWI

The National Grape and Wine Initiative (NGWI) formed out of the funding crisis in research and extension education in California earlier this decade. A few visionary leaders in the California wine community decided it was time to create a national organization to unify and support research and development, and extension education for the grape and grape products industries. NGWI seeks to set and promote national viticulture research and extension agenda. NGWI is modeled after the Australian Grape and Wine Research and Development Corporation which so successful pushed wine quality down under in the 80's. The quality and production challenges facing the wine industry and other grape products are daunting and geographically diverse. In any vineyard the problems may appear manageable but when viewing the viticulture landscape there are significant threats to our industry looming in the distance. In order to insure a sustainable, healthy and growing industry, these problems must be addressed.

NGWI is currently working in these three areas:

1. Developing alliances and unifying research priorities among the research community and industry stakeholders;
2. Catalyzing creative extension and education proposals to address outreach needs; and
3. Coordinating members to lobby for Federal funds, including the Farm Bill

To date, NGWI has largely been supported by visionary winery owners in California but the organization hopes to create its own funding sources. Being discussed is a voluntary check off system much like a marketing order that would support research and extension only. With a base of operating funds, specific projects and programs could be funded as well as support staff to execute the wishes of the board.

I have served on the board since its inception and this is an honest and earnest group that truly seeks to serve and push the agenda of the grape products industries, which include wine, table, raisin, and process grape products. The group is a healthy blend of industry members selected by

region and product, academics (extension in particular), key industry association leaders from organizations such as WineAmerica, the Wine Institute, the Table Grape Board and others, and vendors such as nurseries. NGWI hired Jean-Mari Peltier as its executive director in June and she has been hard at work to conduct the organization's business. Ms. Peltier is based in Sacramento.

NGWI has worked very closely with scientists and funding agencies such as USDA Viticulture Consortium and the American Vineyard Foundation to guide viticulture and enology research and help to set priorities. It has established a close relationship with USDA Agricultural Research Service and the 80 or so scientists who are involved with viticulture research. This group represents an impressive asset that prior to NGWI had very little contact or input from industry. The USDA Cooperative States Research, Extension and Education Service (CSREES), the parent organization for cooperative extension, is also working together through the National Viticulture and Enology Extension Conference on providing outreach to the grape products industry. As the wine industry expands this service is in greater demand than ever before and with more research results needing extending into the industry, extension educators are scrambling to keep up.

NGWI was linked to every Specialty Crops Research Initiative (SCRI) proposal submitted last year. Researchers understand the value of having the support of an industry-based organization. SCRI had $30M in research funds in 2008 and that will increase to $50M in 2009. NGWI was very involved in getting SCRI into the 2008 Farm Bill.

NGWI has five working areas:

- Understanding and Improving Quality
- Consumer Insights, Nutrition and Community
- Processing and Production Efficiency
- Sustainable Practices
- Extension and Education

Deliverables to date include:

- The National Clean Plant Network
- USDA NE-1020 Wine Grape Variety Trial
- Aroma Symposium at 09 Unified Symposium

Your help is needed. Until a stable funding mechanism can be implemented NGWI will rely on industry funding to continue operating. It would welcome you financial support and I would urge you to contribute any amount you can.

For any researchers reading this I urge you to involve NGWI in your research and proposals. You can begin by contacting Jean-Mari or Dr. Nick Dokoozlian at E&J Gallo who is the chair of the research committee.

You can learn more about NGWI by visiting its web site at http://ngwi.org/.

The Unified Symposium: http://www.unifiedsymposium.org/

Unified is probably the biggest wine and grape convention and trade show in the country. Everything from talks to trade show is designed to service the California wine industry. But that's fine. Yeast is the same in a cellar in California or Pennsylvania. So are pruning shears. So there's plenty of overlap. The trade show floor is massive with every imaginable gadget, software, tractor, press or whatever the heart desires for a vineyard or winery as long as the money exists to buy it. Despite walking up and down every single row of displays, I saw nothing particularly new or innovative for the vineyard that I can recommend to growers in the East.

Lessons Learned to Optimize Vineyard Productivity

This session brought together some of the best viticulturists in the state to look at how wine growing practices have evolved over the past 20 years in California while paying particular attention to optimizing vineyard efficiencies and economics, including site selection, rootstocks, cultivars and clones, vineyard design, trellis and training systems and other important contributors to wine quality and production.

Nick Dookozlian was the long-time extension viticulturist in the Central Valley and recently became VP in charge of viticulture operations at E&J Gallo, the largest wine producer in the world. He focused on how training has evolved from the California sprawl on a 2-wire vertical trellis which was driven by soil moisture and fertilizers to the highly, if not too efficient, vertical shoot position system and now back towards a more spread system, a variant of VSP on a fan configuration. In the old model, site capacity drove the viticulture and the vineyard was designed around vine size. In the current system, vine size can be regulated by viticulture tools such as site selection, rootstocks, irrigation and fertilization so the farming methods are driving quality and production. His research has found that as vine spacing decreases there will be an increase in crop and leaf area but these smaller vines have fruit with less color, higher levels of methoxypyrazines and more vigor issues. In training systems bilateral cordons had higher brix levels than unilateral cordons and in particular those spur positions closer to the head of the vine yielded higher sugar than the apical positions. On row orientation is most efficient at a N-S orientation and least for E-W rows. Direct light heats up fruit dramatically which results in lower anthocyanin and phenolics. Diffuse light is preferred for ripening grapes. It is quite amazing how much temperature variation there is within the microclimate of the vine. A slide showed the temperature at the ground to be 103F, 98 at 3', 99F on the exposed side of a cluster and dropping precipitately to 89F on a partially shaded side of the cluster. The interior of the old sprawl system cooled fruit to 83F. The open canopy of VSP is preferred in coastal region for additional light/heat and reduction in disease pressure. In California a major problem is rapid sugar development that outpaces flavor, aroma and phenolic compounds. VSP is almost too efficient given the high light and temperature conditions in most growing areas. In an effort to cool the vine microclimate and increase diffuse light the single panel VSP has been divided into a tight fan shape with 12-14" of separation at the top. This helps to increase the amount of shade mid-day. But this system, like the lyre, if much more expensive to maintain with additional shoot positioning requirements. It is a long, long way from the virtually maintenance-free sprawl system, which provided "natural" shade. Nick proposed that the sprawl may not have been such a terrible system for wine quality if it were managed correctly and suggested that with the tools

and practices we have today, maybe it could work. I would agree that for low to mid-range priced wines, it is well worth considering. In his work he found that berry color is almost identical on the sprawl vs. VSP system. Mechanization still has a bad image in California. He acknowledge that there is bump up in crop size after a vine is minimally pruned but after 2-3 years of settling in time the vine regulates itself and a balance is achieved that can yield smaller berries and good wine quality. Nick suggests that there may be too much VSP in California and that it may be worthwhile to revisit divided systems.

Andy Walker is the plant breeder at UC Davis and just recently released a series of nematode resistant rootstocks, addressing a big problem in California vineyards. The history of plant materials in the California wine industry is filled with stories of woe and intrigue and certainly shows no sign of abating. Before 1989 most of the vineyards were on 12x8 spacing, either St George or AxR1 rootstock and there was no effort to limit vine vigor. Clean cultivating, ample fertilizer and irrigation were normal practices. A typical vine looked like a bad hair day. In 2009 viticulture has changed dramatically with closer vine spacing, a wide selection and use of rootstocks, hedging and leaf and lateral removal, deficit irrigation, cover crops and reduced use of fertilizers and pesticides. The main rootstocks used in California today are 101-14 and 1103P. Rootstock performance is influenced by soil type, texture, depth, and scion. Canopies are manipulated to adapt to the choice of trellis system. AxR1 and St George were useful in that they appear to suppress leafroll virus. Andy emphasized the need to design a vineyard according to the climate and soil characteristics. After these are evaluated, variety, clone, trellis, spacing, rootstock and other viticultural decisions can be made. He placed a great emphasis on the use of clean plant materials and the problems that are now confronting growers such a leafroll and fan leaf viruses, Pierce's disease, Petri disease, etc. and the need to follow exacting sanitation practices such as leaving a replant field fallow for 1-2 years, preferably longer. This will result in dramatic improvements in the soil, including reduced nematode populations and a recovery of soil fungi and bacteria. Always rotate rootstocks in replanted fields.

Daniel Bosch was the long time research viticulturist for Robert Mondavi. There was a time, when I was at UC Davis, that one might claim that RM was the best source for applied viticulture research in the country. They had an extremely active and aggressive program that generated reams of data and ideas and they had great vineyards to work in. Dan has recently moved to Icon Estates, a brand of Constellation.

Daniel emphasizes the importance of Year 2 vine training and development with a focus on uniform spurs or canes. He noted the emergence of vine water management as a critical element to growing wine and the use of the pressure bomb to monitor vine water status and how a common language has developed from these management practices. When a grower says his vines are at "10" or "12" we know just what he is referring to. Fine wine growing is getting expensive. VSP and high density vineyards are expensive to develop and maintain. A low fruit wire creates higher temperatures in the fruit zone which lowers color and total acidity in the grapes. Rows are now running NE-SW to deflect the sun, smaller blocks are resulting in more uniform grapes and split foliage systems are offering better shading to prevent sunburn and bring better fruit chemistry balance. In this decade of viticulture there is more cane pruning to reduce incidence of eutypa and bot canker, less soil movement through the use of cover crops and drip irrigation, better site drainage and overall a greater respect for the site. In site development the

vibrating winged shank ripping on the row is becoming more widely accepted. Tying shoots to maintain position and canopy form is used in high end vineyards. Trunk/wood disease are an increasing concern in vineyards. In the future he sees even more aggressive and costly viticulture in use with lower yields, more induced stress, lower vigor rootstocks such as 420A and 1616, wider use of drainage systems and split canopy systems. New threats are the same old ones including viruses and nematodes. Growers will continue to adopt more sustainable practices. Labor costs and availability are a constant source of anxiety and will continue to encourage the use of mechanization. Robotics is in the future of vineyards. Daniel encourages more research to provide standardization to some of the key viticultural questions of the day, such as when and how much to irrigate, how much canopy exposure in necessary to keep from stressing the vine too much and achieve balance.

Carson Smith runs a large vineyard operation in the Central Valley. It is hard to imagine a more different vineyard environment from the Eastern US than what he sees when he walks out the front door each morning. They often measure block sizes in the hundreds of acres. Yet, it is still viticulture and common sense that rules the decisions made each day, just as it does here. Carson was all about being practical and pragmatic. In the central valley almost all decisions are driven by economics. They walk a fine line between profitability and total bust. It can be an uncomfortable place to be.

20 years ago a farmer asked where a piece of land can be found at a price that can make growing grapes worthwhile, then he would ask if the land was suitable for grape production. Often the best sites were too expensive to farm under the current contract prices so they were not planted. Plant materials were considered important, most vines were own rooted, whatever the nursery had on hand and usually from cuttings from a productive vineyard. There was very little understanding about clones and not rootstocks until the ‘90s and only about 20% in that decade. Productions goals were 10 tons/acre and quality meant meeting the minimal brix level required in the contract, typically 19-21 for whites and 21-22 for reds. There was never any discussion of color, seed maturity, flavor, only minimal sugar and rot.

Now sites are selected with great care. Yes, economics are still critical but water availability is paramount, then soil quality and plant materials. Replant sites are the most common situation and problems such as nematodes and other soil-borne diseases and pests must be addressed, improved vineyard design and removal and replanting timing, fumigation if needed and burn days. Vineyard design may be influenced by existing infrastructure such as roads, fences, pipelines, etc. Most rows were planted E-W and that is now changing to N-S. Carson emphasize that the planning, design and economics of the vineyard must reflect the conditions for the next 30 years, not the previous 30 years. If row spacing is reduced for 12’ to 8’ can current equipment be used? He strongly encourages growers to take advantage of new technologies to inform critical decisions, such as NDVI and other sensor generated data that can identify problems before they show up in the vines. This information can influence decisions about soil preparation (ripping in particular), fumigation, soil amendments, rootstocks, and vine density. GPS information can greatly improve block design. 20 years ago hardly any rootstocks were used and now 90% of vineyards are planted on 1103P and Freedom. Clonal selections are the usual choices but must be productive and bunch rot is a major consideration in clone choice. Viruses and vine mealy bug are considered to be top vineyard problems.

In the central valley they talk about trellis systems designed to support 8-12 tons per acre, up to 30 t/a! That's not us but still, there is a good point here that a trellis must be durable and stout. Trellis design and trellis structure are two separate issues. Choose design for the market, wine maker or grape buyer. Structure is adapted to production levels. A wrong decision can be very expensive to correct. Choose design and materials for strength and site conditions such as wind, water table, row direction and soil chemistry. He has experienced trellis failure due to soil and water chemistry. The most common trellis in current use is the 2-wire vertical with the cordon at 54", a system that lends itself to mechanization. Row spacing is 10x7. The trend is towards simplification and the future is in mechanization.

10 years ago all viticulture decisions were production based, now they are based on quality including spreading the fruit out, cooling the fruit for better color, achieving better vine balance, more intensive management practices including suckering, fruit thinning, and irrigation scheduling. The cost of vineyard development has risen dramatically, although metal stake prices have dropped precipitately in recent months.

Carson said that he is not accustomed to giving talks and was reluctant to give this one but in the end it forced him to think analytically and critically about his farming practices so it was a very positive experience. He was surprised how common themes tied together the presentations in this session, despite the diversity of viticulture goals, regions, practices, etc. The most important lessons learned or mistakes made were not how the vineyard was designed or planted but how the decision was made to plant a new vineyard. One grower he spoke with said he was so anxious to plant grapes that he ignored all of the economic consequences of the decision. He was willing to accept a low-ball contract from a winery just so he could plant a vineyard. All too often in the central valley planting decisions are based on economic survival, not profit potential. Too often growers focus on production practices and prices without considering the most important goal: to make a profit. His suggestion is to know your production and quality goals before you plan the vineyard. Know who your buyers are and the target market. Is the winery a quality or production driven business? If it is a quality producer it needs to pay quality grape prices. Quality is always more expensive to achieve. It requires more attention to detail and is more management intensive including pruning, thinning, canopy management, disease and pest management, irrigation management. A final word of advice: if you have to compromise on what you determine is the best way to design and plant a new vineyard then reconsider planting the vineyard. You may not be able to afford the decision to do it wrong.

*I would like to thank Carson for providing me with a hand-written copy of his talk at Unified which greatly improved my ability to report on his presentation.*

John Crossland is the current president of the California Association of Wine Growers (CAWG) and a grower in the Paso Robles region. His talk was notable mostly for his use of a very large vibrating winged ripping system that appears to be mounted on a D-8 caterpillar. The system extends 2-3 feet into the ground and lifts the soil and gently lays it back down. Ripping is done on the vine row to create a uniform soil environment for the vine, which leads to uniform growth of vines. The ripper is followed by another tractor with a device that "injects" soil amendments by a shank directly into the crevice created by the ripper amendments will be placed at the level

of the roots. It is quite an amazing system for pre-plant soil preparation.
http://www.vineyardpro.com/

Viticulture in Santa Barbara County

After visiting Santa Barbara County (SBC) and its vineyards it is necessary to wonder why anyone who wants to grow wine would do it anywhere else. This is as close to wine paradise as I have experienced. The region has just emerged during the past decade and one of its greatest proponents is Jeff Newton. I have known Jeff since we were grad students studying viticulture at UC-Davis. We followed different career paths – he went on to become one of the best viticulturists in California, well, most of you know what happened to me. I am not being frivolous with this accolade. In the preface of his most recent wine tome, Robert Parker, Jr. mentioned just two viticulturists in his broad view of the wine world, David Abreu and Jeff. His name is now popping up everywhere.

Jeff started Coastal Vineyard Care (CVCA) as a one-man consulting business 25 years ago and now it is a multi-million dollar company managing over 2500 acres in Santa Barbara County. The business itself is remarkable to behold, a lean and mean planting and management machine that farms medium to ultra-premium wine grapes that have achieved 95+ Parker scores. I have to keep reminding myself that this is the guy who used to grow broccoli in the central valley.

Jeff no longer works alone. He has three partners in the business who help to oversee the 30 or so ranches they farm. Below them is an incredibly integrated and efficient hierarchy of managers and foremen who monitor every last minute detail of work. They manage 2500 acres as well as any five acre vineyard in Pennsylvania. The company has its own accounting department, pest control advisor, and farm safety officer. CVCA draws talent from the excellent program at Cal Poly in San Luis Obispo and many of those working at CVCA have diverse and very accomplished backgrounds in other fields. There are viticulturists to look after the detail work such a irrigation scheduling. CVCA also relies on expert consultants to help them do a better job of farming, including Tom Prentice of Crop Care. It is truly a team approach to wine growing.

I got to ride shotgun with Jeff for two days as he made the rounds around his ranches. It was an amazing experience. First of all… the weather. It was perfect. The temperature in Lancaster hasn't crept much out of the 30s all winter and here we were, 60 degrees, blue sky, shimmering sunlight. Amazing. Maybe too amazing as a drought lingers and an early bud break brings the threat of frost.

Vineyard development: Clients usually approach CVCA with a property and ask them to evaluate it. It then goes through the suite of testing, primarily soil and water testing. Soils can be very high in magnesium which affects structure and nutrient availability. Salinity in the water can be a major problem. The initial walk over is important to determine the quality of the site and how vineyard blocks, varieties and rootstocks will be assigned. The soil work and determination of total available water will guide decisions, particularly rootstocks.

Depending on the AVA location relative to the ocean, varieties are selected. In the cool Santa Rita AVA it is mostly Pinot Noir and Chardonnay. Further east into the Los Alamos AVA Syrah, Sangiovese, Grenache excel. The furthest east region is Happy Canyon where Cabernet Sauvignon has taken hold. Jeff has a good sense in each area what varieties will do best. The topography is highly variable, from some flat land on the valley floors to Mosel-steep hillsides but almost always with rolling hills defining the vineyards and adding complex slope, aspect and elevation qualities to the wines.

The vibrating winged plow has been used to rip in soil preparation. This is a wing on the end of a shank that glides through the ground at a depth of 2-3' and lifts the soil and gently lays it back down. They rip on each vine row adding uniformity to the soil structure. There is an applicator that can drill soil amendments deep directly behind the winged plow shank. Gypsum is often used to help improve soil structure and to neutralize active aluminum. Gypsum is much more soluble than lime so it can move deeper into the soil.

Row direction in warmer areas is established more by terrain contour than a strict N-S or NE-SW preference, although they try to achieve optimal orientation. In cooler Santa Rita, N-S becomes more important.

Development costs can be high, upwards of $40,000 an acre for the ultra-premium, high density vineyards. Farming costs can also be steep, pushing $10,000 per acre for the best vineyards but most are in the $6-8K range and as low as $3500. Labor is the major expense.

Soils: Mostly clay loams with some sandy soils. They care about soils but not to the extent that Europeans value the soil for wine quality. Here soil is a medium to irrigate and hold water long enough to get the vine to the next irrigation set. But one premium vineyard was on very sandy soils and the expectation may have been for lighter, fruitier wines but the strength of viticulture applied to the vineyard allows it to produce big, juicy Parker wines. It demonstrates the Thunevin method of taking a medium site and raising it to a top site through maniacal viticulture.

Plant materials: The quality and cleanliness of plant materials is always a concern. The combination of leafroll virus and vine mealy bug has growers on edge in SBC. Also, Syrah disorder is well-known in the area. Suffice to say the latest clone and rootstocks are being used. A lot of 420A is planted because of its tolerance to high pH soils. Riparia Gloire is also used to reduce vine vigor. 101-14 is the most widely used rootstock with a wide range of desirable performance characteristics. Clones are all over the map and wine makers are always looking for the next great clone. There is a tendency to favor California clones as opposed to European imports. For example, there are three highly regarded Syrah clones 1, 2 and PB from the Alban Vineyard located just north in the Edna Valley. Wine makers suggested that the Wente clone performed better than the newer Dijon clones of Chardonnay. Clonal blocks are segregated in the field and almost always in the cellar. They are experimenting with some selection massale plantings. .

Planting: It is still all done by hand. The appearance and uniformity of the results are as good as laser planted vineyards in Pennsylvania. The layout work is outstanding. CVCA does all of their planting in the spring when soil conditions are just right.

Vine spacing: Vine densities, especially for reds have increased in recent years. For high end reds 6 x 3 is the preferred spacing. We visited one vineyard with only 2.5' between vines. Some older vineyards are on 8x4 and the oldest even wider with more traditional spacing. The trend, however, is towards higher density and lower fruit wires for better wines.

Trellis: It's a lot of the same here but with some new twists. All notched, 13g metal stakes but because of some experience with stake failure due to salts and hydrolysis there is some preference towards galvanized stakes, which are proving to be more durable. Tubular steel end posts with winged flanges are most common, with or without dead man anchors. In the past four pairs of catch wires were used but they have decided that three sets of wires are enough.

An interesting development is the use of a spread VSP canopy configuration. Three small cross arms are attached to stakes, the top one is the longest at 12-14". This opens the canopy into a slight V, much less dramatic than a lyre but very effective in providing some shade to the fruit zone. A major problem in sun-rich California, especially in the warmer areas, is the intensity of the sun that burns the fruit and sends sugars soaring out of balance. The wider configuration helps to provide more dappled light to the fruit zone. This is an expensive retrofit, both to the trellis and to maintain with additional shoot positioning.

Fruit wire height varies from 18" -36". The higher the quality of wine, the lower the wire gets. The intent is to pick up additional warmth to push fruit maturity. The climate is dry here so there is little concern about air circulation and fruit rots.

Pruning: Ultra-premium cordon vines are pruned to one count bud and a basal bud. This significantly limits crop. Pruning crews are extremely well-trained and fast. They prune and wrap an 8x4 cane VSP vine in about a minute. A crew later follows to tie the canes. 2-3 inches is left between the ends of canes. Brush is chopped in the row.

Training: There is a mix of cordon/spur and head/cane. Many cordon trained vineyards are unilateral. If the vine spacing goes to 3' or less, only one cordon are is used. Spur positions are every 4-5", 3-4 per arm. Maximum cane length is also considered to be 3' although they rarely get that long. Shorter canes help with more even shoot development along the entire cane. The debate between cane and cordon rages on. In the cooler Santa Rita hills cane is widely used for Pinot Noir and Chardonnay. Cordon is cheaper because it can be pre-pruned and does not require tying. Cordon vines are trimmed by hand to the first catch wire and finished pruned later on. The head of cane pruned vines are topped right at the fruit wire. No renewal spurs are kept since those shoots tend to crowd and shade the head area of the vine. The first bud is saved for next year's cane and they look for water sprouts to provide the following year's fruiting wood. No extra canes are left for insurance wood. If instructed, in some higher vigor situations, a kicker or vigor diversion cane is left. This is tied up into the canopy early in the growing season then lowered and removed later on, sometimes as late as veraison. Spur vs. cane on Pinot Noir at Ampelos yields 1.65 vs. 1.97 t/a respectively. Cane typically has higher yields. Spurs have smaller berries and fewer clusters.

On the V-VSP Tom Prentice prefers saving more spurs and keeping fewer clusters, usually 1 cluster per shoot, where as the normal practice would be to have fewer shoots with more clusters. He feels this helps to promote ripeness and uniformity.

Canopy management: Shoot positioning in ultra-premium vineyards is meticulous. Branch locks (short, removable plastic ties) are used to fix every other shoot into a vertical and parallel position when shoot growth reaches the top of the canopy. These canopies tend to be on low-medium vigor vines with canopy densities of 1-1.5 leaf layers. The effect is a perfect panel of leaves. At Ampelos Cellars, owners Peter and Beth let us taste a 3 year trial of Pinot Noir with and without branch locks. Wines were uniformly produced and the differences between the two treatments were significant and obvious, if not predictable. The branch lock wine has more color and concentration. That's not to say it was a better wine. The locks are very slow to apply and expensive. Ruben developed a method weaving and fastening shoots with ty tape. They use brown colored tape so it won't be seen. This is just another example of innovativeness at CVCA.

In an attempt to slow sugar accumulation the tops of vines have been trimmed at 19 brix but the results are mixed so far. The challenge of producing balanced fruit in light of intense sun and climate change is

The V-VSP must be carefully developed and maintained. Spur position lean out in one direction or other to encourage the shoots to grow towards that side, making them easier to train. Shoots must be positioned on either side and the center kept clean.

Yields: Crop load correlates to wine quality but is generally in the 2-4 pound per vine range. Many thinning passes are made, starting with adjusting cluster number with shoot length all the way through veraison eliminating unripe berries and cluster parts. As far as I could tell, no statistical method of crop estimating is used. It is more based on experience and what they can explain to the crew.

Floor management: Cover crops are now widely used and a mix of legumes and grasses in alternating rows with some cultivated rows. Legumes are used to invigorate vines and rye or barley to devigorate. A lot depends on the soil composition and vigor of the vines. On hillsides they will drill legumes through the grass cover. Low vigor blocks are periodically ripped then gypsum is added to loosen soil and increase water penetration.

A mix of herbicide and mechanical cultivation is used in the vine row - four apps of Roundup in some vineyards and the Pellenc Sunflower or a type of grape hoe in others.

While CVCA is part of the Central Coast Vineyard Team and seeks to farm as sustainably as possible, it is not dogmatic about being organic or biodynamic. They strive for minimal off-farm inputs perhaps with the exception of labor. But even here there is the recognition of the value and improvement in vineyard mechanization.

Irrigation: Of course viticulture lives and dies by water management in much of California. The most important irrigation set is at veraison. Post fruit set water sets berry size. Pressure bombs

are used to determine vine water status. Water is added at -12 to -16 bar depending on variety, rootstock, soil, temperature and lots of other factors. This is truly an intuitive part of viticulture in an arid region and so crucial to wine quality. Weather stations located around each AVA allow monitoring of evapotranspiration that additionally informs irrigation decisions. The preferred data logger is a Spectrum ET2900 Watchdog. This also tracks powdery mildew threats through a commonly used disease modeling system.

Disease and pests: Vine mealy bug and viruses are now on everyone's mind here. Infected vines are pulled immediately and every attempt is made to control VMB, including insecticides like Applaud, Moventa and Admire. The most common sprayer is still an airblast with Aerofans with larger droplets inland and in windier areas the Cima due to its atomization-small droplets. Sulfur dust is not used any more even though it is 2-3x cheaper than wettables.

Other threats: There aren't that many and certainly it is a comfortable place to grow grapes compared to the East and Midwest but occasionally they get hit by something big like the 2007 spring frost or wildfires.

Wines:

Ampelos Cellars is located in the wine ghetto in Lompoc but vineyards are in the heart of Santa Rita, on the south side of Hwy 246, rolling hills, small blocks. Peter Work and his wife, Rebecca are the forces behind these delicious red wines. Pinot Noir clones 2A, 4 667 and 777, and Syrah 99, 470, Alban and Estrella River. '06 Estate Pinot Noir has pure fruit, plush, clean, black fruit, very elegant. The '05 is deep, rich, dark, layered fruit, smoky with good length. Alban Grenache 2 from barrel is delicious! The wine making is very clean and precise. There is the taste of great enthusiasm and passion in these wines.

http://www.ampeloscellars.com/

Paul Lato is a new and exceptionally passionate wine maker, hardly rare qualities in our business but Paul is one of the most eloquent wine makers I have met and that is why Jeff wanted to taste his wines. Like Kermit Lynch, he has the rare ability to put wine into words. He understands the importance of sourcing grapes from the best vineyards and communicating to the grower his need for flawless fruit. He made the analogy to Thomas Keller and his absolute insistence on the finest ingredients in his kitchen. Why would a winemaker expect great wine from anything less? The cellar is actually a fenced off area in the middle of a vast floor of the Central Coast wine cooperative in Santa Maria. He understands that cleanliness of fruit must extend into all cellar operations.

I had to ask myself how Paul makes such good wines. He has no formal training and learned by hanging out with the likes of Manfred Krankl at Sine Qua Non and Jim Clendenen at Au Bon Climat. Still, you can only learn so much by hanging around wine. He is very smart and very observant. He is intuitive and connects dots, such as grapes to quality and he works well with others, such as vineyard managers. He told the manager at Gold Coast Vineyard not to do any big experiments in his vines and that if there is ever a decision about what to do, do whatever will improve wine quality regardless of cost. Paul was a sommelier in Toronto before coming to

California. It seems that sommeliers and chefs often make good wine makers. They have a sense of ingredients, harmony and construction in food that can be translated to wine. Perhaps most importantly they have a disciplined and discerning palate that helps them to understand a wine.

The vineyards include the great Bien Nacido Vineyard in Santa Maria, a cooler, inland area that is often windy and foggy and where Pinot Noir and Chardonnay excel. His Wente clone was a classic big, butter California Chard but still with nuance and elegance. I loved the refined, modest, and flavorful Gold Coast PN which he likens to a fine Chambolle-Musigny. The Solomon Hills 115 and 777 PN was a bit more structured and heavy but still with fine balance and flavors. The Fiddlestix PN from Santa Rita was the biggest wine of all but lacked the bright fruit that I love in PN. But it no doubt will have many fans.

Paul only makes about 500 cases of wine right now and while they are hard to find they are worth seeking out.

http://www.paullatowines.com/

I'll say this again at the risk of repeating myself but only because it is true. If Jeff and CVCA have to work this hard and spend this much money in almost ideal viticultural conditions to make a great wine then given the growing conditions in the Eastern U.S. we have to work even harder and better to achieve the same results. California and the Mid-Atlantic are on different viticultural planets but there are still lessons to be learned from each other. CVCA is an amazing business, built from scratch by Jeff and now developing some of the best vineyards in the world. The model for the business and its practices could certainly work here. The viticulture is mostly the same, with the exception of water management issues and coping with vine vigor problems that we have due to rainfall. I would challenge any Eastern wine grower to visit Santa Barbara County and not come home with a basket full of ideas.

Coincidentally, an excellent interview with Jeff appeared in the January **Wines and Vines** magazine. It's loaded with great information. In fact, he pretty much spills the viticultural beans here and if you want to know how to grow a 95+ Parker wine just follow the beans…. http://www.winesandvines.com/template.cfm?section=features&content=61262&ftitle=JEFF%20NEWTON or google "wine and vines, jeff newton."

The Coastal Vineyard Care web site is http://www.coastalvineyardcare.com/

You can read more about the wineries and vineyards in Santa Barbara County at http://www.sbcountywines.com/

Santa Cruz Mountains

Jeff's viticulture speaks of great detail and precision, from the very inception of the vineyard to the moment the fully mature fruit is harvested. This is in contrast to the small and diverse vineyards in the Santa Cruz Mountains appellation to the north, where there is less overt money

behind the wines, and one might say slightly less maniacal fastidiousness in the vineyards and cellars but no less great wines. I was able to visit Ridge, Mt Eden and Kathryn Kennedy, all great estates but oh-so un-Santa Barbara. Here, philosophy and elevation combine to fashion great wines, from the amazing Pinot Noirs and Chardonnays grown at 2000 feet at Mt Eden to the great Montebello Cabernet Sauvignon from 50 year old vines at Ridge and organically grown Cab in the heart of the suburbs at Kathryn Kennedy. The vineyards and vines here are often rugged, crusty and old veterans who have withstood decades of wind and weather to keep producing miniscule crops of amazing fruit. It was interesting to compare the precision and definition of the Santa Rita PNs with the purity and elegance of the Santa Cruz counterparts. It may be a matter of elevation (temperature) and intensity of sun that accounts for the difference. I must encourage anyone who loves Pinot Noir to taste the Mt Eden estate wines. They are as fine and pure an example of the breed as you can ever hope to try. Matt Kramer stated that if he were to offer any California wine to a visitor from Europe, it would be the wines from Mt Eden. These are classic, hand crafted wines. The Montebello Cab has its own reputation that has withstood the onslaught of cult wines from Napa and elsewhere. This wine continues to be the symbol of refinement and balance among alcoholic fruit bombs. Paul Draper's intent was always to emulate Chateau Latour and he continues to succeed (at a quarter of the price).

In Napa, Sonoma, Santa Barbara and elsewhere wine growers struggle against the sun. I think the altitude in the mountains is a great asset in achieving balance and elegance in wine. As ever, I believe that the sun is a great equalizer in wine quality and in arid regions with heavy sun load on the fruit, some of the subtleness of a great variety like Pinot Noir is lost. No proof whatsoever, just mere conjecture. It all adds up to what makes wine so intellectually challenging and curious, the more we try to understand and explain it, the further away we get from an explanation.

You can find more information about vineyards and wineries in the Santa Cruz Mountains at http://www.scmwa.com/

There are interesting stories and facts about SBC and SCM and other wine regions at the Appellation America web site http://wine.appellationamerica.com/

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