



CHALK HILL

Chardonnay

CLONES

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THEMES IN THE KEY OF CHARDONNAY

by Rod Smith

*J*ohann Sebastian Bach wrote six cello suites, each in a different key. They all come from the same creative genius, yet they are strikingly different. The suites have been performed by many cellists, and although each musician is reading the same music the interpretations vary, not just in sensibility but in the very sound of each instrument.

If we think of the sonatas as different varieties of the wine grape, *Vitis vinifera*, we get a sense of the degree of similarity and difference between two varieties such as Chardonnay and Sauvignon Blanc. If we think of two performances of the same sonata as two different expressions of Chardonnay or Sauvignon Blanc, we have an image of the same grape variety expressing the terroirs of two different vineyards. If the musicians are ordinary, we might not realize the sonata is being expressed by two different voices. But if the musicians are, say, Mstislav Rostropovitch and Yo Yo Ma, we hear the difference immediately.

In this analogy the musicians are equivalent to

wine producers. Their statement of the composition is defined by factors inherent in the grapes they use and what they do in the winery. In ordinary wine, those factors are not well defined and the resulting wines are indistinct. But the better the wine, the more critical each component becomes.

The wines of Chalk Hill Estate reflect an unprecedented campaign to fine-tune viticulture and enology on a wine estate. Chalk Hill Estate wines show the results of that campaign in their precise expressions of terroir. At that level of quality the expressions of vineyard and winery are defined and integrated to a high degree. Subtle elements that don't affect the broad sensory profile of generic wines become apparent in the character of estate wines.

The clones and selections comprising the genetic composition of a carefully honed estate vineyard are small but telling factors in the character of such wines. Their delicate voices may not stand out in the final blend—indeed, they shouldn't—yet each makes a decisive contribution, as if each musician in an orchestra were a first-rate virtuoso.

THE ANCIENT TRADITION OF CLONES

*T*he concept of clones is an old one. In the myth of Jason and the Argonauts, “dragon teeth” sown in the ground sprout into an army of identical monsters. Recently, DNA experimentation has brought such fantasies into the realm of possibility. The concept of the clone is far from sinister, however. A clone (from the Greek word for twig) is simply a genetically distinct sub-type of a grape variety. A clone is created by taking cuttings (or twigs) from a vine with desirable characteristics and propagating new vines, which are identical to the source.

Ironically, the viticultural significance of clones is directly opposite the popular science-fiction connotation of universal sameness: to a grape grower, clones are valued because of their subtle differences. The improvement and customizing of vineyards using the distinctive qualities of individual clones or selections goes back thousands of years. The first viticulturists were the people who began choosing the best vines from established vineyards for propagation into new vineyards. The use of certified clones began a scant four decades ago in Europe, and didn't become

common there until the late 1970s. It's only been common in California since the late 1980s, when replanting necessitated by phylloxera gave growers the unexpected opportunity to refine the genetic mix in their vineyards.

Just as winemaking is fundamentally the management of a natural process, propagation with selected plant material is simply streamlining a phenomenon—genetic differentiation—that occurs with or without human intervention. In fine wine production, nothing is created that didn't or wouldn't already exist—but part of the human role in terroir is to nudge nature in a desirable direction. And where fine wine is the goal, clonal diversity is desirable.

TRANSLATING SCION LANGUAGE

Clones are subtle genetic variations of grape varieties—vines that have mutated slightly over time in response to environmental conditions in a particular place. The scions (cuttings of fruit-producing wood) used for propagation may be budwood taken from a single vine (clones) or budwood selected from multiple vines in a favored vineyard (selections). In theory, each clone or selection has its own character, which is asserted to some degree in the character of the wine made from its fruit.

“A good analogy,” winemaker Steve Leveque suggests, “is what you’re likely to see in a rose garden. The plants are all recognizable as roses, but there’s variation in smell, size of flower, and how they grow. Chardonnay clones would show the same kind of differences—just not in color.”

Such differences would correspond to nuances of character displayed by aroma, flavor, structure and texture in the wine. This contrasts with a wine made from a different grape variety. In a flight of Chardonnay wines, a Sauvignon Blanc would be easy to pick out. The difference between clones of the same variety is much more subtle.

Growers today have access to all kinds of clones of a given grape variety. They can create discrete plant communities made up of individuals carefully chosen for what they contribute to the mix. Sometimes the passion for selections from famous vineyards in Bordeaux or Burgundy makes botanical smugglers out of otherwise law-abiding people. Some clones are notorious “suitcase imports” that have been introduced to California numerous times by individuals who took cuttings in Burgundian vineyards and hand-carried them through customs. Each of those selections is slightly different from the one that is eventually certified, or standardized, by an institution such as the University of California’s Foundation Plant Materials Service. More often, candidates for clonal certification emerge from elaborate and expensive programs of selection, propagation, and planting or grafting of specific clones.

The importance of clone in the big picture of wine character is less significant than climate, site, cultivation practice, and winemaking. Only at the upper levels of quality, and the lower levels of yield, can such a subtle influence come into play. And yet there is a strong belief among quality producers that, as the last piece of the viticultural puzzle, the

right clone can make a disproportionate difference in how terroir is expressed through wine from a given location.

The degree to which clone influences wine quality is most crucial in varieties that have had many centuries to differentiate. Clones of Pinot Noir, an ancient variety, show pronounced differences, almost to the degree of different grape varieties. A much younger grape variety such as Cabernet Sauvignon shows less differentiation. Dr. Jim Wolpert, chairman of the UC Davis Department of Viticulture and Enology, estimates that in Pinot Noir the clone can make up fifty percent of the final wine quality, while in Cabernet it's only about ten percent. Chardonnay, he says, falls somewhere in between.

Given that site remains the most important determinant of wine character, regardless of clone, Chalk Hill Estate is an ideal testing ground for clones. The estate has 13 soil types in a variety of exposures, providing a wide range of vineyard situations. Repeated trials over many vintages have narrowed the focus down to a handful of sites that are ideal for Chardonnay. This wide-ranging experience in deductive winegrowing is one of the things that sets Chalk Hill Estate apart from other wine producers.

ONCE AND FUTURE CHARDONNAY

Chardonnay originated in Burgundy. Is it coincidental that the apotheosis of Chardonnay is white Burgundy? It is much older than Cabernet Sauvignon, so there are many more genetic variations with much more pronounced differences. What it has in common with Cabernet is worldwide popularity, which has assured a globetrotting career that has taken it to every significant wine region.

Some of the Chardonnay clones grown at Chalk Hill Estate come straight from Chardonnay's homeland in eastern France. Others have arrived via other regions where they have been selected and developed for various qualities that substantially reflect the prevailing taste of producers and consumers in those regions. Such selections reflect the cultural sensibilities of the areas where they were developed—another example of the human role in terroir—and yet few have been systematically grown and evaluated for their fine wine potential. Chalk Hill Estate is the first fine wine estate to do that.

EACH CLONE HAS A DISTINCTIVE VOICE

Since the object of a clonal evaluation program is to highlight the differences between clones, it's essential to control as many aspects of growing and winemaking as possible, so that clone is the only variable and each wine is a true clonal expression.

This is not experimental winemaking. Experimental winemaking relies on microvinification to test or demonstrate a specific scientific thesis. Chalk Hill Estate has quantified the growing habits of the vines and the technical characteristics of the wines they yield. The goal here is to demonstrate the attributes of different Chardonnay clones on a commercial level, vis a vis Chalk Hill's style of Chardonnay. A microvinification might yield useful data that could help clarify vineyard and winemaking issues. But it's no substitute for a serious winemaking program. "Proper assessment of individual clones is an expensive and time-consuming process," Steve Leveque points out. "Each clone must be harvested, vinified, and tasted over several vintages to get a true idea of its characteristics. Winemaking methods can

also impact some of the subtle natural qualities of the clone, so we make the wines consistent with our Chalk Hill classic style.”

These wines are made as if each were potentially a component of the Chalk Hill Estate cuvee. “I look at each clone as a jar on the spice rack. Selecting the right one in just the right amount allows us to work towards the ultimate blend for our Estate.”

ANSWERS RAISE QUESTIONS

*I*n this collection of single-clone Chardonnays we have five different performances of Chalk Hill Estate terroir. This is the most comprehensive clonal trial ever undertaken in California; these extensively replicated experiments with 17 clones have generated a significant body of data with relevance to both vineyard and winery.

One of the most exciting aspects is the development of Chalk Hill Estate's own Chardonnay clone, a selection from the oldest and best vineyard on the property which has recently been certified by UC Davis. The Chalk Hill Clone, designated as Clone 97, has been twenty years in development, and will preserve the genetic heritage of the estate's unique Chardonnay plantings in perpetuity.

There is so much more to be learned about how to produce the clearest possible expression of a varietal wine from a unique planting. Every new answer raises more questions. For example, how much does the nature of a specific vintage have to do with how each clone expresses itself? How will earlier

picking, or a delayed harvest, affect wine character? Vintage by vintage, as the team answers questions and questions their answers, the Chardonnay plantings continue to evolve toward ever finer definition and expression. Clearly, the finest Chalk Hill Estate Chardonnays still shine in the future.

Clance # 15

CLONE UCD 15

Source

Prosser, Washington

Treatment

Heat treated 173 days

Vines

Moderate to high vigor

Fruit

Very low yield, small loose clusters, with very small “shot” berries

Traits

Late ripening and very rot resistant

Aromas

Walnut, apple, pear, delicate fruit

Flavors

Spicy and tropical with mineral component

Balance/Finish

Delicate, medium-long finish

Blank #1

CLONE UCD 17

Source

California (Robert Young proprietary selection)

Treatment

Heat treated 62 days

Vines

Moderate vigor

Fruit

Moderate yield, medium-sized, loose clusters

Traits

Excellent acidity, rot resistant

Aromas

Pear, tropical fruit, ripe lemon, vanilla, oak spice

Flavors

Citrus, sweet green apple, creamy

Balance/Finish

Balanced, firm, good length, nicely structured

Flame #22

CLONE UCD 22

Source

Conegliano, Italy

Treatment

No heat treatment

Vines

High vigor

Fruit

Moderate yield, very small, tight clusters

Traits

Early ripening

Aromas

Citrus, grassy, grapefruit, slightly herbal

Flavors

Citrus, apple, fig, melon

Balance/Finish

Balanced, medium weight, finish drops off

Erance #76

CLONE UCD 76

Source

Saone-et-Loire, France

Treatment

None

Vines

Moderate vigor

Fruit

Moderate yield

Traits

Early ripening

Aromas

Lemon-lime, green apple, orange, spice, honey-suckle, ginger

Flavors

Lime, apple; flavors echo aromas

Balance/Finish

Firm and rich, excellent, substantial, even and juicy

Clance #95

CLONE CTPS 95

Source

Côte d'Or, Burgundy, France

Treatment

None

Vines

Moderate vigor

Fruit

Moderate yields, small compact clusters with very small berries

Traits

Early ripening, low acidity

Aromas

Cinnamon, clove, papaya, pear

Flavors

Toasted pear, round

Balance/Finish

Viscous, rich fruit, opulent style

Ernest O'Leary

CLONAL BLEND

Sources

40% Clone #22; 40% Clone #17; 13% Clone #95;
7% Clone #76

Aromas

Caramel, spice, honey, lychee, pineapple, forward
combination of barrel and tropical fruit

Flavors & Finish

Nice texture, roundness, intense fruit, very long
finish, penetrating

CHALK HILL WINERY

2003 Chardonnay Clones

*Winemaking Protocol designed
by Steven Leveque*

Purpose

To determine the differences among several clones of Chardonnay grown in Chalk Hill's Oak Hill Vineyard, Block C.

Procedure

- a) Harvest fruit at physiological ripeness and by taste by winemaker.
- b) Whole cluster press in the Willmes press, with normal production cycle. Add 25 ppm SO₂ to juice and settle.
- c) Rack the juice after minimum 24 hours settling.
- d) Record juice analysis: Brix, TA, pH, malate; add nutrient if needed. 100% native yeast fermentation.
- e) Rack to French oak (50% new) for fermentation, all barrels from the same cooper from the same forest and toast level.
- f) Monitor fermentation daily, and confirm dryness using an enzymatic residual sugar assay.
- g) Top barrels at dryness. Inoculate with freeze-dried *Viniflora Oenos* and follow progress of malolactic fermentation.
- h) Stir and top weekly during malolactic fermentation.
- i) At completion of malolactic add 40 ppm SO₂. Stir and top monthly.
- j) Lightly fine.
- k) Bottle without filtration, adjusting free SO₂ to 32 ppm.

CHALK HILL ESTATE VINEYARDS & WINERY

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