



CHALK HILL

Chardonnay

CLONES

2000



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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.

“Think of a group of people in a room,” Bill Knuttel suggests. “They are all human, but they have slightly different characteristics. Some are taller, some thicker around the middle, some wear different perfumes or colognes. Chardonnay clones would show the same kind of differences.”

Such differences would correspond to nuances of character displayed by aroma, flavor, structure, and texture. On the other hand, he says, a wine made from a different grape variety would seem radically different. “If you had all humans and one gorilla, no one would have a problem picking out the

gorilla. A flight of Chardonnays with one Sauvignon Blanc in the bunch would be as easy to segregate.”

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. "You can't just look at the vineyard data," Bill Knuttel points out. "You have to grow the vines, harvest the fruit, make the best wine you can, and then taste the wine over time. And you have to repeat that vintage after vintage. It's expensive and time-consuming, but it's the only way to properly assess the clones."

These wines were made as if each were potentially a component of the Chalk Hill Estate cuvee. “Like a chef, you want to have a lot of good ingredients. Each of these clones has something to offer. From a blending standpoint I like them all, for different reasons.”

SUITES FOR UNACCOMPANIED CHARDONNAY CLONES

*T*he venerable Martini Selection, aka Clone 4, originally came from Wente to Stony Hill and then to Louis Martini. A selection from the Martini vineyard by the legendary viticulturist Dr. Harold Olmo was then certified by UC Davis. Clone 4 is often considered a utility clone. It might also be called the go-to clone because of its reliability. It can be counted on by growers and winemakers to do an outstanding job in any situation.

The vine is low in vigor yet consistently high in yield, making it suitable for a wide range of soils—it has enough drive to beat the average on infertile soils, and the restraint to stay within bounds on rich soils. Its ability to yield a large crop of reasonable-quality fruit has earned it the nickname Superclone. That might imply that it yields mediocre wines, but the opposite is true: when grown on the right soil and balanced for low yield, it gives concentrated, complex wines. “It’s unfortunate that nobody looks at the old clones,” notes Bill Knuttel. “It’s a mistake, because they have their places in the right vineyards.”

This wine shows why. It combines power and finesse, luxuriant fruit and crisp definition. It has an expressive nose, good concentration, and firm acidity, with tropical fruit and peach inflections.

Clone 16 was selected in Rutherglen, a warm area in the state of South Australia (which also contains outstanding appellations such as Coonawarra, McLaren Vale, and Barossa). The selection was imported into the US and subsequently certified at UC Davis.

Low yield and moderate vigor initially made Clone 16 attractive to Chalk Hill. The key to its personality became apparent during winemaking: the high malic acid level of its fruit, and also low tartaric. Malic acid is less stable than tartaric acid. It respirees during ripening, and the loss accelerates as the mercury rises, so especially in a warm climate the total acidity of the finished wine is on the low side. At Chalk Hill it yields a distinctive wine, rich and balanced with creamy texture and bright citrus notes. This clone performs beautifully in a blend, contributing a rich perfume and luscious fruit without throwing the total acidity out of balance.

Clone 17 is another moderate-vigor clone that was originally selected from the famed Robert

Young Vineyard in Alexander Valley, just a few miles from Chalk Hill Estate. It is almost opposite to 16 in acidity profile: it has a high degree of tartaric acid and low malic. Its sensory profile is therefore quite different. Not as effusive or perfumed as either Clone 4 or Clone 16, it nonetheless has a high-toned nose and bright palate, with a mineral undertone that tends to focus and define the lush elements around it.

In contrast to the previous four, Clone 22 was selected from a cool climate. It comes from Conegliano in the Friuli region of northern Italy. Not surprisingly, its wine is on the lean end of the Chardonnay spectrum. Clone 22's virtues in a blend are brightness and a firm, even weight on the palate. In a blend, it draws a defining line through complexity.

If you think Clone 76 stands by itself as a finished wine, you're not alone. It's consistently the most preferred wine in blind tastings. That's not surprising—it comes from Dijon, in Burgundy, and shows the classic Burgundian Chardonnay values.

The heady Chardonnay perfume has tropical notes and an underlying stoniness that expands through the palate as the lush forepalate tapers into firm, tight-grained minerality and a long, radiant finish.

Clone 352 hails from Espiquette in southern France. Its Mediterranean origin shows in its inherent fruitiness, and a rich, high-toned creaminess with a delicate white-flower perfume. It also has an intriguing undercurrent of flavor that evokes an apple orchard in autumn. “I call it a woody apple character,” says Bill Knuttel. “Every time I have this wine in a tasting it seems like a California Chardonnay, with the high toned creaminess and blossoms, but also that subtle woodiness which may explain its affinity for oak.”

ANSWERS RAISE QUESTIONS

*I*n this collection of six single-clone Chardonnays we have six 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. The greater wine industry benefits directly from this research in theory and practice, from the knowledge gained through these trials and made available by Chalk Hill Estate and through access to a wide range of clones for propagation.

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 has been twenty years in development, and will preserve the genetic heritage of the estate's unique Chardonnay plantings in perpetuity. It became available for commercial propagation in 2001.

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.

Blaine #4

CLONE UCD 04

Source

California (Martini selection via Stony Hill via Wente)

Treatment

Heat treated 90 days

Vines

Low vigor

Fruit

High yield, very large clusters, large berries

Traits

Naturally high acidity and low pH, prone to rot on vigorous sites

Aromas

Lemon/citrus, apple, floral, quince, pear

Flavors

Melon, pear, lemon candy, fresh, floral

Balance/Finish

Medium weight, refreshing



Flame #16

CLONE UCD I6

Source

Rutherglen, Australia

Treatment

Heat treated 60 days

Vines

Low vigor

Fruit

Low yield, very small clusters, mix of large and small berries

Traits

Very early ripening, high pH, low acidity, prone to insect damage and rot

Aromas

Banana, herbal, peach, apple pie, coconut

Flavors

Grapefruit, banana cream, complex, sweet impression

Balance/Finish

Rich entry and middle, full-bodied but flabby



Blaine #17

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



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



Home #7

CLONE CTPS 76

Source

Saone-et-Loire, France

Treatment

None

Vines

Moderate vigor

Fruit

Moderate yield

Traits

Early ripening

Aromas

Lemon-lime, green apple, orange, spice, honeysuckle, ginger

Flavors

Lime, apple, flavors echo aromas

Balance/Finish



Home #352

CLONE CTPS 352

Source

Espiquette, France

Treatment

None

Vines

Moderate vigor

Fruit

High yield, medium clusters, large berries

Traits

Very fruitful, many clusters per vine

Aromas

Red apple, woody, ginger, smoke, sappy, pineapple

Flavors

Apple, lemon, sweet and tangy

Balance/Finish

Medium weight, firm, even and smooth finish



CHALK HILL WINERY
2000 Chardonnay Clones
*Winemaking Protocol designed
by William Knuttel*

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 a uniform maturity level of 23.5–24.0 Brix.
- b) Whole cluster press in the Willmes press, with normal production cycle. Add 30 ppm SO₂ to juice and settle.
- c) Rack the juice after minimum 24 hours settling.
- d) Record juice analysis: Brix, TA, pH, malate. Ameliorate with 2#/1000 gallons Fermaid and inoculate with 1#/1000 gallons Prise de Mousse active dry yeast (EC1118).
- e) Rack to two-year old French oak for fermentation, all barrels from the same cooper with the same wood selection 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) Fine with 0.5#/1000 gallons bentonite and 5 mg/L isinglass.
- k) Bottle without filtration, adjusting free SO₂ to 32 ppm.

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