### winemaking



# Winemaker Trials Finding the Right Oak for Each Pinot Noir Clone

Curious about the effects of new versus neutral oak aging on specific Pinot Noir clones, Terragena estate vineyard proprietor, Chris Buchanan decided to run a trial testing just that. But this experiment requires patience: Buchanan is continuing to test the single clones as they age in bottle to determine how an oak's influence continues to evolve over time.

#### Stacy Briscoe

Vineyard proprietor **Chris Buchanan** found himself exploring wine while living in New Orleans and attending college at Tulane University, where he earned a degree in mathematical economics from Tulane. After moving to California, studied winemaking and viticulture through the University of California, Davis. While developing the Terragena estate vineyard and property, Buchanan also worked with winemaker Derek Rohlffs of Bravium as a winemaker and bookkeeper in the San Francisco Bay Area.

**TRIAL OBJECTIVE:** Holding all other fermentation variables constant, this trial determines the sensory effects of new Hungarian oak versus neutral French oak on Pommard clone Pinot Noir.

**TRIAL DESCRIPTION:** Approximately 5 tons of Pinot Noir Pommard and 115 clone were harvested from a fairly uniform, flat vineyard at approximately 24° Brix based on winemaker tasting of fruit and general vintage assessment. The fruit was fermented in 25 percent whole cluster lots, utilizing a Burgundy yeast isolate. The wine was transferred into various neutral and new barrels and then completed MLF utilizing a commercial MLF bacteria. No SO<sub>2</sub> was added at crush or until completion of MLF.

In sensory trials, all barrels were tasted for typicality of clone and barrel. The three barrels selected for individual bottling and aging stood out as unique displays of clonal expression. A vineyard blend was created both with and without the selected three barrels to distinguish any difference in the final blend. The conclusion was the three barrels were better on their own. A control wine was created from the remaining vineyard blend.

These wines were all bottled independently as single barrels in order to explore how each clone and oak treatment ages over time and to provide an educational asset to explore the complexities of Pinot Noir.

Neutral oak was used over 4 times prior to this trial.

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Lot 1: Pinot Noir Pommard in neutral French oak

Lot 2: Pinot Noir Pommard in Hungarian MT+ oak

Lot 3: Pinot Noir 115 in neutral French oak

ANALYSIS NAME	LOT 1	LOT 2	LOT 3	UNITS
free sulfur dioxide	28	15	22	mg/L
molecular sulfur dioxide	0.8	0.47	0.66	mg/L
total sulfur dioxide	62	47	64	mg/L
titratable acidity	6.7	6.9	6.8	g/L
рН	3.34	3.3	3.32	
volatile acidity(acetic)	0.62	0.49	0.61	g/L
L-malic acid	<.05	<.05	<.05	g/L
glucose + fructose	0.5	0.5	0.6	g/L
ethanol at 20° C	13.98	14.41	13.47	% vol
ethanol at 60° F	13.94	14.36	13.43	% vol
catechin	8	9	12	mg/L
tannin	196	239	202	mg/L
polymeric anthocyanins	12	15	12	mg/L
total anthocyanins	126	109	126	mg/L
catechin/tannin index	0.041	0.038	0.059	
polymeric anthocyanins/ tannin index	0.061	0.063	0.059	

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**TRIAL CONCLUSION:** One interesting result is that while the Brix were all quite close together for fermentation lots, varying less than .5 degrees, the alcohol varied from 13.6 percent for the neutral oak 115 clone up to 14.5 percent for the new oak Pommard. Speculation is that a combination of variance in the underlying nutrient makeup of each clone as well as possible wood alcohol extraction in new oak, accounted for the variance in alcohol level.

The three sample wines continue to show clonal and barrel typicity. These four bottles offer a more complete understanding of Pinot Noir clonal variation and isolate the effects of clone, as well as oak, from the effects of a particular vineyard site.

Further, bottling these wines as individual selections allows for exploration of how each clone and oak treatment ages in comparison with a blend of clones from the same vineyard as the wine is cellared over a period of years. A long term project, this can inform which of these clones or treatments may be better suited to long aging and/or how a bend of clones could contribute to a wine that presents strongly when young and ages gracefully for many years.

#### Winemaker's Postmortem

#### What was the motivation behind this trial? Why were you interested in comparing the effects of Hungarian versus French oak on the Pommard Pinot Noir clone specifically?

**Buchanan:** The motivation was to understand how new oak and neutral oak affect the flavor profile of the Pommard clone (ECD 04) of Pinot Noir and how those various oak influences affect the in-bottle aging process. I prefer new Hungarian barrels for most Pinot Noir because I find they typically produce a more delicate effect than French barrels. Since neutral barrels have been used at least four times prior, they have very little flavor impact from the oak, since essentially all of the oak and toast flavor has been extracted. My focus wasn't as much French versus Hungarian but more on new versus neutral oak.

Additionally, we chose to compare the 115 clone in neutral oak to the Pommard clone in neutral oak. This has effectively given us two trials with three wines.

## What were you hoping to achieve? Were there any desired outcomes?

**Buchanan:** I suppose the primary goal was exploration and understanding the impact of various treatments. While I have a good general idea, I had not done a controlled trial and bottling of isolated clone and oak treatments. Also, I wanted to offer an opportunity for curious consumers to explore the difference these winemaking decisions have on the wine. When I first began winemaking, this clone and oak difference in Pinot Noir was something I was very curious about.

The Abbassi Vineyard where these grapes come from is a very interesting, small vineyard. It has been planted to multiple clones of Pinot Noir and is fairly uniform in terms of soil and topography. This allows for trials such as this one: I can isolate a single variable and explore how it impacts the wine. Bottling these wines individually has given me great insight into how these treatments ultimately affect the wine as it ages, and I look forward to continuing to explore how new oak, neutral oak and various clones impact the wines in youth and as they age over five to 10 years. Understanding how these decisions impact an aging wine can potentially help inform how to make clonal and oak blends in order to produce wines of early approachability while still containing long-term, age-worthy characters.

## Can you briefly describe how you set up this trial?

**Buchanan:** The grapes were picked at night and brought to the winery. They were destemmed with 30 percent whole-cluster inclusion in the fermentation bins. All wines were fermented in the same way with twice daily punchdowns. They were separated into barrels by clone. We then aged them in barrel while they completed malolactic fermentation, and then bottled separately in order to capture each individual barrel's character and nuance. We look forward to exploring the long-term aging of these wines, though it is certainly a project that requires patience.

#### Did you encounter any problems during the course of the trial? If so, how did you overcomes these issues?

**Buchanan**: It took forever to hand-write all of the details on each individual bottle. Originally, we were going to write out the clone name and oak type on each bottle. After about one case we decided to switch to codes. "N" for neutral oak, "H" for Hungarian and "Pom" for Pommard. Clone 115: well, that one didn't need an abbreviation.

## Did your team or colleagues have any input on, or opinions about, this trial?

**Buchanan:** The team definitely pressed to use the abbreviations above. They did not want to write out all of the information on each bottle.

We also worked with the Abbassi family, **Michael** and **Kathryn**, to trial each of the barrels. We selected three based on interesting characteristics that could be isolated to explore how the wine continues to mature in bottle.

#### What was the outcome of the trial? Were the results as you predicted or did anything unusual or unexpected occur?

**Buchanan:** The results are still being experienced. Generally, the effect of new versus neutral oak has been as expected, but it is very interesting to see how the wines age. I would say that they tend to peak and valley at different times. One day I open all three to discover one is really expressive and "alive," but a few weeks later, a different one will show those same characteristics. This difference in expression over time is really fascinating to me. One very interesting outcome for me has been the dramatic difference between the 115 clone and the Pommard clone in neutral oak. It really demonstrates why these clones have been isolated and have very different uses in Pinot Noir blends. The selection of clones has a significant impact on overall wine style, and this trial is a demonstration of that effect.

#### What winemaking lessons did you learn from this trial? In light of those lessons, do you plan to adjust your current winemaking program?

**Buchanan:** Informally, I discovered that various consumers prefer different wines. I can bring all of these wines to a tasting and there is almost always a clear and decided preference for each individual. I don't know that I will adjust my winemaking directly. However, because I now have a greater understanding of how various clones and oak treatments will age, I can make more informed decisions as to which oak to utilize with which clone.

## What were some comments from your team? Which wine did they prefer? Why?

**Buchanan:** Generally, the Pommard in neutral oak has been preferred, though the new oak was preferred when the wines were young. The 115 has given some incredibly beautiful aromatics and mouthfeel. Much like our consumers, different members prefer different wines. I'm personally a fan of the neutral oak, but I'd be hard-pressed to choose a favorite between Pommard and 115. They are really distinct and interesting; it would really depend on what I was in the mood for. The Pommard is more earthy and brooding with deep and darker fruit aromatics and more structured mouthfeel. The 115 tends towards a lighter fruit and floral aromatics with an almost weightlessness in the mouth.

## Do you plan to conduct a follow-up trial to re-test these results?

**Buchanan**: Perhaps, though I may choose to explore different attributes or variables of single barrels or clones in the next iteration.

#### Would you conduct a similar experiment using a different kind of wood? Would you conduct a similar experiment using a different Pinot Noir clone or different grape variety?

**Buchanan:** Absolutely. I certainly have interest in exploring how second-use oak compares to new barrels. We're always experimenting and looking for something cool to explore. The first step in the scientific method is observation, and I truly enjoy creating interesting wines to observe the effects of various variables. **WBM** 

