



BELL

WINE CELLARS

6200 WASHINGTON STREET

YOUNTVILLE, CA 94599

WINERY 707-944-1673

FAX 707-944-1674

E-MAIL: INFO@BELLWINE.COM

WWW.BELLWINE.COM

Terroir

The Napa Valley has been producing fine and memorable wines for more than a century. More recently, the words “Napa Valley” have become synonymous with great California wine to consumers all over the world. The famous Paris wine tasting hosted by Steven Spurrier in May of 1976 saw the 1973 vintages of Chateau Montelena Chardonnay and Stag’s Leap Wine Cellars Cabernet sauvignon shock the French judges (and wine world) by outscoring the greatest white burgundies and grand cru Bordeaux, placing Napa Valley squarely on the world wine map. The three-fold proliferation of wineries in the Napa Valley in the past two decades reflects the realization by many vintners of the outstanding potential of the Napa Valley.

What makes Napa Valley so unique?

We all realize that Napa Valley sets the standard for California wine, because Napa grows fabulous grapes, which is the first and most important requirement for fabulous wine, but why? How is it that Napa Valley has more viticultural diversity than the Medoc or the Cotes d’Or in France¹, producing such an astounding array of different varieties of wine that are all wonderful? What forces created such a uniquely perfect place for winegrape growers and winemakers alike? Whether a winery creates a blend from several vineyards or chooses to showcase a particular vineyard or varietal, the character and quality of Napa valley wines emerge from the diversity of viticultural environments within the appellation. The French call this matrix of factors “terroir” – the influence of place on the grapes and subsequent wine.

¹ Rod Smith. Wine Making: Terrain & Terroir, Napa Valley Vintners Association.

Terroir²

Geography, geology, the resulting soils and climate – factors of terroir.

1. Geography:

Napa Valley is located on the northern end of San Francisco bay, about thirty miles long on a roughly northwest-southeast axis, and ranges from one to three miles wide. Its defining mountain ranges, the Vaca on the east and the Mayacamas on the west, rise well above 2,000 feet and include several extinct volcanoes. Residual volcanic activity is evident throughout the valley in numerous hot springs and geothermal vents, including the Old Faithful geyser in Calistoga. Mount St. Helena, the tallest mountain in the region at 4343' closes off the valley at the north end. The broad, flat, southern end of the valley follows the Napa River, opening into San Pablo Bay, an interestuarine (with the Sacramento and San Joaquin rivers) arm of the San Francisco Bay system. The valley floor might be considered an elongated hillside shaped like a backward "C", rising from near sea level at the mouth of the Napa River to a little over 250 feet at Calistoga.

Within a few miles of the bay, the hills have risen over 3,000 feet to Mt. Veeder on the west side, the first of the several volcanic peaks that bulge like vertebrae from the mountainous spine that runs north to Mt. St. Helena. Meanwhile, due east of Carneros, the Vaca Range is already rising toward Atlas Peak. Facing each other like a gateway fashioned by Vulcan, Mt. Veeder and Atlas Peak mark the entrance to the valley proper. The progression of vines up the valley delineates the natural growing conditions. While vineyards are almost continuous on the cooler, wetter, west-side foothills stretching from Carneros to Calistoga, the drier east-side hills are steeper, rockier and hotter. Those sunbaked, inhospitable hills are very sparsely planted. Vines hardly appear at all on the valley floor until you get to the Big Ranch Road area just north of Napa, where the clay-based, muddy floodplain gives way to alluvial soils that drain more easily.

² <http://www.napavintners.com/wines/terroir2.html>

2. Geology:³

Like the rest of California, Napa Valley has had a very active and eventful geologic history that has left its imprint on the vineyard environment. Many tectonic plates (large pieces of the earth's crust) have collided with North America to form California. As a result, there are many geological faults in the area, which have molded the topography of the Napa Valley and the mountains that surround it.

A great deal of volcanic activity occurred in the area about two million years ago. These volcanic eruptions deposited a series of ash and lava called the Sonoma Volcanics over much of Napa and Sonoma Counties, especially along the axis of the Mayacamas Range. The small hills which emerge from the valley floor north of Yountville were created by this volcanic activity.

Changes in sea level caused San Pablo Bay to alternately advance and retreat over the southern part of the valley several times. This resulted in the deposition of bay sediment (clays and sand) as soil parent material in the southern valley. The bedrock varies from coarse sandstones to marine conglomerates to volcanic basalts and tuff. These different parent materials give rise to soils with very different ability to retain water, texture and fertility.

3. Soils:⁴

Some of soils' impacts are well known with the most important being the relationship between the size and shape of soil particles, the space around each particle and the soil's water-holding capacity. Porous, well-drained soils with low water-holding capacity such as those in the upper valley generally yield riper, firmer, more tannic wines than the dense, slow-draining clays typical of the southern valley. The extensive roster of distinctive soil types in the valley, unusual for such a relatively small area, is due to the wide range of parent materials introduced through the various geological mechanisms discussed previously, and the speed and manner with which they have weathered into a viable rooting medium.

³ <http://www.napavintners.com/wines/terroir.html>

⁴ <http://www.napavintners.com/wines/terroir2.html>

Volcanic eruptions through millions of years distributed minerals and ash far and wide, particularly affecting the soils and wines of Diamond Mountain, Howell Mountain and their associated alluvial fans. Repeated marine incursions have deposited many layers of sedimentary clays interlaced with shell and sand from Carneros north to Oak Knoll. In addition the Napa River, and possibly the Russian River before it, meandered widely over the valley floor in various stages of flood for millions of years, moving, mixing and sorting sediment loads carried from far upstream, along with local alluvial deposits of varying ages carried down from the mountains. There are at least 10 major alluvial fans in the valley, each with its own mineralogy, chemistry, texture and structure.

Soil forms from the top of a deposit downward, as clay and various minerals separate from sand, organic materials break down, changing color as it evolves. Small variations in climate affect soil weathering, almost as much as they affect vine growth, so that the same general mix of rock types can make distinctly different soils from place to place, hence the presence of more than 140 different soil types found in Napa Valley.

4. Climate:⁵

The valley's climate changes subtly but significantly from end to end, from side to side and between the valley floor and the mountainsides, affecting grape flavor development, acid balance and the quality of tannins. Northernly situated Calistoga's daily high temperatures during the growing season generally exceed southernly situated Carneros by 10 degrees or more. Overnight fog incursions of differing density affect the differential between daytime and nighttime temperatures along the valley's length. The extent of that effect in a given location, repeated nightly or only occasionally, also influences wine characteristics. One of the most important things about the valley's general climate is the role its topography plays in creating temperature and pressure differentials that move air up and down the valley, helping to even out extremes.

Of these four preceding factors most influential in defining terroir, climate is the most variable and is what is often referenced when we refer to “vintage”. Unlike most grape growing regions of Europe, Napa Valley has consistently glorious summers, with warm to

⁵ <http://www.napavintners.com/wines/terroir3.html>

hot temperatures, sunny and free of any rain from mid-April through the end of October. But even in our relatively perfect weather, a grapevine can't dress in layers to accommodate temperature shifts. Instead, it does something better, more delicately tuned to the climate. It changes its metabolism, especially the rate of photosynthesis. In fact, when leaf and berry temperatures exceed 95 degrees, most photosynthetic reactions slow or stop to minimize water stress. So when the temperatures in Carneros run at 75 to 85 degrees, the vines suffering in 100 degree heat north of Calistoga might simply shut themselves down to protect themselves from damage. In any case, the characteristics of the grapes at the end of the growing season reflect every little variation in the vine's immediate environment. Everything affecting the vine's metabolism affects the resulting fruit, ultimately reflected in the wine from that fruit—which is why climate, as the most dynamic variable in the nature of a given vineyard environment, is the essential element in the concept of vintage.

Beyond terroir, there are other viticultural variables to consider regarding a successful vineyard: grape variety, rootstock, drainage and irrigation requirements, trellising and row spacing all impact the final product. Fortunately we have control over these variables: the trick is correctly matching our varietal choices to the specific soil and climatic conditions of a site⁶.

⁶ Bob Steinhauer. A Viticultural Perspective. 2004 Premier Napa Valley Catalog.