



RED MOUNTAIN
AVA ALLIANCE

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5 PILLARS

HISTORY OF RED MOUNTAIN

Certain geographical features, unique to the Red Mountain AVA, create wines with incomparable richness and intensity, exceptional tannin structure, and ageing potential. We call these the “5 Pillars of Red Mountain”. Here is our story.

A sub-appellation of Yakima Valley (which is, in turn, a sub-appellation of the Columbia Valley), Red Mountain is located in south-central Washington near the small town of Benton City.

Red Mountain became a federally designated American Vinicultural Area (AVA) on April 3, 2001. “A viticulturally area is a delimited grape-growing region distinguishable by geographical features, the boundaries of which have been recognized by the Alcohol and Tobacco Tax and Trade Bureau (TTB) and defined in 27 CFR Part 9. A listing of approved vinicultural areas is in the Code of Federal Regulations, Title 27, Part 9, American vinicultural areas.” (<http://www.ttb.gov/wine/wine-faq.shtml#w2>).

Comprised of 4,040 (16 km²) acres, the defined boundary of the Red Mountain grape- growing region is presently the smallest AVA in Washington State. Distinguishable by geographic features including tributary, soil and slope, approximately some 2200 acres of the Red Mountain AVA are under cultivation with an estimated total of 2700 acres of potential plantings. Red Mountain is defined by natural borders, with the ridge of the mountain to the north and the Yakima River to the west. Red Mountain resembles a growing region more like the Old World, where one can see each block of each vineyard from a single vantage point.

The name Red Mountain is attributed to the geographic land mass that rises like a silent sentinel over the region. At an elevation of 1410 ft, Red Mountain rests in the Southeast corner of Washington State as a result of the ice-age flooding of Glacial Lake Missoula. Red Mountain takes its name from a native grass called “drooping brome” or “cheatgrass”, which imbues a reddish hue to the mountain slopes in the springtime.

The Southwest slope of Red Mountain lies within what was once a backwater eddy during the time of the Missoula floods. The predominant soil types within the AVA include the Warden, Hezel and Scootenay series of wind blown soils (loess), which were deposited over the glacial sediments from the giant pre-historic floods. This variety of soil presents a combination of sand, silt and loam which are exceptional for growing vinifera.

Due to the warm temperatures during the growing season, red grape varieties, with an emphasis on Cabernet Sauvignon, dominate on Red Mountain. There are, however, limited plantings of white grape varieties as well, particularly Sauvignon Blanc.

Red Mountain Cabernet Sauvignons tend to be full bodied, dark, and dense with dark cherry aromas and flavors. Merlots can be powerfully tannic—even more so than Cabernet. Red Mountain Syrahs tend to be bold and full-bodied, with abundant dark fruit flavors and mineral notes. Red Mountain wines often have a distinct minerality. A lack of soil nutrients along with the high pH reduces the vigor of the vines, resulting in significantly smaller berry sizes compared to varietal norms.

SOUTHWEST FACING SLOPE

The slope of a site refers to the degree of inclination of the land. A slight to moderate slope can be beneficial because it accelerates cold air drainage. Generally, the steeper the slope, the faster cold air moves downhill, if there are no barriers to air movement such as trees or berms. Air drainage is important for protection against spring frosts. Vegetation that slows or stops air drainage should be removed during site preparation because it can act as a dam and force cold air back up the slope.

The aspect of a slope refers to the compass direction the slope faces (north, south, east, or west).

Depending on the climate of your region, different slopes should be selected for the greatest benefit of vineyard production. In cool climates where summers are cool and growing degree days are low, northern slopes should be avoided and southern slopes (S, SE and SW) are preferred to allow maximum heat accumulation on that site to grow and ripen grapes. Generally, in areas like eastern Washington and western Idaho, vineyards are sited on south/southwest facing slopes. The best wines in Germany and the other cooler regions of Europe come from south/southwest facing slopes. The key in those situations is SLOPE and wind machines for frost control.

In climates with warm or hot summers and cold winters, eastern, northern, and North-eastern slopes are preferred over southern and western exposures for several reasons:

Southern and western exposures are warmer than eastern and northern exposures.

Southern exposures warm earlier in the spring and can slightly advance bud break.

Southern aspects can lead to more extensive vine warming on sunny winter days than on northern slopes.

The consequences could be reduced cold resistance and subsequent cold injury. Bark splitting and trunk injury to the southwest sides of vines is occasionally observed and is related to trunk warming on sunny winter days with subsequent, rapid cooling. Although it is a southwestern facing slope, bark splitting and trunk injury are unlikely due to the cold winters on Red Mountain.

Eastern aspects have an advantage over western aspects because eastern slopes are exposed to morning sun. Vines on an eastern slope will dry (from dew or rain) sooner than those on a western slope, potentially reducing disease risk. However, western facing slopes catch the intense afternoon and evening sun aiding in ripening.

In regions with warm growing and lower humidity conditions, growers may want to avoid fully west facing slopes or make changes in row orientation to reduce over-heating the fruit.

Factors such as the presence of woods, steep slopes, and exposed rocks may dictate that a less preferable aspect is used. However, management costs can be reduced if you choose the correct site for grape production rather than dealing with less-than-ideal sites.

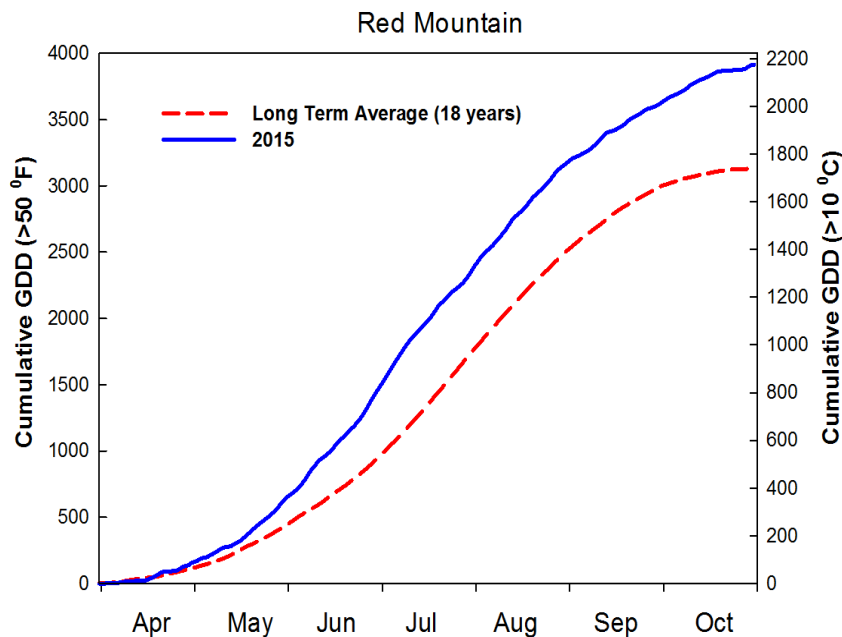
The southwest slope of the Red Mountain AVA provides the vineyards in the region with a directional aspect to the sun that is ideal for prolonged sunlight exposure and warmth. These highly desirable conditions allow for a ripeness in tannins that is recognized as a primary characteristic of Red Mountain fruit.

WARM GROWING SEASON

Red Mountain experiences more growing degree days than any other region in the state. The high latitude (N 46*) and topography contribute temperature swings experienced during the growing season, with daytime temperatures averaging 90 °F and night time temperatures dropping below 50 °F. These heat accumulation days create ideal temperatures for highly marketable grapes, exhibiting ripeness and concentration. The cooler evenings help to retain acidity levels which allows for the exceptional balance and structure found in Red Mountain grapes, and the wines crafted from them.

Sun - Great wine grapes need sun to aid in the production of sugars (via photosynthesis), color development and heat accumulation for overall physiological ripening. While the growing season is slightly shorter from beginning to end than more southerly wine regions, the number of sun hours received in Eastern Washington is equal due to incredibly long days at such a high latitude – receiving 16 hours of sun at the summer

- solstice.
- There is sun 300 days a year.
- The angle of the sun is similar to the great wine regions of Northern Europe, as they share similar latitudes.



Dry Growing Season - Eastern Washington is one of the highest latitude wine regions in the world. Similar areas elsewhere tend to be on the cusp of cool, rainy weather in the spring and fall, making viticulture difficult – especially at sensitive times like harvest. Eastern Washington is dry enough to be categorized as a Continental Semi-Desert

- The majestic north south running Olympic and Cascade Mountain ranges in the Western portion of the state combine to stop the clouds rolling in off of the Pacific Ocean - known as a Rain Shadow Effect. Eastern Washington is the highest latitude wine region to experience this phenomenon in the New World (read: not Europe).
- Common vineyard fungal disease such as oidium (powdery mildew), peronospora (downy mildew) and grey/black rot require a humid environment. Due to its arid climate, Eastern Washington is remarkably fungus free; as a result, very few chemical based anti-fungicides are required, leading to sustainable vineyard practices that leave vibrant, healthy, lively soils and water sources.

Daytime Air and Soil Temperature - Consistently warm daytime air and soil temperatures during the growing season are critical to producing the grape varieties that Washington State specializes in, helping with the physiological ripening - including skin color, skin and pulp texture, seed color and texture, tannins and other flavor compounds. Cold (though not freezing – see “Vital Issues” at the end of this section) during the winter months are ideal for vine dormancy, allowing the plant to rest and restore.

- Average daytime high vineyard air temperatures for June 1 to October 15: 78 degrees Fahrenheit. During the all important August/September months, that climbs slightly higher to 84 degrees Fahrenheit.
- Average daytime high temperatures for December 1 to March 1: 32 degrees Fahrenheit.
- In addition to allowing proper dormancy, these cold winter temperatures kill many vineyard disease carrying pests such as phylloxera, moths, mites and nematodes. This makes Washington vineyards remarkably pest free. As a result, very few chemical based pesticides are required, leading to sustainable vineyard practices that leave vibrant, healthy, lively soils and water sources.

Diurnal Shift: Day to Night Temperature Variability - One of the greatest natural phenomena for growing grapes which end up balanced between ripe sugars (which will equate to alcohol in the wine) and crisp acidity is a difference between day time and night time temperatures – or, diurnal shift. Washington State has some of the most dramatic fluctuations of any wine region in the world.

- There is up to 40° F difference between high day and low night time temps!
- Malic Acids generally dissipate through respiration from the grape in constant warm temperatures. Cool evenings preserve the acid, which translate through fermentation to wine and adds freshness and balance.
- Resultant acid in the wines is natural – and seems a bit more integrated than the types added in the winery.

LOW RAINFALL

Red Mountain gathers less than 6 inches of rain per year, requiring irrigation in the vineyards. The use of drip irrigation provides ideal grape growing conditions through canopy management. Additionally, Red Mountain vines experience dramatically lower mold and mildew pressure compared to most other vineyard regions.

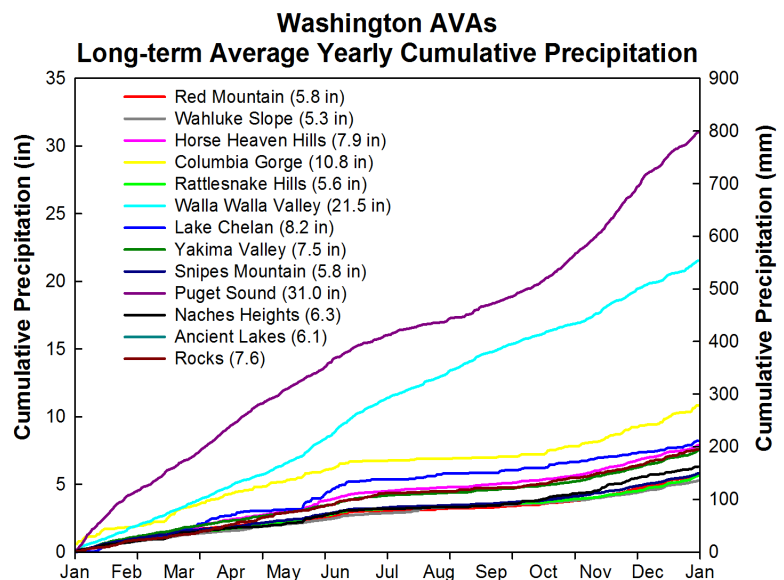
Water - Eastern Washington has the good fortune of having incredible water sources to rely on for irrigation in such an arid region. This allows absolute control as to when the vine is given moisture and how much is given, which contributes to grape ripeness, lack of sugar dilution, canopy management and dehydration controls at vital moments during its growth.

- **Mountain Rivers:** The Columbia Basin benefits from snow melt runoff. The massive Columbia River in Eastern Washington is the most obvious example, combining the Cascades, Rockies and Blue Mountains runoff to the 15th largest river in the United States at 1,214 miles in length.
- **Underground aquifers** run through levels of basalt lava flow, and can be tapped via wells for water reservoirs. World class, technologically controlled/timed irrigation systems are utilized to influence the growth of many vineyards.

Drip irrigation is most common, but some overhead spray irrigation also exists.

- **Water Management:** Washington State has the good fortune of having incredible water sources to rely on for irrigation in such a dry area as Eastern Washington. This allows absolute control as to when the vine is given moisture and how much is given, which contributes to grape ripeness, lack of sugar dilution, canopy management and flavor development. Growers employ state of the art technology such as Neutron Probes, Troxler Readings and Tensiometers to monitor and apply irrigation when necessary.

The annual rain fall on Red Mountain is one of the lowest in the state with an average cumulative precipitation of 5.8 Inches



AVA SPECIFIC SOILS

The predominate soils of Red Mountain are not found anywhere else in the state. Wind blown Loess (Warden, Hezel, and Scootene) were brought in by pre-historic floods. The high alkalinity and calcium carbonate content of the soil, along with its granular consistency, allows for each vine to form a well established root system. In soils with this composition, root systems are able to reach deep to obtain the necessary nutrients and moisture.

The Earth

Good (Bad) Dirt - Vines are somewhat choosy about their soils. A combination of lack of nitrogen, strong drainage and healthy organic nutrient matter is a consensus perfect dirt. It may be “bad” for growing almost anything else, but it is “good” for the vine.

- **Various Soil Types:** A combination of mostly sandy, rocky based alluvial (meaning carried by water – see below), some windblown over periodic volcanic basalt lift and patches of clay. Types include loess, basalt, clay, silt, loam, sandy loam.
- **Ancient Ice Age Floods:** Imagine a 300 foot wall of water gushing at up to 80 miles an hour - 10 times the strength of all the world's rivers combined – from a glacial lake just north of Washington/Idaho southwest to the Pacific Ocean. More than 50 times over 2,000 years. It happened here 15,000 years ago! That is what a vast portion of Eastern Washington is – a dried up river bottom.
- **Poor Nitrogen Content:** In these types of soils, there is a lack of nitrogen, making vines work harder to send other nutrients to the grapes and spending less energy on the foliage.
- **Excellent Drainage:** Grape vines don't do well with wet roots. Sandy/rocky soils drain water further into the earth. Roots dig deep to find it, working harder still.

Phylloxera Hates Sand: The vine killing aphid, Phylloxera (officially known as *Dactylasphaera Vitifoliae*), cannot travel in sandy soils to reproduce, leaving Washington remarkably free of this global scourge vineyard pest.

The Vines

Own Rootstocks - Eastern Washington is one of the very few world class growing regions on earth that DOES NOT have to graft its vines onto rootstock. Phylloxera (*dactylasphaera vitifoliae*) is an aphid that damages roots by feeding on them and leaving them prey to disease and nutrient deficiencies - enough to kill the host vine. It exists in 95% of the world's quality wine regions. As a result, these places must graft the genus *Vitis Vinifera* vines (which, while they count for every great wine grape in the world like Chardonnay and Cabernet Sauvignon, are prone to phylloxera) onto another type (or genus) of rootstock such as *Vitis Riparia* or *Vitis Rupestris*, which are immune to the pest and able to coexist. While hard to prove, most wine professionals believe that there is at least some purity of flavor lost in having two different vine types forged together. Washington State doesn't have to do this! As a result, the wines of Washington are 100% the grape variety planted - and that much more profound for it.

Vine Age - As vines age, more energy gets directed from the early years' establishment of strong roots, trunks and foliage to the grape clusters. Depending on the variety and clone of vine, peak years generally fall between 30 and 60 years of age. The oldest of Washington's vines are just entering their 4th decade. If Washington wines are this great now, imagine what will become when the vines mature.

CONSISTANT WINDS

The prevailing winds come out of the Southwest and are notable for their frequency and velocity. The regular gusts of warm air flow through the AVA's vineyards during the growing season, keeping the grape clusters small and concentrating the flavors of the fruit - which contributes to their richness and intensity. Cool air from the north, seeking the lower elevation of the river valley, moves downwards across the hillsides planted with vineyards and helps keep the grapes from being overheated. The constant air movement prevents air from settling in the area and allowing frost to damage the grapes.

The role of Wind Exposure in Grape Growing

Like rain, wind moderates warm and cool temperatures in the vineyard. It will cool temperatures on a warm summer day, but will warm temperatures on a cold spring morning.

Because most of the regions in California Wine Country are quite warm during most of the year, wind usually cools temperatures. This slows down the maturation process of grapes. Moderate wind is good, but too much will stop the metabolic processes in grapevines.

Wind can help prevent humidity, mildew and other mold. Vineyard managers can prune the leaves right around grape bunches to increase wind exposure. Grapevines grown on hillsides and slopes are usually exposed to more wind.

Some California Wineries have wind machines to reduce humidity and warm the vines during spring frosts. On cold mornings, they heat the air a critical few degrees to prevent damage.

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(AgWeatherNet) 2015 WA AVAs	Avg. Wind Speed (mph)	Top Wind Speed (mph)
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Red Mountain	4.6	23
Columbia Gorge	3.8	11.1
Rattlesnake Hills	4.2	19.2
Whaluke Slope	6.1	25.6
Walla Wall Valley	4	20.6
Horse Heaven Hills	6.1	30.5
Yakima Valley	4.5	21.8
Snipes Mountain	6.9	26.5
Lake Chelan	5	19.8
Naches Heights	4.4	17.7
Ancient Lakes	4.9	21.7
Puget Sound	3.4	18.4

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