

Turning Water into Wine, Efficiently!

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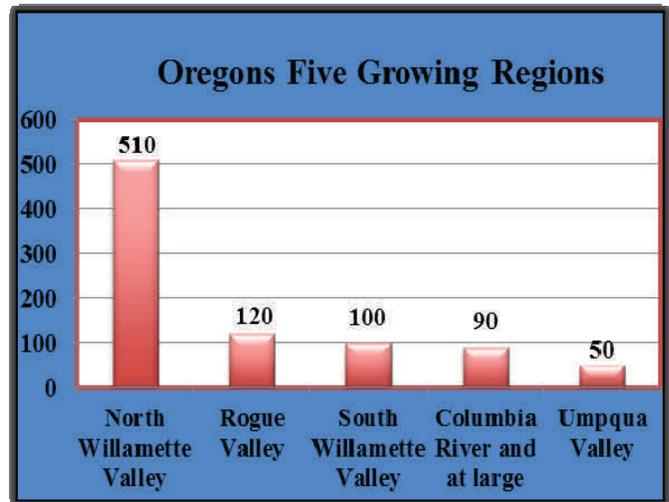
Water is Oregon’s most precious resource and the opportunity for vineyards to improve efficient irrigation beckons. The wine industry is answering that call through responsible stewardship of sustainable practices and great advancements in vineyard irrigation. The wine industry’s attention to sustainable practices reaps many ecological benefits including improved water and soil quality. Although there are many ways to approach water conservation, a standardized certification of efficient irrigation practices has yet to be implemented. Each land steward determines its own watering practices and many are based on conventional wisdom rather than empirical evidence. It is time for the wine producing and wine consuming community to collaborate in addressing the most serious natural resource concern: Water Quantity Supply. It is imperative that all Oregon vineyards collaborate in practicing a standardized way of turning water into wine, efficiently!



Oregon Wine: Past and Present

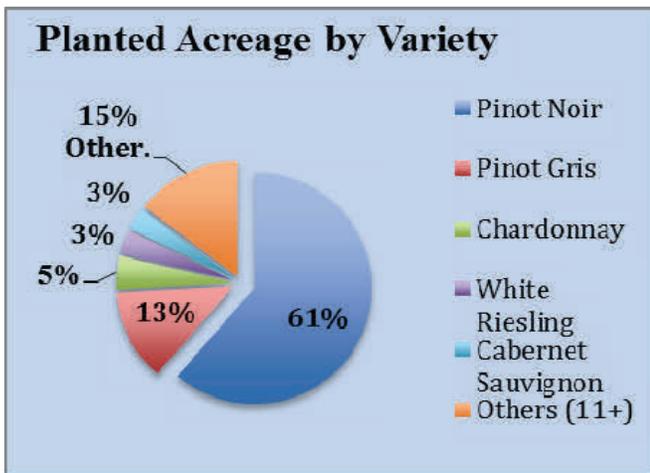
European and American settlers have been growing grapes in Oregon for winemaking since the mid-nineteenth century. Oregon’s wine industry and culture had a resurgence in the 1960’s but hit its stride in the 1980’s with the international success of locally grown Pinot Noir varieties. By the 1990’s Oregon received global recognition for its main cultivar Pinot Noir.

Oregon vineyards specialize in small acreage quality production. Oregon’s 870 vineyards grow in five growing regions and produce 20,400 planted acres of grapes. Pinot Noir makes up more than half of all



Data Source: National Agricultural Statistics Service (NASS)

Graphics by: Luca De Stefanis

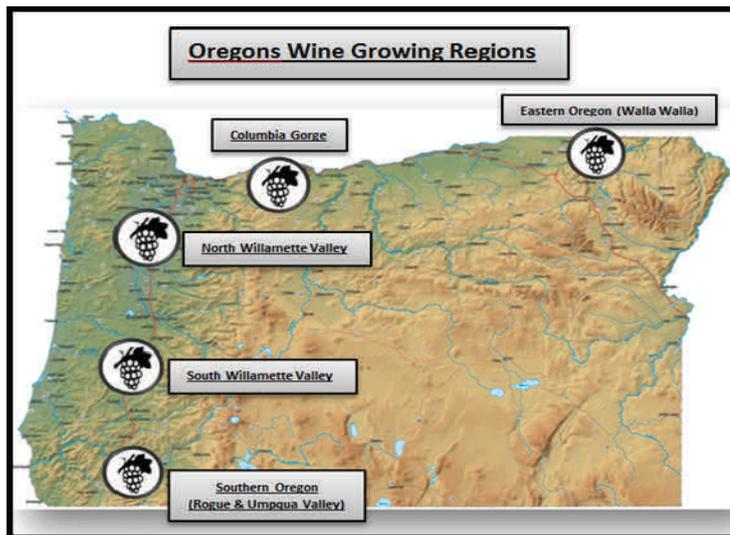


Data Source: National Agricultural Statistics Service (NASS) Graphics by: Luca De Stefanis

planted acreage. Yamhill County (located in the North Willamette Valley growing region) has the highest number of vineyards and planted acres in Oregon, nearly triple that of other counties in Oregon. Nationally, Oregon ranks third in the total number of wineries and fourth in wine production — following California, Washington, and New York. Oregon’s wine industry’s rapid growth, recession-proof trends, and role as a tourist attraction make it important to Oregon’s economy.

A 2011 Oregon Wine Board study shows that the economic impact of Oregon's wine industry nearly doubled to \$2.7 billion from 2004-2010. And, the wine industry had a \$1.56 billion net economic contribution (a measure of value added) to Oregon's economy which helped to create jobs rural communities. With more growth imminent this trend is likely to continue.

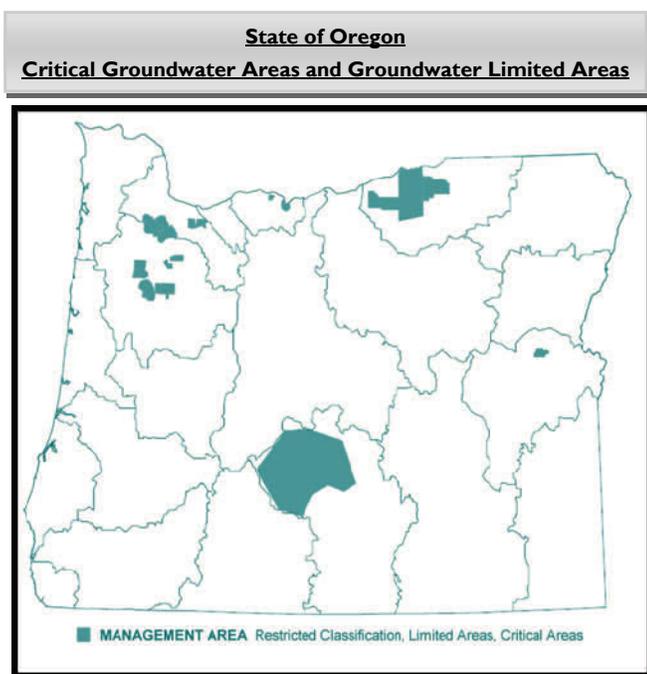
Oregon's wine industry nearly doubled to \$2.7 billion from 2004-2010.



Graphics by: Luca De Stefanis

Oregon Water: Present and Future

According to the U.S. Census Bureau, Oregon's population has increased 12 percent since the year 2000. Total statewide water demand is currently estimated to increase 13 percent by the year 2050. Despite the high annual rainfall in Oregon, there are limits to Oregon's water resources and we as a community need to learn how to live within these limits. Oregon has established high-priority regions designated as Critical Groundwater Areas and Groundwater Limited Areas. There are seven critical groundwater areas in Oregon and The Dalles in Wasco County is one of them. This area represents a portion of the Columbia River Gorge wine growing region which is home to several vineyards. There are twelve Groundwater Limited Areas in Oregon with most located in the Northern Willamette Valley. Many are wine growing regions such as Chehalem Mountain, Eola Hills, South Salem Hills and Amity Hills.



Source: WATER RIGHTS IN OREGON - Oregon Water Resources , 2009

Climate and Topography Determine a Vineyard's Water Use

Climate is the single most important factor in successful vineyard irrigation practices. Topography, soil structure, soil-depth and water availability are also significant factors in determining proper irrigation. Oregon has 16 distinct American Viticulture Areas (AVA's) that designate wine-growing regions based on geographic characteristics. Each AVA has its own microclimate. Microclimate variations are determined by temperature, humidity, rainfall, wind, or a combination of these. These factors may potentially lead to high demands on water. Drip irrigation is used more regularly in the more arid wine regions—Southern Oregon, Eastern Oregon and parts of the Columbia Gorge—when soil is shallow and rainfall is limited. In areas with higher rainfall, such as the Willamette Valley, vineyards need less water and might use *dryland farming*, which requires no irrigation. Once a crop is established, vineyards in areas with higher rainfall and deeper soils can often grow grapes without the use of irrigation.

Water efficiency in wine production

Collaboratively taking on irrigation holds the greatest promise for the wine industry to reduce water demand and improve irrigation efficiency.

Whether in Eastern Oregon, Southern Oregon, the Willamette Valley or the Columbia River Gorge region knowing how to operate electronic irrigation equipment to its full potential and proper management of micro- or subsurface drip irrigation system are key to the wine industry's contribution to conserve the most water. Establishing voluntary standardized practices that emphasize upgraded irrigation systems and hardware can serve as an industry-wide foundation to water conservation.



Photo by Ethan Prater, Flickr Community Commons 2012

Water use inefficiencies often results from insufficient training, unclear guidance, and a do-it-yourself attitude that is not always the most effectual approach. Basing water needs on intuition or a common practice of observing a hot and sunny day and then irrigating can lead to unnecessary water use and excessive pumping of groundwater (personal communications with wine industry representatives, 2012).

Utilizing micro-irrigation and subsurface drip irrigation are the most basic steps forward in irrigation efficiency practices. Micro-irrigation uses the soil to move the water through the root mass. Knowing a vineyard's soil type (water holding capacity) and how much water to apply (application rate) is critical. Subsurface drip irrigation uses buried lines and emitters to apply slow, frequent applications of water to the soil surrounding plant roots. Water losses from surface evaporation and runoff are eliminated so higher irrigation efficiencies result. Conserving water has emerged as a conventional practice and free technical

assistance is available to the public through Oregon State University Extension Services, and through the U.S. Department of Agriculture. The Farm Bill also has mechanisms to offset the costs of irrigation efficiency upgrades.

Sustainability practices have consumer appeal

Consumer concerns over food safety, environmental and wildlife conservation, and climate change have caused



Photo by James Fischer, Flickr Community Commons 2012

substantial rethinking of growing and production practices by many producers. Sustainability Certifications display a vineyard's environmental responsibility. In 2007 the Oregon Wine Board showed that sustainability practices had substantial appeal to many consumers. The Oregon wine industry has been at the forefront of this movement and substantial acreage is now farmed using various forms of sustainable or organic methods and many wineries have adopted carbon footprint reduction practices. Many organizations that offer certification for such methods are headquartered in Oregon.

Wine certification organizations have done a brilliant job at addressing sustainability, environmental issues, organic production and social equity. Some of the leaders in this field are Low Input Viticulture & Enology (LIVE), VINEA –Winegrowers Sustainable Trust, Oregon Certified Sustainable Wines (OCSW), Salmon Safe, Oregon Tilth and the USDA National Organic Program. Most efforts to address water issues concentrate on water quality improvement rather than water quantity and irrigation efficiencies. The consumer demand for Oregon’s wine has increased at the expense of water use. *How can Oregon vineyard certifying organizations, academic research institutes and the community improve strategies for conserving water on vineyards through efficient irrigation practices?*



Photo by James Fischer, Flickr Community Commons



Photo by Ethan Prater, Flickr Community Commons 2012)

Many Oregon vineyards are ripe for using water more efficiently. The success of Oregon wines will attract new vineyards and lead to greater expansions putting a significant stress on water supplies. Irrigation practices are good but they are not great. Water supplies are available but are finite. In order for the Oregon wine industry to live up to its glowing reputation for sustainability, improved standardized irrigation practices are required.



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Photo by Robert Hamilton, Flickr Community Commons 2012

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