

Establishing a Vineyard in Oregon

A Quick-Start Resource Guide

Patty Skinkis

When thinking of planting a vineyard, many questions come to mind: Is the land suitable for growing grapes? What soil types are best for successful wine-grape production? How much does it cost to establish a vineyard and produce grapes?

Decisions about location and design determine the success and sustainability of the vineyard business you imagine. This guide outlines the main factors to consider when establishing a commercial vineyard and suggests resources to assist in the planning process.

Step 1

Learn about viticulture and business *before* planting

The most important step in deciding whether to establish a vineyard is to learn as much as possible about viticulture and the business of growing grapes. This includes understanding key factors of farming such as vine growth and physiology, vineyard design, farm inputs, crop management, labor needs, business management, and marketing. Understanding both production and business will help you avoid costly mistakes during establishment that may create larger issues once the vineyard is in full production.

Some of the resources listed below were developed specifically for Oregon and/or the Pacific Northwest. They provide important information for establishing and managing vineyards.

Oregon State University—Oregon Wine Research Institute

The Oregon Wine Research Institute (OWRI) is a working group of Oregon State University faculty and U.S. Department of Agriculture (USDA) researchers who conduct research, outreach, or teaching in the disciplines of viticulture, enology, and applied economics. The focus of their work is to benefit the knowledge base of the commercial wine-grape industry



Photo: Patty Skinkis, © Oregon State University

Clusters of Pinot noir near harvest

in Oregon. Be sure to visit the OWRI website to access information on the following:

- Production guides
- Newsletter archive
- Webinar recordings
- Research summaries
- Upcoming events

Those new to the industry are strongly encouraged to attend OWRI events to enhance knowledge and engage with other industry colleagues.

<http://owri.oregonstate.edu/>

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Oregon State University Extension Service

The OSU Extension Service provides educational information for both commercial wine-grape growers and homeowners who have small-scale vineyards. Most of the educational materials (e.g., practical guides, videos, etc.) are created by OSU experts and are available at the OSU Extension Service online catalog.

<http://extension.oregonstate.edu/catalog/>

eXtension—Grapes

Extension faculty from land-grant universities nationwide maintain this website to meet the educational needs of the commercial wine-grape industry. Basic viticulture information is available for those new to the industry or current vineyard and winery employees. You can find information that ranges from vineyard establishment to management, diagnostics, and more.

<http://eXtension.org/grapes>

Vineyard development companies and consultants

While it is best to learn as much as possible about viticulture and business before starting your vineyard, it may be beneficial to hire a vineyard consultant or management company to assist you with the planning and establishment phases. Contact your local Extension office or OWRI for a list of consultants who serve Oregon vineyards.

<http://extension.oregonstate.edu/find-us>

<http://owri.oregonstate.edu/>

Step 2

Develop a business plan

A vineyard operation is an agribusiness, and establishing a vineyard to produce grapes requires thoughtful business planning to be successful. Those who dream of a vineyard are often unprepared for the high costs involved. Vineyards are more costly to establish and maintain than many other perennial crops (e.g., fruit/nut trees) due to costs associated with the trellising system, additional hand labor required during the first few years of establishment, and the preference to maintain a pleasant aesthetic appearance, particularly if the vineyard is associated with a winery and/or agritourism. The resources below provide the basic information that will assist you in the business planning process.

Status of the Oregon wine industry

Oregon Vineyard and Winery Production Report

This report provides summaries of acreage, yields, fruit prices, and other relevant vineyard and winery production statistics organized by cultivar and region. By studying the most recent report, you can gain an understanding of the current production economics for the state. By compiling data from historical reports, you can observe trends in pricing and production over time that can further aid in business planning. The report is updated annually and available online through the Oregon Wine Board:

<https://industry.oregonwine.org/resources-old/winery-and-vineyard-reports/>

<https://inside.sou.edu/research/winecensus.html>

Economics of vineyard establishment

It is important to consider the establishment and development costs associated with a vineyard. A number of resources are available to help assess these costs, and they are useful for you both as a new grower or as your business grows.

Enterprise budgets

OSU Extension faculty developed enterprise budgets for wine grapes in Oregon. These publications outline the costs and returns of a vineyard business from establishment to full production. These budgets are available online at the OWRI website under “Getting Started.”

<http://owri.oregonstate.edu>

Northwest Grapes Cost-of-Production Calculators

These online calculators were developed by the Washington Wine Industry Foundation and the USDA's Risk Management Agency for vineyards in the Pacific Northwest. It is a menu-driven site that assists you in developing an enterprise budget for wine or juice grapes using conventional or organic farming methods.

<http://www.nwgrapecalculators.org/>

Financing

You should determine whether financing is available before making a commitment to buy or lease land to establish a vineyard. The OSU Extension Service Small Farms Program has resources and educational programs

available that provide this information. The following websites provide information regarding financial assistance and start-up funding resources for new farmers.

<http://smallfarms.oregonstate.edu/>

<https://www.nal.usda.gov/ric/small-farm-funding-resources>

Marketing and location

It is important to locate your vineyard in an area where you can produce a consistent crop of high-quality grapes. However, an equally important factor is proximity to a viable market. Many vineyard owners agree that it is relatively easy to grow grapes and make wine, but selling wine is the most difficult part of the business. For this reason, you should locate your vineyard in an area that facilitates sale of your fruit to wineries or marketing your wine to consumers if you intend to establish a winery.

Some vineyard production regions in the United States are located within regions known as American Viticultural Areas (AVA). Wineries may prefer to obtain fruit from particular AVAs and label wines with that distinction. Locating a vineyard or winery business within a specific AVA can improve marketing, but land values may come at a higher price for well-known regions.

American Viticultural Areas are under federal regulation by the Alcohol and Tobacco Tax and Trade Bureau (TTB) within the U.S. Department of the Treasury (Code of Federal Regulations Title 27, Part 9). You can find information about established AVAs on the TTB website.

<http://www.ttb.gov/wine/ava.shtml>

Oregon Wine Board

A primary role of this organization is to develop and market the Oregon wine brand to support the state's commercial wine-grape industry. Contact the Oregon Wine Board for information about the state's vineyard growing regions and collective marketing initiatives:

<http://www.oregonwine.org/>

Step 3

Determine site suitability

Whether you already own land or are searching for the perfect property, you must determine whether the site is suitable for grape production. Climate, topography, soils, and water are important factors in determining whether a site is suitable.

Climatic factors

Not all cultivated varieties (cultivars) of wine grapes grow or produce quality fruit under the same climatic conditions. The goal is to be able to grow healthy grapevines and ripen fruit consistently each year. Cultivars differ in their winter hardiness, season length, and heat requirements, so it is important to know the climate data for the area. You will need data on minimum winter temperatures, seasonal temperatures, growing degree-days, and frost-free days to determine which grape cultivars will be suited to your site or whether you can grow grapes at all.

Growing degree-days

An important climatic factor is seasonal accumulation of growing degree-days (GDD). GDDs are a measure of heat accumulated during the growing season. They are calculated using the average daily temperature for each day, with a daily minimum threshold temperature of 50°F. The GDD for an entire growing season is calculated by adding together all daily GDDs for the season, typically from April 1 through October 31 for most of Oregon's wine-grape production regions.

Seasonal GDD determine whether you can produce cool-, warm-, or hot-climate grape cultivars. In general, cool-climate cultivars require 1,800 to 2,500 GDD in a growing season to ripen properly. Examples include Pinot noir, Pinot gris, Riesling, Gewürztraminer, Muscat, and Chardonnay.

Warm-climate cultivars such as Cabernet Sauvignon, Merlot, Viognier, and Tempranillo typically need 2,500 to 3,500 GDD. Finally, hot-climate cultivars require more than 4,000 GDD. These hot-climate grapes include cultivars grown for raisin and table grape production, and they are not typically grown in Oregon.



Photo: Patty Skinkis, © Oregon State University

Land prepared for vineyard establishment

The following websites provide GDD data and daily temperatures, precipitation, and other weather data for many locations throughout Oregon.

Oregon climate summaries

<https://wrcc.dri.edu/summary/Climsmor.html>

AgriMet Cooperative Agricultural Weather Network

<https://www.usbr.gov/pn/agrimet/wxdata.html>

Topography

Slope and aspect determine the site's sunlight exposure patterns and duration, heat accumulation, and air and water drainage. Topography is important to take into account for vineyard design and equipment safety, particularly on hillsides. Other considerations related to topography are elevation and air drainage (to avoid frost and freeze pockets). To learn more about specific vineyard topography effects, see the site selection article from eXtension:

<http://www.extension.org/pages/31027/vineyard-site-selection#.U6Rj0nf5dyl>

Soils

When choosing a vineyard site, avoid land that has a high water table, very shallow soils, and/or impervious soil layers. For more information, read the soil quality article from eXtension (<http://articles.extension.org/pages/31029/soil-quality-in-vineyards>). Before purchasing land or planting vines, be sure to collect soil samples for analysis of soil properties, chemistry, and nematodes. If possible, arrange for a local soils consultant to do detailed soil mapping of the site. To find a soil consultant, contact your local Extension office, local NRCS office, or OWRI.

Identify soil types

The Web Soil Survey created by the Natural Resources Conservation Service (NRCS) provides online access to soil maps. These maps can be helpful in identifying characteristic soils of a given site. You can input an address and view soil and topographic characteristics. Printed soil maps are also available from local NRCS offices.

<http://websoilsurvey.nrcs.usda.gov/app/>

Keep in mind that these maps were created based on regional soil sampling and do not provide a fine resolution mapping of soil types on a given property.



Photo: Patty Skinkis, © Oregon State University

A vineyard planted with grapevines and awaiting trellis wire installation

Test for nematodes

Nematodes are tiny, soil-borne roundworms that may be parasitic to grapevines, depending on species. The parasitic species may cause damage to the roots or transmit viruses that can jeopardize vine health. A wide range of soil types can host nematodes. Also, if an orchard or vineyard was on the land previously, there may be nematode populations in the soil. It is best to test soils on the property even if a vineyard was not on the land previously. Submit soil samples to OSU's Nematode Testing Service: <http://plant-clinic.bpp.oregonstate.edu/nematodes>.

OSU Extension Service Small Farms Program

This web page offers basic information on how to collect a soil sample, a list of analytical labs, and how to interpret results.

<http://smallfarms.oregonstate.edu/soil-testing>

OSU Extension Service publications

The following publications can be found online at the OSU Extension Catalog:

<http://extension.oregonstate.edu/catalog/>

- *A Guide to Collecting Soil Samples for Farms and Gardens* (EC 628)
- *Soil Test Interpretation Guide* (EC 1478)
- *Laboratories Serving Oregon: Soil, Water, Plant Tissue, and Feed Analysis* (EM 8677)

Irrigation and water availability

In many areas of the state, including southern and eastern Oregon and the Columbia Gorge, it will be difficult to produce wine grapes without supplemental irrigation. While it is possible to produce wine grapes without irrigation (dry farm) on many sites in the

Willamette Valley, it is important to have access to water for the establishment years (years 1–3). Before buying land or developing a vineyard, determine if water is available and investigate water rights by using the Oregon Water Resources Department website.

Oregon Water Resources Department

<http://www.wrd.state.or.us/>

Irrigation systems

OSU Enterprise Budgets (see page 2) provide detailed information on irrigation costs. If you need specific information on irrigation design and installation, contact an irrigation company or vineyard consultant who can help you design systems suitable for your vineyard and soil characteristics.

Step 4

Investigate cultivars, clones, and rootstocks

Choosing the best cultivars and clones to grow depends on many factors, including climate, soils, diseases, pests, and cultural practices. To narrow down cultivar options, begin with site, climate, and marketability. Marketability factors were addressed in Step 2, and some climatic factors were addressed in Step 3.

Cultivars and clones

Much like a plant genus (e.g., *Vitis*) has different species (e.g., *Vitis vinifera*), and different species have different cultivars (e.g., Pinot noir), a cultivar may have different clones. In viticulture, “clone” refers to a grape cultivar that has multiple “variants.” These



Photo: Patty Skinkis, © Oregon State University

A Dundee Hills area vineyard early in the season

clones have specific characteristics that are maintained when propagated. To learn more about clones and selecting grape varieties, see “Choosing Varieties” on Grapes-eXtension

<http://articles.extension.org/pages/60308/growing-grapes-starting-a-vineyard>

Selecting the appropriate cultivar to grow will depend on your climate. Pinot noir is the number-one cultivar grown in Oregon, making up more than 60 percent of the state’s acreage. Pinot noir does especially well in the major grape-growing regions of the state because it is a cool-climate cultivar, and much of western Oregon is a cool-climate region (<2,500 GDD annually). Some regions of the state are able to produce warm-climate cultivars such as Cabernet Sauvignon, Syrah, and Merlot. See Step 3 for more information.

Many Oregon growers select specific clones of Pinot noir (e.g., Pommard, Dijon 115, and Dijon 777) for their ripening timing and/or fruit quality characteristics. Selecting specific clones within a cultivar can be difficult and depends on qualities of interest, including agronomic characteristics (e.g., yield and cluster size) and winemaking characteristics. However, many clonal differences within a given cultivar are subtle, and these can only be detected once wines are produced. Therefore, it may be informative to contact local winemakers for input. The resources below provide helpful information.

Oregon Wine Research Institute (OWRI)

OSU has conducted research on clones of Pinot noir and Chardonnay and rootstocks. Check out the “Research Publications” section under the “Extension Resources” tab at the OWRI website to access useful research summaries.

<http://owri.oregonstate.edu>

FPS Grape Registry

Growers sometimes wish to grow unique cultivars and clones in their new vineyards. They may assume that the vines do not exist in the U.S. and try to acquire them without regard to the U.S. and Oregon plant quarantine rules. The FPS Grape Registry is an online resource that is particularly helpful in determining which cultivars and clones exist in the United States. Use this website’s search feature to determine availability of the cultivars and clones that you are interested in growing.

<http://ngr.ucdavis.edu/index.cfm>



Photo: Patty Skinkis, © Oregon State University

Grafted grapevines that are ready for planting

Rootstocks

The primary reason for using rootstocks is to prevent vine damage and subsequent death due to soilborne pests, namely phylloxera. This is an aphid-like insect that feeds on grape roots and is native to the eastern United States but was transported to nearly all grape-growing regions of the world, including Oregon. The European grape species utilized for wine-grape production, *Vitis vinifera*, is susceptible to damage by this pest and will ultimately die from infestation. Thus, grafting vines to phylloxera-resistant rootstocks is the most reliable method of control.

It is advised to plant new vineyards with grafted vines, but there are a few exceptions. For example, eastern Oregon growers choose to plant vines without rootstock so that they can retrain vines in the event of winterkill. If vines are grafted, it is not possible to retrain them from the roots when subject to winterkill, as the scion cultivar (the above-ground portion of the vine) has been killed down to the graft union. Phylloxera is also less prevalent in eastern Oregon due to the higher sand content of the soils. While sandy soils are not conducive to phylloxera infestation, they can host high populations

of nematodes. Nematodes can vector viruses and reduce vine productivity by parasitizing roots, so it is important to thoroughly examine soil conditions prior to making rootstock decisions (see Step 3). The following publications provide more information about phylloxera and rootstocks for Oregon.

[Grape Phylloxera: Biology and Management in the Pacific Northwest \(EC 1463\)](#)

[Grapevine Rootstocks for Oregon Vineyards \(EM 8882\)](#)

Step 5

Order plants

Oregon grape quarantine

Rules and regulations govern shipment of plant materials to Oregon from outside the state. It is important to be aware of these rules when buying plants. The quarantine is enforced by the Oregon Department of Agriculture (ODA). Read more about the quarantine at the ODA website

ODA grape quarantine

<http://www.oregon.gov/ODA/programs/PlantHealth/Pages/PlantHealthQuarantines.aspx>

Plant materials

To obtain the best plant material, be sure to place your order at least 12 to 18 months before you plan to plant your vineyard. Always buy your grapevines from reputable nurseries, and choose plants that are certified free of viruses. Vines that are not certified are not tested to be free of the important viruses of grapevine, including leaf roll, red blotch, and fan leaf. Vines with virus often have reduced vigor, yield, or fruit quality and may pose an infection threat to other vineyards. It is important to ask the nursery whether the cultivars, clones, and rootstocks you are interested in purchasing are certified virus-free.

Nurseries that sell certified grapevines obtain their plants from a foundation plant service and use those vines to develop their certified virus-free “mother” blocks, from which they propagate and sell certified plant materials. The certification is maintained by regularly testing those mother blocks, ensuring that they are free of the most important grapevine viruses. Two foundation blocks on the West Coast obtain plants from all over the world and conduct cleanup processes to maintain a reliable source of certified clean stock. These are not places from which to purchase plant materials for your vineyard. Instead, use them as a source of information about clean plant materials and

certification. To learn more about cultivars, certification, and programs, see the following resources.

Clean Plant Center Northwest (Washington)

<http://cpcnw.wsu.edu/>

Foundation Plant Services (California)

<http://fpms.ucdavis.edu/>

FPS Grape Registry

This website has a search feature to find information about cultivars and nurseries.

<http://ngr.ucdavis.edu/index.cfm>

It is important to talk with your industry colleagues before you order plants to determine which nurseries have a good track-record in delivering quality plants.

Need more information?

Be sure to check out the additional resources below for more information on vineyard establishment and management.

Considerations and Resources for Vineyard Establishment in the Inland Pacific Northwest

<http://cru.cahe.wsu.edu/CEPublications/PNW634/PNW634.pdf>

National eXtension resources in viticulture

<http://www.extension.org/grapes>

Many questions are likely to arise when planning a vineyard and winery business. If you have consulted the resources above and need additional help, contact one of the OSU Extension offices in the nearest grape-growing region (Table 1). Horticulture, Agriculture, and Small Farms Extension faculty in regions throughout Oregon are able to assist with farm and vineyard-related questions.

For a complete list of statewide Extension offices, visit: <http://extension.oregonstate.edu/locations.php>

Table 1. OSU Extension Service contacts

Region	Location and website	Phone
Umpqua Valley	Douglas County Extension, Roseburg	541-672-4461
Southern Oregon*	Southern Oregon Research & Extension Center, Central Point	541-772-5165
Central Oregon	Deschutes County Extension, Redmond	541-548-6088
Columbia Gorge	Wasco County Extension, The Dalles	541-298-3574
Eastern Oregon/Walla Walla Valley	Umatilla County Extension, Milton-Freewater	541-938-5597
Statewide Viticulture Extension	OSU main campus, Corvallis	541-737-1411
Statewide Enology Extension	OSU main campus, Corvallis	541-737-6494

*Includes the AVAs of the Umpqua, Rogue, Illinois, and Applegate valleys

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