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Establishing a Vineyard in Oregon

A Quick-start Resource Guide



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When thinking of planting a vineyard, many questions come to mind: Is the land suitable for growing grapes? What types of soils are needed 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 you plan a vineyard and suggests resources to assist in planning.

Step 1

Learn about viticulture and vineyard establishment *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 vineyard design, establishment, vine growth and development, and the basic requirements of a vineyard business. Considerations include vine physiology, vineyard inputs, and crop management. By having some understanding of wine grape production, you can avoid costly mistakes during the early years of production.

Some of the resources listed below were developed specifically for Oregon and/or the Pacific Northwest. They are especially good sources of information for those new to growing grapes.

Oregon State University—Oregon Wine Research Institute (OWRI)

The Oregon Wine Research Institute at Oregon State University is a working group of faculty who conduct research, Extension, or teaching programs in viticulture and enology. The website provides access to information produced by this team of research and Extension faculty.

Check out the website (below) to access publications and other informational media related to vineyard and winery production. The Viticulture and Enology sections of the website provide access to an up-to-date inventory of Extension publications and an archive of research reports from studies conducted at OSU over more than 20 years.

You can also find information about educational events on the website, including webinars, workshops, and short courses. Those new to the industry are encouraged to attend online or in-person events hosted by the OWRI to learn more and engage with others in the industry.

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

Oregon State University Extension Service

The OSU Extension Service provides educational programs, products, and information for commercial grape growers and homeowners who may have a small-scale vineyard in mind. Most of the educational materials (reports, bulletins, videos, etc.) created by experts at OSU are available at no charge or for a nominal fee on the OSU Extension Service website.

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

Oregon Viticulture

This book offers information on many aspects of vineyard establishment and production in Oregon.

It is a great local resource for new growers. The book is under limited publication at this time. However, it may be available at OSU Extension offices located within grape production regions across the state (see Table 1, page 7).

<http://osupress.oregonstate.edu/book/oregon-viticulture>

eViticulture.org from eXtension

This website was developed by Extension faculty from across the nation's land-grant universities. It is the most up-to-date and readily available source of viticulture information for new growers and winemakers, vineyard and winery employees, and seasoned professionals. You can find information that ranges from vineyard establishment to management, diagnostics, and more. Articles are continually updated and new content created to serve the needs of the commercial grape industry.

<http://eViticulture.org>

<http://eXtension.org/grapes>

Vineyard development consultants

While it is best to learn as much as possible about vineyard establishment and viticulture before starting your vineyard, it may also be beneficial to ask a vineyard consultant to guide you through the establishment process. There are consultants throughout Oregon who specialize in vineyard systems. Contact your local Extension office or the OWRI for a list of local consultants.

Step 2

Develop a business plan

Like any agribusiness, establishing a vineyard to produce grapes requires thoughtful pre-planning to be successful. Often those who dream of a vineyard are unprepared for the costs required for establishment and annual maintenance. The cost of establishing and producing grapevines is higher than for other perennial crops due to the trellis system, the manual labor required, and the preference to maintain an aesthetic design, particularly if the vineyard is associated with a winery or agritourism. The resources below provide the basic information needed in the business planning process.

Status of the Oregon wine industry

Oregon Vineyard and Winery Report

This report is published by the National Agricultural Statistics Service (NASS, U.S. Department of Agriculture). It provides historical information on grape cultivars grown in Oregon, yields, prices for harvested fruit, and other production statistics.

http://www.nass.usda.gov/Statistics_by_State/Oregon/Publications/Vineyard_and_Winery/index.asp

The NASS reports are not available for all years. The Oregon Wine Board has collected production statistics in recent years; contact them for new reports.

<http://oregonwine.org>

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 whether you are a new grower or a farmer planning to expand your operations to include grape production.

AgTools™

This online, self-serve program is one of the best open-source tools for assessing the economics of vineyard establishment. It was developed by a team of economists and Extension faculty from Oregon State University and several other universities. The program contains four different modules, including AgProfit™, AgFinance™, AgLease™, and AgPlan™ and is available online at no charge. Use instructions are available on the website complete with online training sessions and videos.

<http://www.agtools.org>

Enterprise budgets

OSU Extension faculty in Oregon developed enterprise budgets for wine grapes in eastern and western Oregon. These budgets outline the anticipated costs and returns of vineyard establishment and production in two important grape-growing regions of the state. These budgets are available online from the OSU Extension Service.

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

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 the user in developing an enterprise budget for wine or juice grapes using conventional or organic farming methods.

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

Financing

It is important that prospective vineyard owners investigate whether financing is available before making a commitment to buy or lease land to establish a vineyard.

OSU Extension Service Small Farms Program

This website provides information regarding financial assistance and start-up funding resources for new farmers.

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

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. You want to locate your vineyard in an area that facilitates sale of your fruit to wineries or marketing your wine to consumers.

Specified vineyard production regions in the United States are known as American Viticultural Areas (AVA). Some wineries may wish to obtain fruit from a particular AVA and label wines for distinction. Also, locating within a specific AVA can improve the marketing of your wines if establishing a winery is part of your business plan.

American Viticultural Areas are under federal regulation by the Alcohol, Tobacco 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

Contact the Oregon Wine Board for more information about vineyard growing regions in the state and collective marketing initiatives:
info@oregonwine.org or 503-228-8336.

Step 3

Determine site suitability

Whether you already own land that you plan to develop or are searching for the perfect site, you must determine whether the site is suitable for grapes. Climate, topography, and soils play the important roles in determining whether a site is suitable for a viable vineyard. For information on conditions suitable for grape growing in Oregon, see *Oregon Viticulture*, Chapter 3 (pages 44–50) and other resources listed under Step 1 in this publication.

Climatic factors

Not all types of grapes (cultivars) grow or produce quality fruit in a given location. 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 can be grown on your site or whether you can grow grapes at all.

Growing degree-days (GDD)

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



Photo Patty Skinkis, © Oregon State University

GDDs for the season, typically from April 1 through November 1 for most of Oregon.

GDDs determine whether you can produce cool-, warm-, or hot-climate grape cultivars. In general, cool-climate cultivars require 1,800–2,500 GDD in a growing season. Examples include Pinot Noir, Pinot Gris, Riesling, Gewürztraminer, Muscat, and Chardonnay.

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

The following websites provide GDD data and daily temperatures, precipitation, and other weather data.

Oregon climate summaries

<http://www.wrcc.dri.edu/summary/climsmor.html>

AgriMet Cooperative Agricultural Weather Network

<http://www.usbr.gov/pn/agrimet/webarcread.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, frost pockets, and freeze pockets. To learn more about specific topography effects on the vineyard climate, see *Oregon Viticulture*, Chapter 3, "Site Assessment" or this article from eViticulture on site selection:

<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, see *Oregon Viticulture*, Chapter 18 (pages 143–161), "Soil Management and Grapevine Nutrition," or read the article on soil quality from the eViticulture website (<http://eViticulture.org>). 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



Photo Patty Skinkis, © Oregon State University

mapping of your proposed vineyard site. To find a soil consultant, contact your local Extension office, the NRCS (below), or the 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 a site's 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.

Test for nematodes

Nematodes are tiny, soil-borne roundworms; some are parasitic to grapevines. The parasitic species may cause damage to the roots or transmit viruses that can jeopardize the health of vines. A wide range of soil types can host nematodes. Also, if a 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 take 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 are available online from the OSU Extension Catalog at:

<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 some areas of the state, primarily southern and eastern Oregon and the Columbia Gorge, it may be difficult to farm quality wine grapes without irrigation. It is possible to produce wine grapes without irrigation (dry farm) on most sites in the Willamette Valley. However, even 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, investigate water rights and whether water is available.

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, irrigation companies and specialists can design systems and programs suitable for your vineyard and soil characteristics.



Photo Patty Skinkis, © Oregon State University

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 market assessment. Some climatic factors are addressed in Step 3.

Marketing considerations

Oregon Vineyard and Winery Report

This report includes sales and production statistics for various grape cultivars in Oregon.

http://www.nass.usda.gov/Statistics_by_State/Oregon/Publications/Vineyard_and_Winery/index.asp

Clones

In viticulture, “clone” refers to a grape cultivar that has multiple “variants.” These clones have specific characteristics that can be maintained when propagated. To learn more about clones and selecting grape varieties, see <http://eViticulture.org>

Selecting specific clones within a cultivar can be difficult and depends on the qualities that you are interested in, including agronomic characteristics (growth, yield) or winemaking characteristics. The resources below provide helpful information.

Oregon Wine Research Institute (OWRI)

This website includes results of research on clones of several grape cultivars, including Chardonnay and Pinot Noir, as well as research on rootstocks. Check out the “Viticulture” section.

<http://owri.oregonstate.edu>

The National Grape Registry

This online resource lists plant materials that have been registered in the United States. It provides information on specific cultivars and clones and provides a list of nurseries where the vines may be purchased.

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

Rootstocks

The main reason for grafting vines to rootstocks is to prevent vine damage or death due to phylloxera, an insect that feeds on grape roots. Phylloxera has been found in nearly all grape-growing regions of the world, including Oregon. The European grape, *Vitis vinifera*, is susceptible to this pest and ultimately will die from infestation.

Grafting to a resistant rootstock is the most reliable method of control. It is highly advisable to plant new vineyards with grafted vines, but there are a few exceptions. For example, in eastern Oregon, growers have chosen to plant vines without rootstock so that they can retrain vines in the event of winter cold damage. If vines are grafted, it is not possible to retrain them from the roots.

OSU Extension Service publications

The following publications are available online from the OSU Extension Catalog at:

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

Grape Phylloxera: Biology and Management in the Pacific Northwest (EC 1463)

Grapevine Rootstocks for Oregon Vineyards (EM 8882)



Photo Patty Skinkis, © Oregon State University

Step 5

Order plants

Plant materials

Always buy from reputable nurseries that sell plants certified free of viruses and other diseases. Vines that are not certified are not tested to be virus-free. Some viruses can remain latent, or at rest, in plant tissues for years. If the virus becomes active, the resultant disease may lead to vine loss and potential infection of other vineyards. It is important to ask the nursery whether the cultivars, clones, and rootstocks you are interested in are certified free of virus and other diseases.

Nurseries that sell certified stock get 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. Two foundation blocks on the West Coast acquire plants from all over the world and clean up their grape cultivars to maintain a reliable source of certified clean stock. These are not places from which to purchase plant materials for your vineyard; they serve as a source of information about clean plant materials and local nurseries that provide clean plants. To learn more about certification, programs, and cultivars already available in the U.S., see the resources that follow.

Clean Plant Center Northwest (Washington)

<http://healthyplants.wsu.edu/grape-program-at-cpcnw/>

Foundation Plant Services (California)

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

National Grape Registry

This website includes a database that allows you to search for nurseries that carry specific cultivars.

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

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.

Oregon Department of Agriculture grape quarantine information

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

Need more information?

Be sure to check out the following resources and publications for more information.

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

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

eViticulture. <http://eViticulture.org>

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 a local Extension office in one of the key grape-growing regions of Oregon (Table 1). These Extension faculty have horticulture, viticulture, and/or wine production expertise and are available to answer questions regarding regional topography, soils and climates, and general viticulture and wine production.

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

Table 1. OSU Extension Service viticulture and enology contacts

Region	Location and website	Extension faculty	Phone
Umpqua Valley	Douglas County office, Roseburg http://extension.oregonstate.edu/douglas/	Steve Renquist	541-672-4461
Southern Oregon*	Southern Oregon Research & Extension Center, Central Point http://extension.oregonstate.edu/sorec/	Vinay Pagay	541-776-7371
Columbia Gorge	Hood River County office, Hood River http://extension.oregonstate.edu/hoodriver/	Steve Castagnoli	541-386-3343
Eastern Oregon/Walla Walla Valley	Umatilla County office, Milton-Freewater http://extension.oregonstate.edu/umatilla/mf/	Clive Kaiser	541-938-5597
Statewide – Viticulture	OSU main campus, Corvallis http://owri.oregonstate.edu/content/patty-skinkis	Patty Skinkis	541-737-1411
Statewide – Enology	OSU main campus, Corvallis http://owri.oregonstate.edu/content/james-osborne	James Osborne	541-737-6494

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

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