The Climate and Landscape Potential for Wine Production in the North Olympic Peninsula Region of Washington

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Table of Contents:

Executive Summary:

A region's potential for growing grapes for quality wine production requires a sound understanding of the suitability of the environment to provide the landscape and climate factors necessary for ripening different varieties. While some regions have had decades and even hundreds of years to define, develop, and understand their suitability, newer regions typically face a trial and error stage of finding the best match between region and variety. Furthermore, cool climate regions, at the margins of viticulture, require a more exacting understanding of their suitability so as to minimize failure and maximize current and future potential. This research facilitates this process by modeling the climate and landscape in a young and, as of yet, largely unproven grape growing region in Washington, the North Olympic Peninsula. The work addresses the need to establish the baseline knowledge of suitability in order to provide a level of mitigation from mistakes/failures. The result is an inventory of climate and land suitability that provides both existing and new growers greater insight into the potential of the region.

The physical factors that influence suitability include matching a given grape variety to its ideal climate along with optimum site characteristics of elevation, slope, aspect, and soil properties. To analyze these factors, this research uses spatial data for the region in a multi-layered model that examines topographical influences, soil factors, land use zoning criteria, and heat accumulation limits for growing grapevines. The composite model depicts the best landscapes within different climate suitability zones.

The North Olympic Peninsula region contains nearly 14,000 acres of landscapes with very good to ideal topographical characteristics having elevations from 200 to 600 ft, slopes between 5 to 20%, and high solar radiation receipt potential. In terms of soil, internal drainage, depth, pH, and water holding capacity form much of the basis of suitability for viticulture. For the North Olympic Peninsula, soils vary tremendously over the region but appear to provide nearly 40,000 acres of either relatively ideal or potentially amendable soil characteristics.

The climate structure of the North Olympic Peninsula region is one of moderate temperatures due to its location relative to the ocean. Precipitation varies markedly across the region, but benefits tremendously from the rain shadow of the Olympic Mountains with many of the suitable areas experiencing from 15 to 30 inches of rainfall per year. Growing seasons across the best landscapes in the region are typically longer than 180 days with little frost pressure. Growing degree-days for the best landscapes vary from 1400 to 2300 units, providing a range of cool, early ripening variety climate types.

Combining all aspects of viticultural suitability from the analysis finds nearly 2000 acres of agriculturally zoned land with the highest composite topographic and soil suitability that falls within the climate zones. Spatial data resolution also likely does not account for many suitable areas that are more sheltered from the dominant wind/weather directions where higher heat accumulation will likely be found. Furthermore, trends and projections in climate for the region indicate increasing potential with warmer daytime and nighttime temperatures and a longer growing season with greater heat accumulation.

In terms of varietal choices given the region's current climate structure, many of the varieties currently being grown by individual growers and at the WSU-Mount Vernon's Northwestern Washington Research & Extension Center should be considered. These include plantings of white varieties such as Madeleine Angevine, Sylvaner, Siegerrebe, Chardonnay, Pinot Gris, Riesling, Muller-Thurgau, Pinot Blanc, and Gewurztraminer. For red varieties, plantings should include Pinot Noir (both precoce and normal clones), Zweigelt, Garanoir, Leon Milot, Agria, Regent, Marechal Foch, and others. These recommended varieties are supported by experiences from the few growers in the region who have had success with them.

Overall, the North Olympic Peninsula region provides sound potential for cool climate viticulture and presents an interesting development for the industry in Washington and beyond. The region will benefit from its proximity to a large market and should capitalize on the ability to grow unique grapes with a light, crisp, and aromatic style of wine that pairs well with the seafood of the region.