

Wine Making...Weather... Geology...Climate Change



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Oregon AMS dinner meeting (*Elmer's-Parkrose*), May 15, 2019

INTEREST IN WINE...START EARLY!



Thanks, Mom! - a.k.a.,
"Mama Wizard"

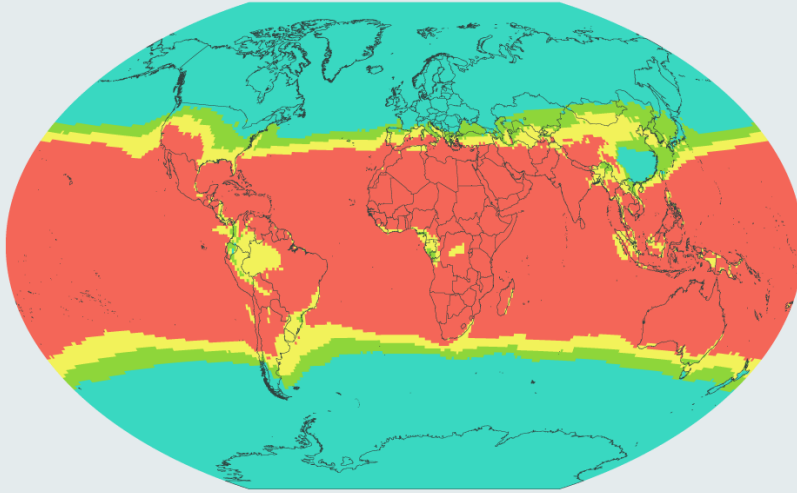
WINE-MAKING...THE PROCESS:



What are the strengths and weaknesses of the process?

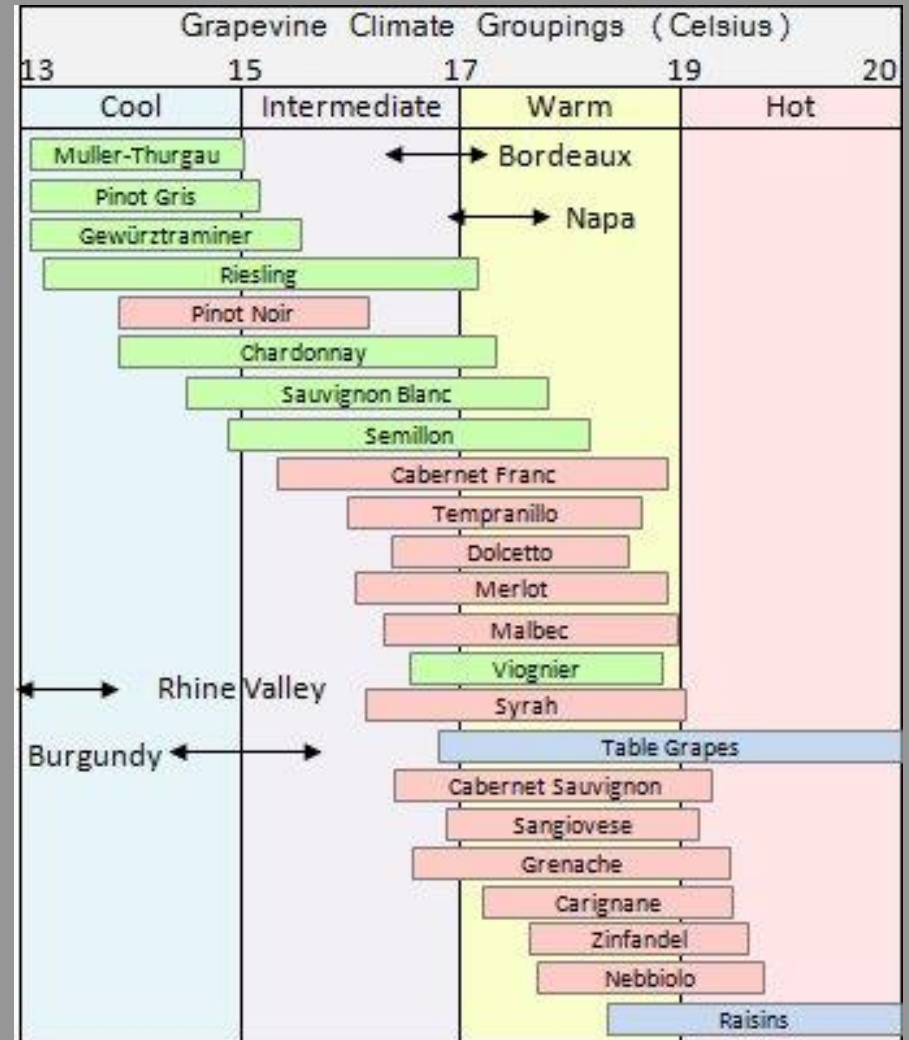
WINE-MAKING...THE WEATHER:

WARM CLIMATE VS. COOL CLIMATE



datasource: Annual Average Global Horizontal Irradiance from NASA/SSE

WINE FOLLY



Why is Temperature important for grapes?

WINE-MAKING...THE WEATHER:

Growing Degree Days (GDD)

Example:

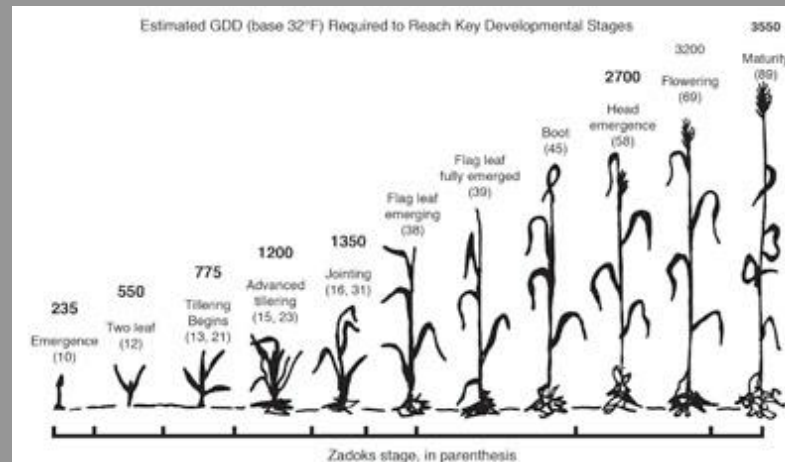
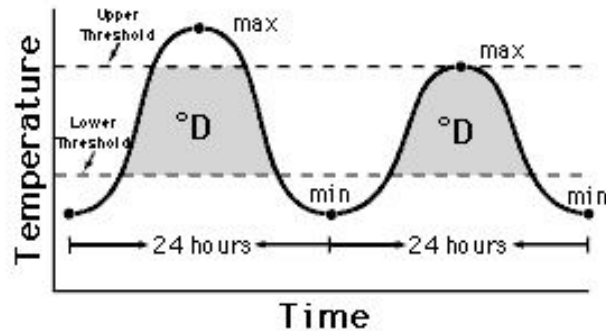
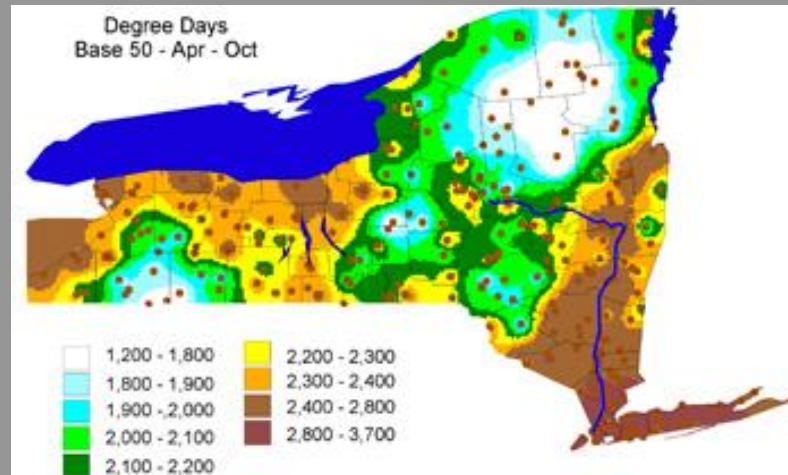
- Base number = 50
- High temp. = 80 F
- Low temp. = 60 F

$$80 + 60 = 140 / 2 = 70$$

$$70 - 50 (\text{Base}) = 20 \text{ GDD}$$

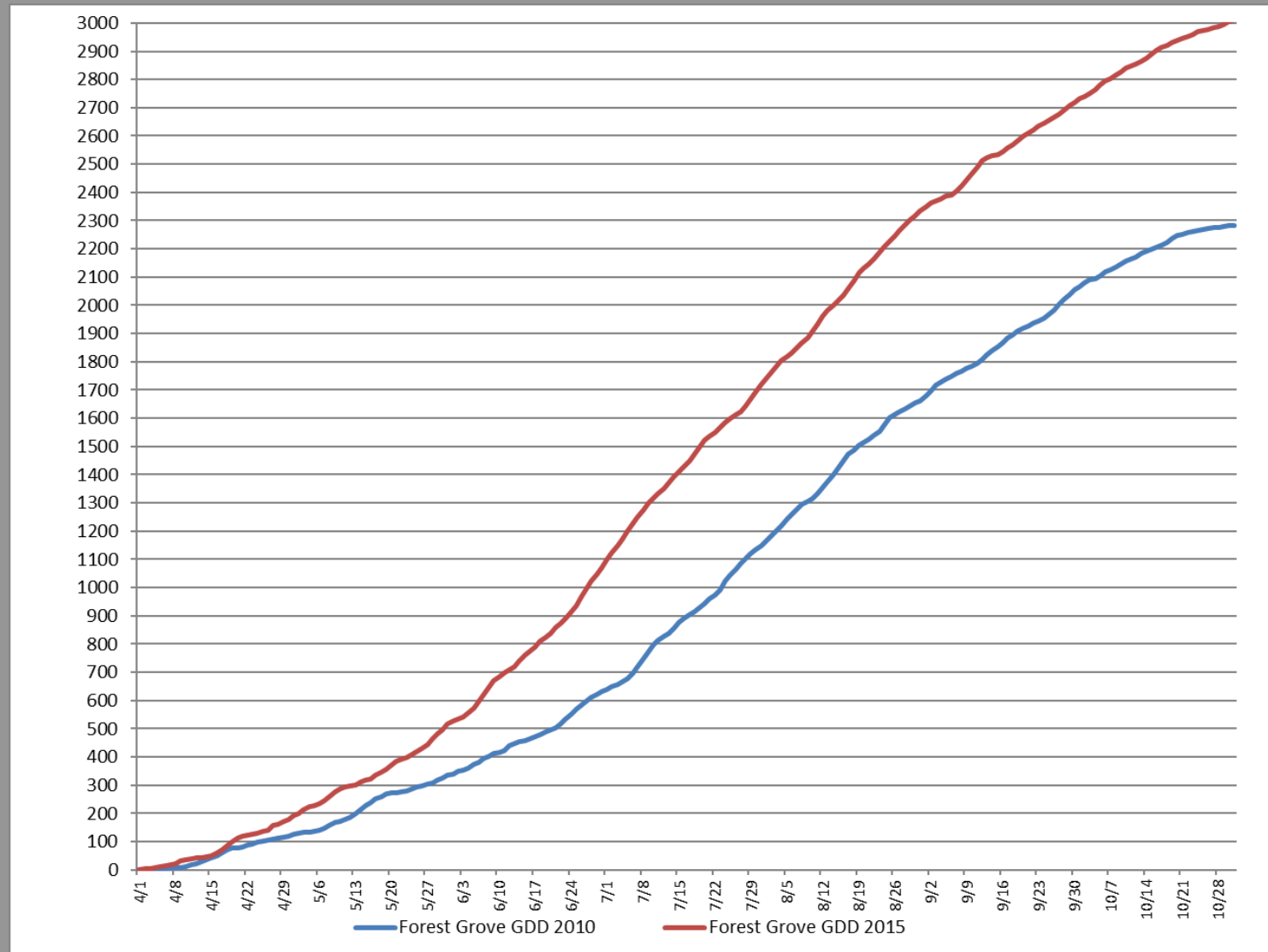
agphd.com

Farm Basics



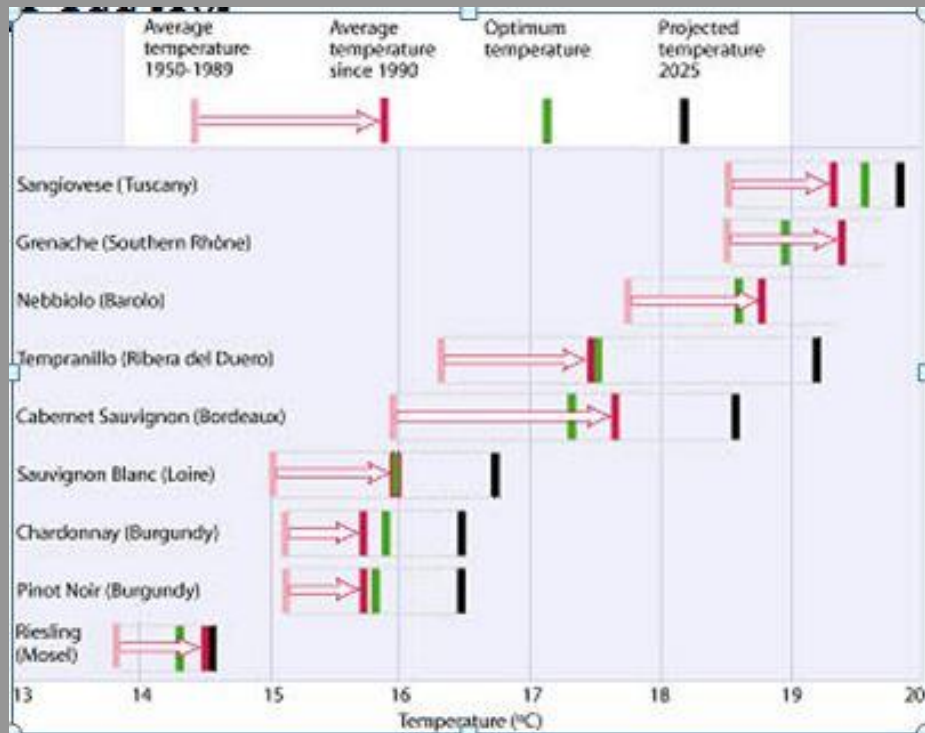
How can GDD be used to test grape quality?

WINE-MAKING...THE WEATHER:



Seasonal accumulated GDD – year to year variability. Cause?

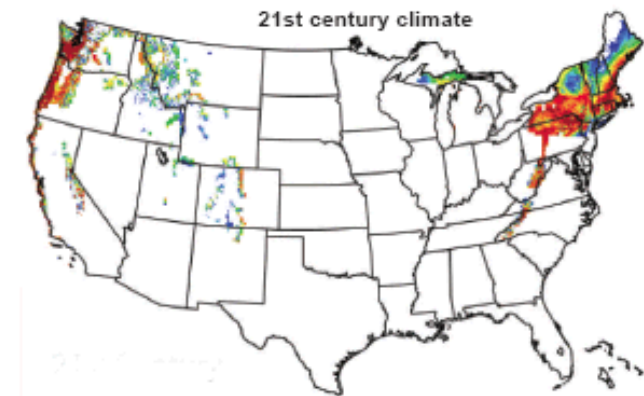
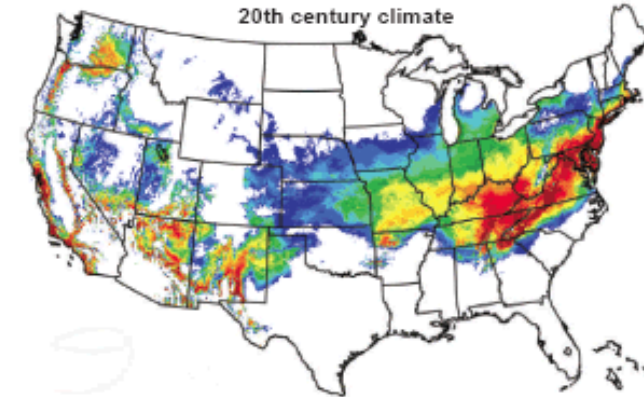
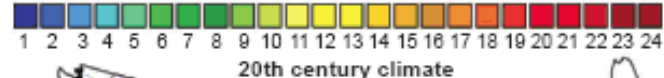
WINE-MAKING...CLIMATE CHANGE:



Warming could affect wine production

By the end of this century, rising temperatures across the U.S. could reduce the areas suitable for premium wine production by up to 81 percent.

Number of years for premium wine-grape production



SOURCE: Proceedings of the National Academy of Sciences

AP



How will CC impact grape production?

Prof. Jones: <https://www.linfield.edu/wine/greg-jones.html>

WINE-MAKING...CLIMATE CHANGE:

Global warming could shift western U.S. wine regions

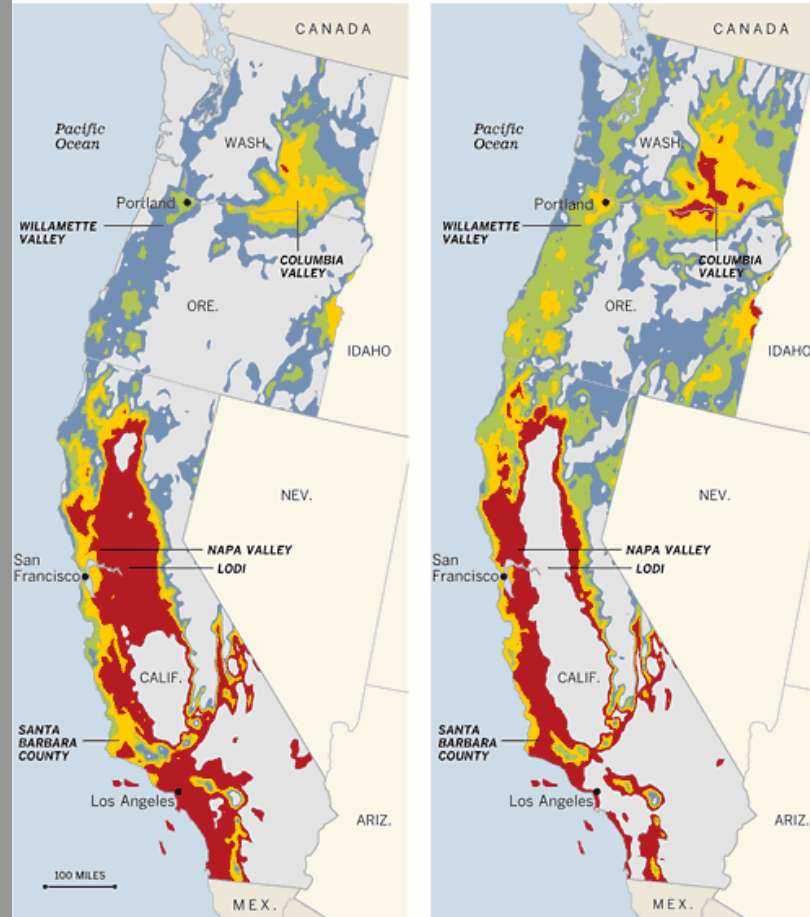
Grape varieties grow best in specific climates. Rising temperatures could change the regions in which certain grapes will flourish.

Ideal growing regions, by climate:

Non-viable
 Hot
 Warm
 Intermediate
 Cool

1971-2000 climate normals

2000-2049 projections



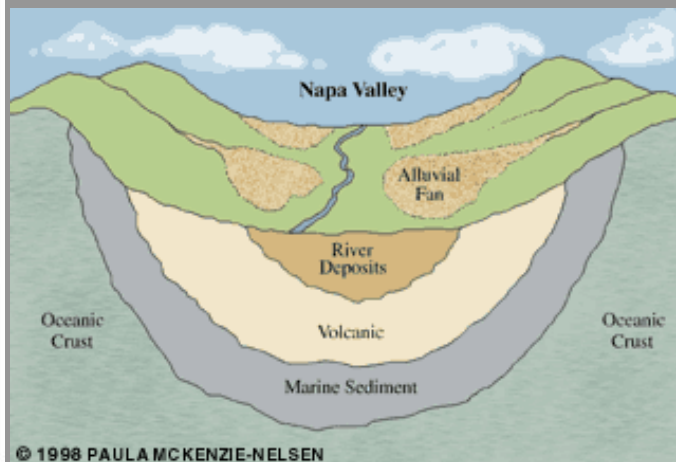
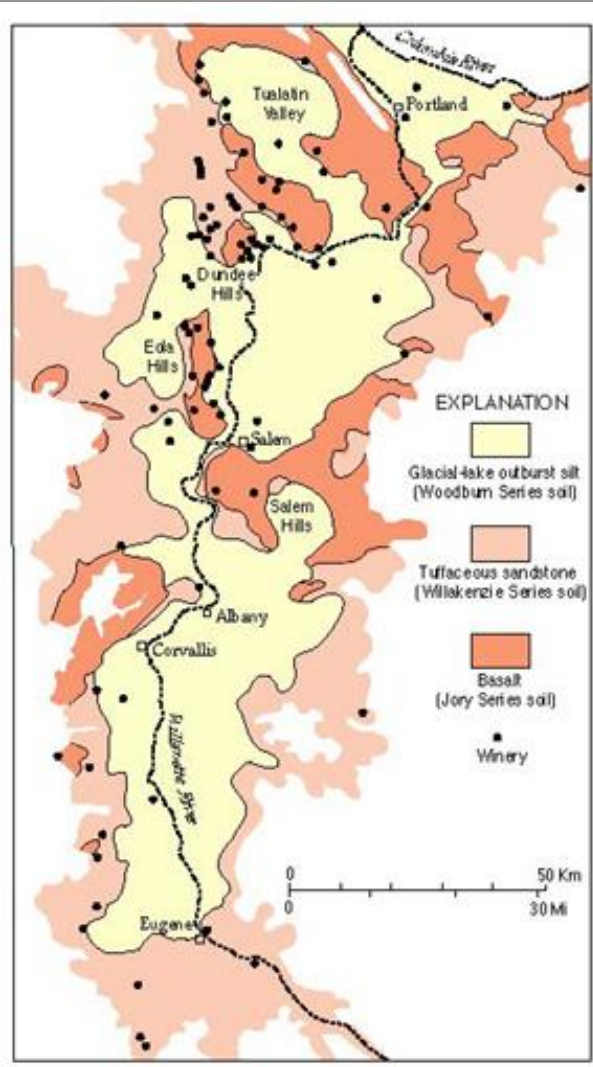
Source: Gregory V. Jones, Southern Oregon University

DOUG STEVENS Los Angeles Times



<https://wineeconomist.com/2007/10/16/chateau-al-gore>

WINE-MAKING...GEOLOGY...SOILS:



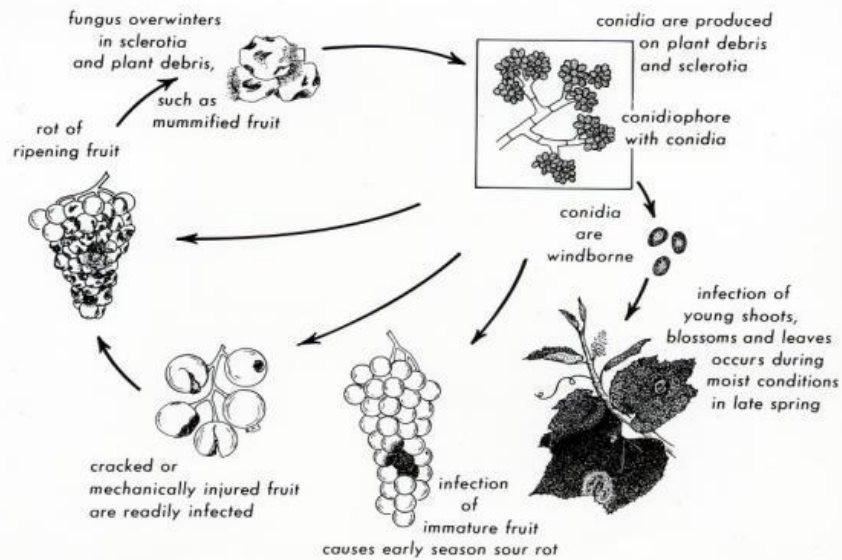
How does soil-type affect the grape quality?

WINE-MAKING...GEOGRAPHY:



What is "Terroir" and is it real?

WINE-MAKING...THE HAZARDS:



Bird Netting

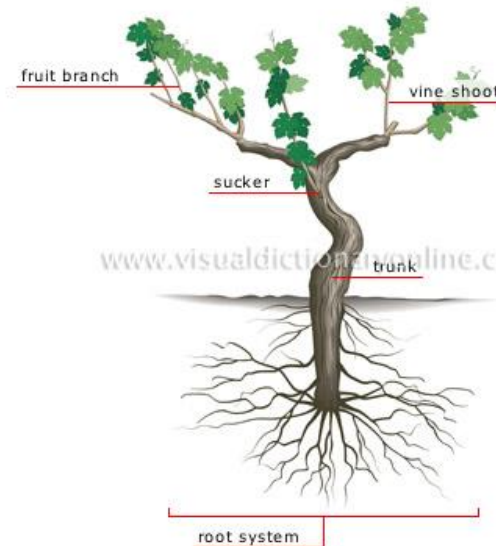
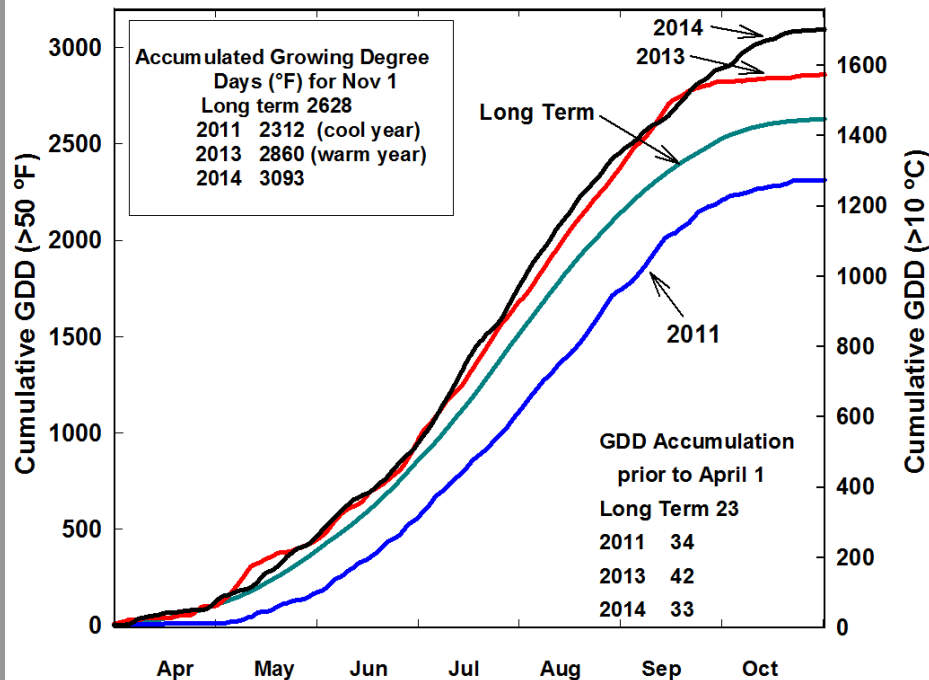


Which hazard is the top concern for local vineyards?

WINE-MAKING...THE HARVEST:

WSU-IAREC HEADQUARTERS

Accumulated Growing Degree Days



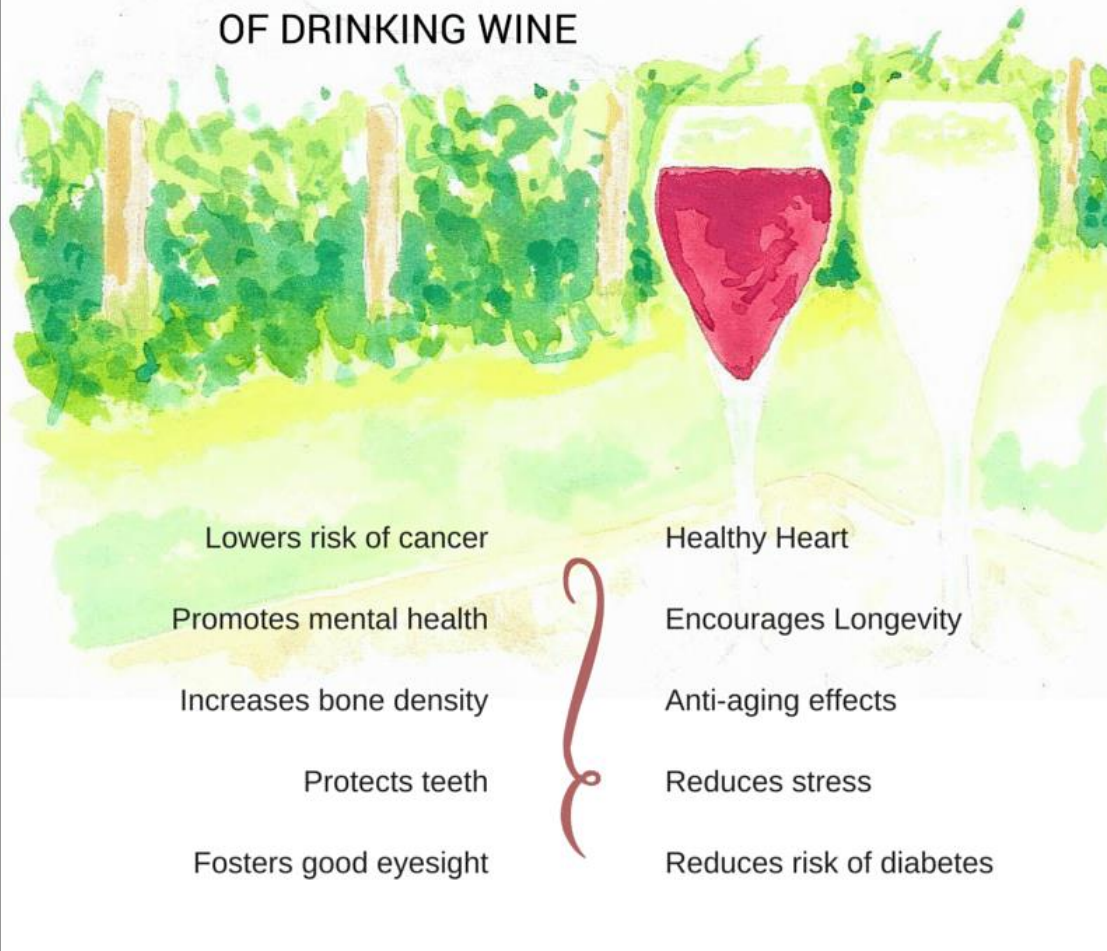
How can GDD be used to predict grape harvest?

GDD and harvest: 1800 Chardonnay, 2000 Pinot Gris, 2300-2400 Pinot Noir

OREGON WINE...HEALTH BENEFITS

10 HEALTH BENEFITS

OF DRINKING WINE



Lowers risk of cancer

Promotes mental health

Increases bone density

Protects teeth

Fosters good eyesight

Healthy Heart

Encourages Longevity

Anti-aging effects

Reduces stress

Reduces risk of diabetes

BENEFITS OF

Red Wine



Consume **4 to 8** ounces of red wine a day to enjoy multiple health benefits.

BENEFITS



Heart Health

Reduces the risk of a heart attack by

30%



Brain Benefits

Lowers the risk of a stroke by

50%

LONGEVITY

34%

lower mortality rate than drinkers of other alcohol.

THE GOOD STUFF



Resveratrol

lowers the risk of heart disease, and protects against Alzheimer's and dementia.



Antioxidants

contain anti-aging and cancer preventative properties.



Melatonin

helps you sleep by regulating your body clock.

Talk to your health care provider to find out if red wine is what's best for you.

Source: J. Kanner, et al. (2007) "Resveratrol: a natural polyphenol with potential health benefits." *Journal of Gerontology*, 62(1), 1-10.

Source: M. J. Smith, et al. (2007) "Antioxidant activity of resveratrol." *Journal of Agricultural and Food Chemistry*, 55(1), 1-10.

Source: J. Kanner, et al. (2007) "Resveratrol: a natural polyphenol with potential health benefits." *Journal of Gerontology*, 62(1), 1-10.

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<https://www.austwinetourco.com.au/10-health-benefits-of-drinking-wine/>

OREGON WINE...WHY IT MATTERS

SPARKY SAYS: "TIME FOR A POP QUIZ! "



"WHAT ARE ECONOMIC IMPACTS OF OREGON WINE SALES?"

- (A) \$30-50 million per year
- (B) \$250 million per year
- (C) \$830 million per year
- (D) \$5.7 billion per year

(D) **\$5.7 billion** per year (2016)

Oregon ranks **3rd** in number of wineries and **4th** in production in the USA – wow, wow!! 😊



Oregon's wine regions

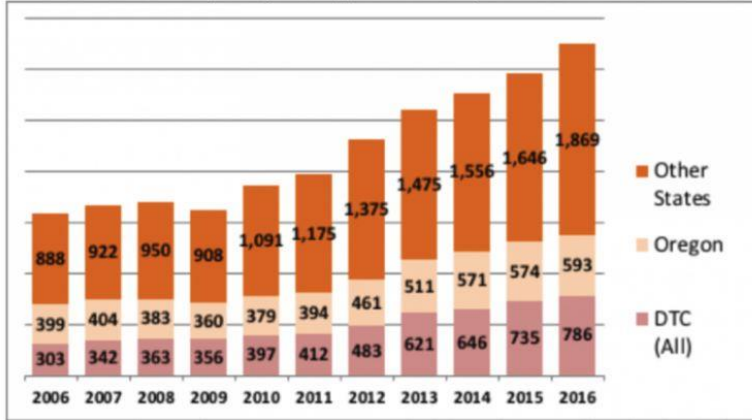
https://en.wikipedia.org/wiki/Oregon_wine

OREGON WINE...WHY IT MATTERS

Higher DtC sales margins responsible for half of total revenue at Oregon wineries

March 20, 2018 | Filed under [Daily Data](#) | Posted by [Lewis Perdue](#)

Case Sales (1000s) for Oregon Wineries by Destination Market



Source: SOURCE/OASS winery census 2006-2016; DtC includes tasting room, club, web and mail sales

Source: [Oregon Economic Impact Study 2016 \(PDF\)](#)

*Oregon wineries sold 23% of their bottled wine direct to consumers, via tasting rooms, wine clubs, events, catalog/mail or website sales. Slightly more than 1/5th of all club and mailed sales go to out of state consumers.

In addition, and unknown but substantial portion of tasting room sales go to tourists from other states. Direct sales realize higher prices for wineries than sales to distributors, due both to capturing the retail margin and the greater demand for wineries' high-end wines in this channel. Therefore they account for over half of total revenue from wine sales at Oregon wineries.

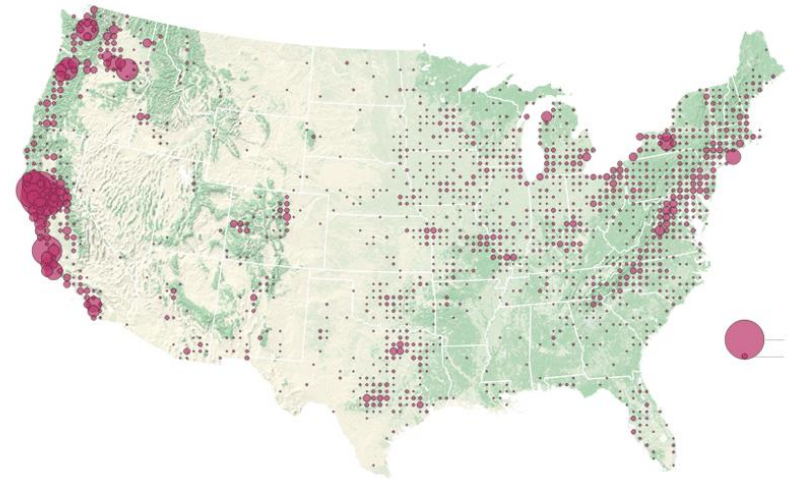
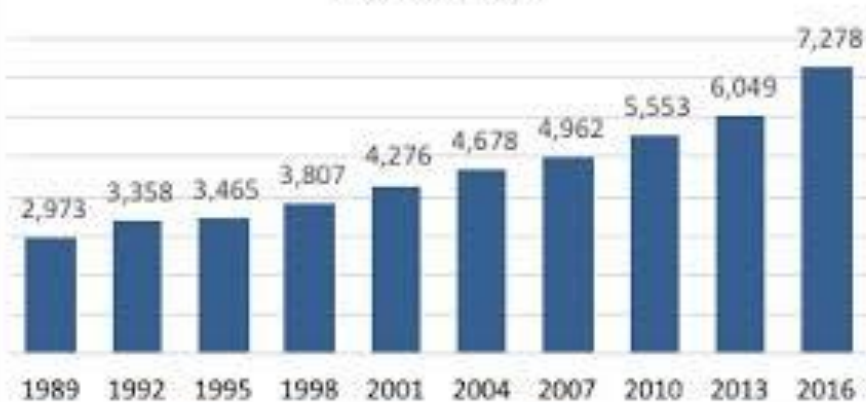


OREGON WINE INDUSTRY'S IMPACT GROWS

	2010	2013	2016
Total Economic Impact	\$2.7 billion	\$3.35 billion	\$5.76 billion
Winery Revenues	\$252 million	\$363 million	\$529 million
Wine Tourism	\$158.5 million	\$207.5 million	\$787 million
Winery employment	2,048	2,437	2,993
Vineyard employment	571	749	1,053

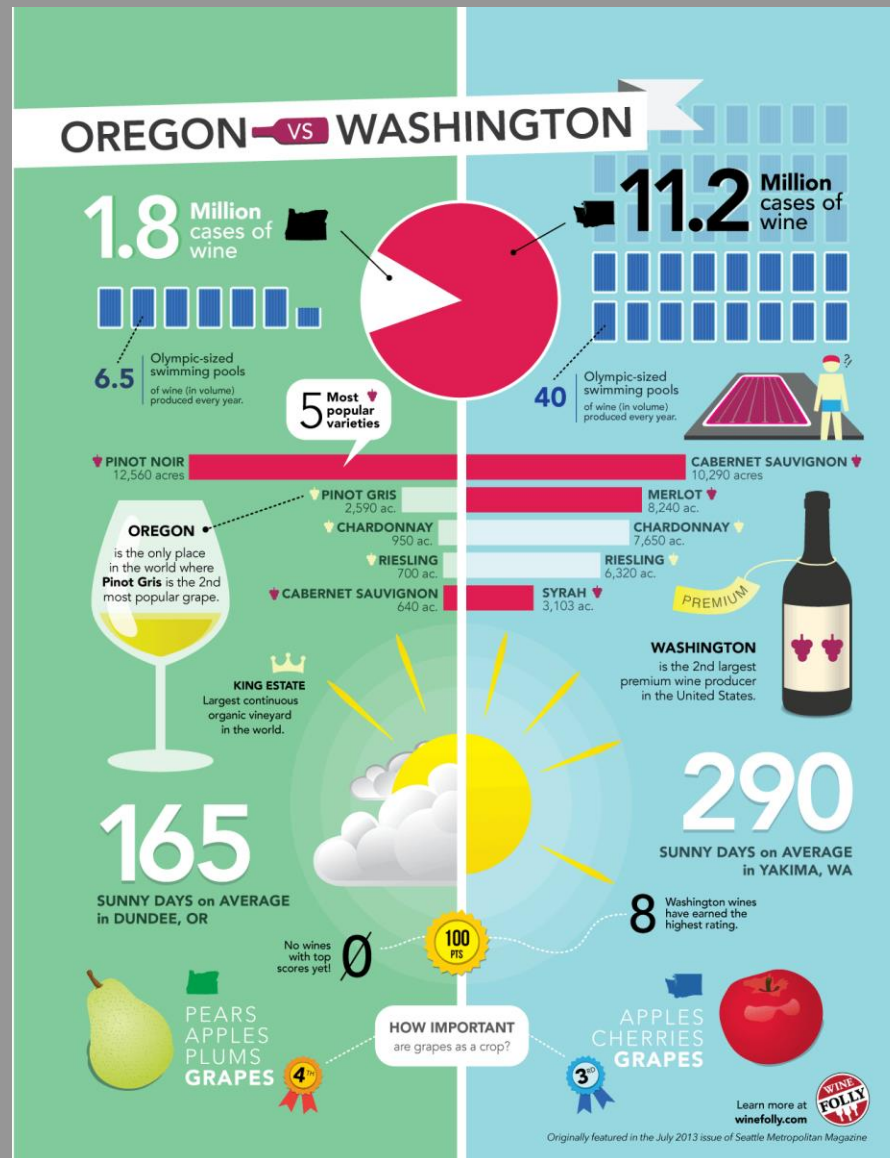
Source: Full Glass Research

Total Wine Sales in Oregon 1989-2016 1000 9L Cases



2018 report: <https://industry.oregonwine.org/wp-content/uploads/OR-Econ-Impact-2018-FINAL-Report-3-19-18.pdf>

OREGON vs. WASHINGTON WINE



SOURCE: <https://winefolly.com/update/washington-vs-oregon-wine-infographic/>

This map illustrates the various sub-appellations within Oregon's Willamette Valley American Viticultural Area (AVA). The map is color-coded to distinguish between different regions: Chehalem Mountains AVA (yellow), Ribbon Ridge AVA (orange), Yamhill-Carlton District AVA (light green), Dundee Hills AVA (pink), and Newberg AVA (blue). Major roads, including US-26, US-101, and US-240, are shown as black lines with route shields. Numerous vineyard and winery locations are marked with red dots and labeled, such as Forest Grove, Cornelius, Hillsboro, Gaston, Scholls, Yamhill, and Newberg. A blue bicycle icon with an arrow points towards the Chehalem Mountains AVA. Text overlays in red and blue provide additional context and links to more detailed information.

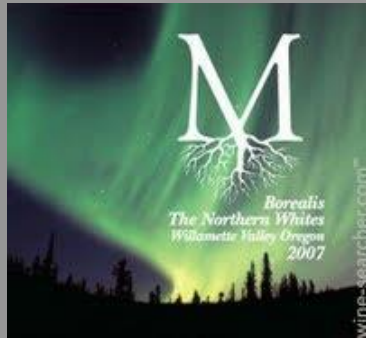
Oregon's Willamette Valley AVA:
 Chehalem Mountains and
 Ribbon Ridge sub appellations

[Click for detail](#)

[Click for detail](#)

Visit: <http://www.winesnw.com/index.html>

WINE-MAKING...THE WINES:



Please visit a local Washington County winery...SOON!

Thank you – what are your questions? ☺