# The Concept of Terroir in Viticulture

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Advanced Viticulture Short Course
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Pinot noir wines
from Burgundy and Oregon

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Pinot noir wines
same region
different vineyards


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Pinot noir wines
same region
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Pinot noir wines
same vineyard
different blocks

# The Concept of Terroir in Viticulture

**Term “terroir” has 2 origins:**

- From Latin word “terratorium” a derivation of “territorium” = delimited zone under roman army control.

- “Product of terroir”, used in the middle age to describe a natural product specific of a region and cannot be found somewhere else.

Terroir

An interactive ecosystem where vine growth, grape ripening and wine quality are influenced by the environment around the vine.

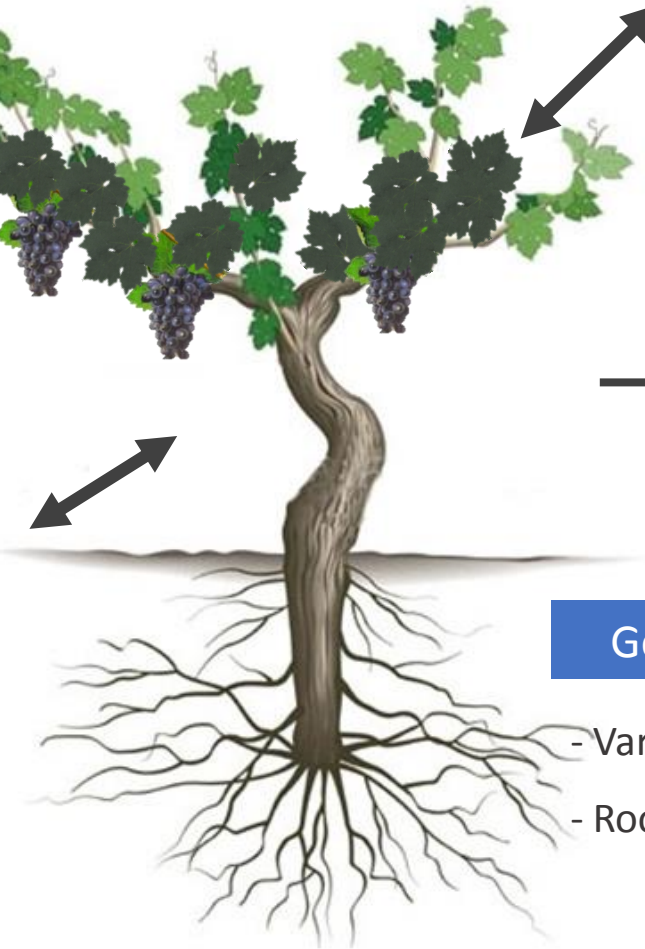
# The Concept of Terroir in Viticulture

**Human factor**

- Viticulture practices
- Winemaking

**Climate**

- Temperature
- Radiation
- Precipitation



**Soil**

- Composition and physical structure
- Water availability
- Pedoclimate
- Mineral nutrition: Nitrogen (N)…

**Genetic factors**

- Variety
- Rootstock

**Grape quality potential**

**Wine quality**

# Climate

Climate varies with Time (vintage) and space.

**Macroclimate**
Climate of a large region studied over 30+ years.
*i.e. Rhône Valley*

**Mesoclimate**
Climate of smaller region over a shorter period (days).
*i.e. Chateauneuf-du-Pape*

**Topoclimate** (slope, altitude, aspect)

**Microclimate**
Climate of a vineyard block or vine itself over very short period (hours).


# Temperature and Radiation

Wine regions can be basically divided into 2 types of climates:

- Warm climate: wines with higher sugar levels (which produce higher alcohol wines).
- Cool climate: wines with lower sugar levels and more acidity.

Differences within same type of climate.

*i.e. Oakville AVA receives more sun and heat than the Medoc in Bordeaux, the Medoc produces Cabernet-Sauvignon wines with greater acidity.*

Oakville AVA in Napa Valley

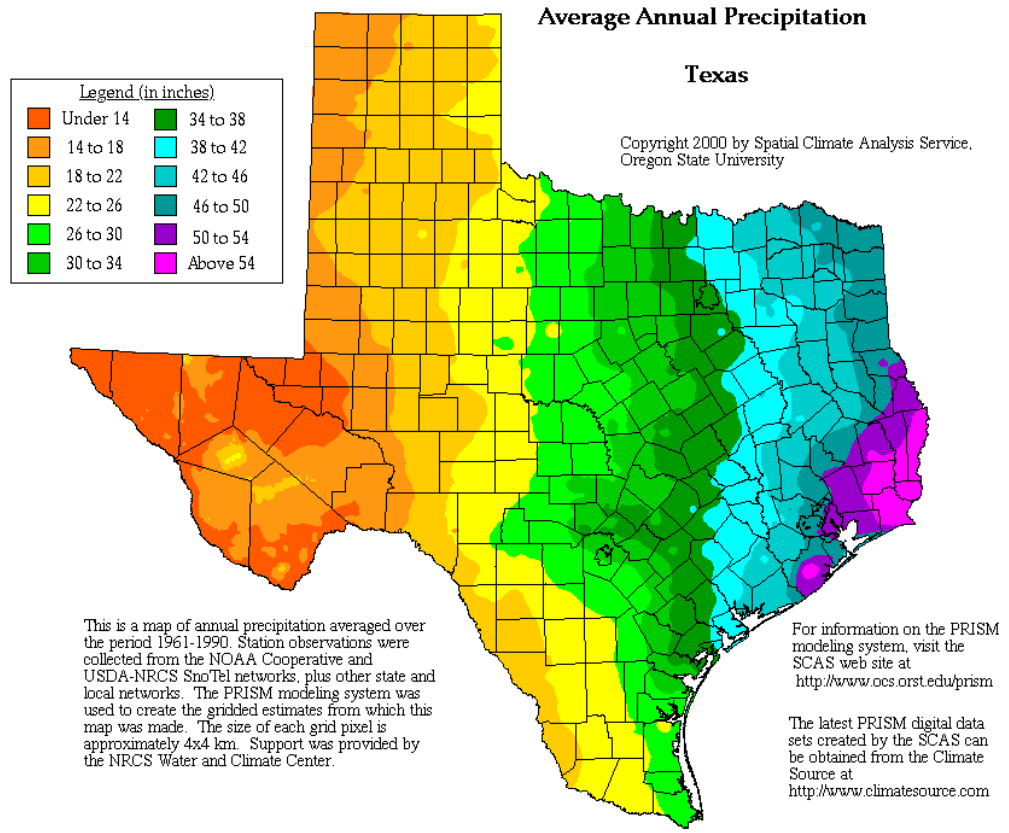
Medoc in Bordeaux

# Vine Water Status

Effect of rainfalls and evapotranspiration on vine water status.

Vine water status also depends on soil (water holding capacity) and training system (canopy architecture and leaf area).

*Irrigations is likely to modify terroir expression.*



# Soil

- Soil composition and physical structure
- Soil color
- Water reserve
- Mineral nutrition
- Organic matter
- Macro and micro-organism



*i.e. Riesling wines on clay soil have more body than Riesling on limestone soil.*

# Genetic Factor

Varieties and rootstocks have different properties dictated genetically:

- Ripening rate:
  - Early ripening varieties (Pinot noir, Chardonnay…) vs. late ripening varieties (Mourvedre, Grenache…).
  - Rootstocks that induce (RGM) or slow down (420A) ripening rate.
- Absorption of minerals
  - Cabernet-Sauvignon more efficient in assimilating N than Riesling
  - Clone R3 of Sauvignon blanc more efficient in assimilating N than CL297
- Synthesis and accumulation of metabolites

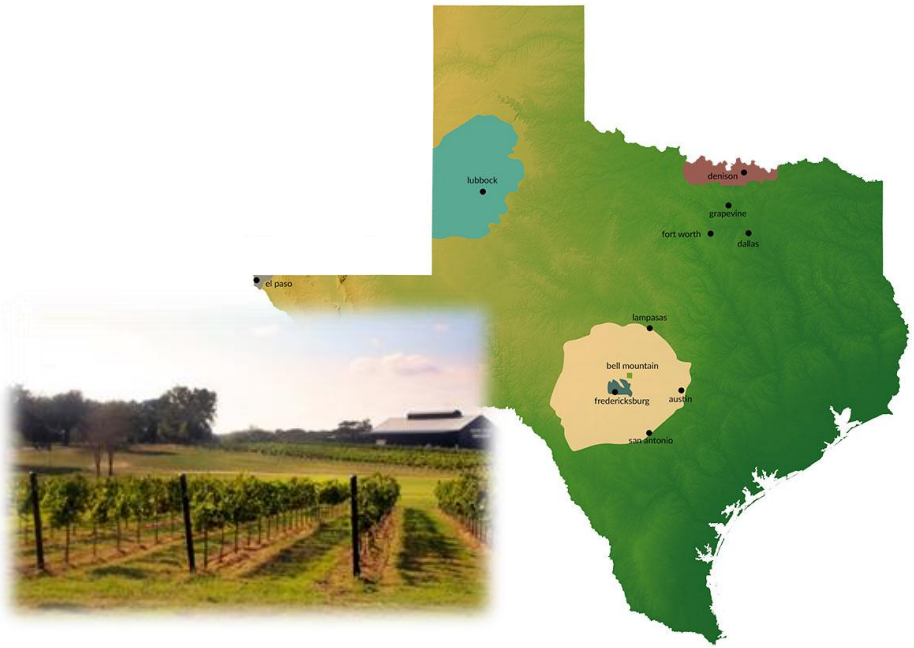
  Carmenere great producer of methoxpyrazines

  Sauvignon blanc great producer of volatile thiols

  Muscat great producer of terpenes.

# Human Factor

- No vineyard or wine exist without the intervention of human (site selection, selection of varieties, growth improvement, winemaking…).
- Human decisions: choice of variety and rootstock, row orientation, vine density, cover crop, spray program, canopy management, irrigation, harvest…

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