

EL CENTRO COLLEGE
Food and Hospitality Services Institute

RSTO 1319 Enology and Viticulture

CLASS NOTES: Wine in General (3)

- Wine is a beverage produced by the fermentation of the juices of fruits and particularly grapes. The scientific study of wine is known as **enology**. This field has two major subparts: **viticulture**=the cultivation of the vines and the harvesting of the grapes and **viniculture**=the making of wines from grapes.
- Grape vines are grown in temperate zones of the globe. Extremely cold or extremely hot and humid or hot and dry climate do not favor the growth of grape vines.
- Generally the vines for wine making are found as follows:
 - (a) Northern Hemisphere between 30° and 52° Latitude
 - (b) Southern Hemisphere between 15° and 42° Latitude
- There are thousands of grape varieties used to make wine. However, there are only two vine families which are used to produce the majority of wines we drink today.
 - (a) **Vitis Vinefera**-found in Europe. Examples: Chardonnay, Cabernet Sauvignon.
 - (b) **Vitis Lambrusca**-found in North America. Examples: Concord, Catawba

NOTE: In many instances Vitis Vinefera are grafted to Vitis Lambrusca vines to make them more resistant to wine disease.

NOTE: We do have **hybrid vines** which are a cross between Vitis Vinifera and Vitis Lambrusca. These are primarily planted in the Eastern Coast of the USA

- Vines are influenced by:
 - (a) Climate (b) Soil (c) Vineyard practices by growers

The minimal average temperature for wine grapes is 50°F (10°)

The **macroclimate** of a wine region includes cool climates which make distinctly different wines from warmer climates, since grapes retain higher levels of acidity-resulting in crisper wines. On the other hand, warm-climate wines give us wines with noticeable fully flavors and a softer texture.
- Regional climates and latitudes also influence the length of the growing season. Higher latitudes enjoy longer daylight hours in the fall months providing for a long, gradual cooler maturing period. Whereas, in the lower and hotter latitudes, where the days vary less in length, grapes mature quicker.
- Thus grape growers use these facts to consider which grapes to plant in a given location. The more delicate characteristics found in grapes make them suitable for cooler climates-such as Pinot Noir. On the other hand, the more robust characteristics of grapes such as the Syrah makes them more suitable for warmer climates.
- It takes an average of 100 days between a vines flowering and the maturing of grapes.
- **Soil.** Rocky soils with high mineral content seem to favor grape vines.

When grapevines produce large quantities of grapes and leaves we usually have low quality wine. Fewer grapes on the vine mean higher quality grapes overall. Too many leaves on the vine shade the grapes from the sunlight, resulting in lower quality wine.
- Soil with high level of rocks-such as slate and gravel favor the quality of wine.

- Soils containing metallic compounds such as iron, is more suited for grapes producing red wines-these grapes show greater density and a firmer structure.
- Drainage of the soil should allow the water to seep far into the soil and encourage root growth.
- A further advantage to soils with rock content is that these soils reflect heat back to the vine. Roots also absorb heat from the sun during the day. This stored heat can be used by the plant to continue to ripen the grape or to keep the root system warmer as the surrounding air may be getting cooler.
- **Phylloxera**-is a bug which lives on the vine. It sustains itself by sucking sap from the vine roots. It imparts its waste into the roots and within couple years the vine dies. *Vitis Venifera* is susceptible to *Phylloxera* while *Vitis Lambrusca* is not. A Texan, **Mumson** was given the highest civilian award by the French Government, because he developed the technique to graft *Vitis Venifera* onto *Vitis Labrusca* stock and thus he saved the French grape vines.
- *Phylloxera* has hit the USA, particularly California. The only country immune so far is Chile.
- There are more vines of grapes planted in this world than any other fruit. There are more than sixty wine producing countries in the world producing over 35 billion bottles of wine each year.
- The top five countries in wine production world wide are- in order of production:
(1) Spain (2) France (3) Italy (4) Turkey (5) The USA
- The top five wine producing states-in order of production are:
(1) California (2) Washington (3) New York (4) Oregon (5) Texas

- Planting of vines takes place in late spring-April and May. It takes 3 years to produce grapes suitable for wine making – but vines will produce grapes for up to forty years or more.
Most red grapes are usually planted in warmer climates-more southerly locations. In colder northern climates-i. e. Germany, Northern France-most vineyards are planted with white grapes. In the warmer regions of Italy, Spain, Portugal Southern France, the red grape flourishes.
Grapes are picked when the fruit has reached its optimum sugar/acid ratio for a given wine. “Brix” is a measure of sugar content in the grape.
- Weather influences the quality of wine. Rain, frost, hail, windstorm can have devastated effects on the harvest. Not enough rain, too much rain, rain at the wrong time – all are undesirable events fore the grape grower.
- The flowering of the vine starts when the temperatures reach 64-68°F(18-20°C) – which for most Northern Hemisphere locations is early June. As we have mentioned earlier the time from flowering to maturity is 100 days – which varies based on the weather and the grape variety.
- At first the young grapes are very acidic-sour, and the acidity decreases with ripening as grapes accumulate more sugar. Wine makers pick the grapes when the sugar/acid ratio is just right for the style of wine they want to make.
- Color of wine. The color of the wine comes entirely from the grape skin. By removing the skin immediately after crushing, no color is imparted to the wine. And the wine will be white. If the grape skins are left with the must for the entire fermentation, we have red wines. For a rose? the skins are left in the fermenting must briefly-12 to 24 hours-just long enough to achieve the hue desired. As white wines age they gain color. Red wines, on the other hand, lose color as they age.

- The Alcohol Levels in Wine. Across the entire range of wines, alcohol levels vary dramatically, from as low as 6% alcohol by volume in some German **Eiswein** to as much as 13.5% in some Cotes **du Rhone** reds to 14.5% in a sweet white **Sauterne** from Bordeaux, to 21% in a **Sherry** from Spain, that has been fortified by the addition of brandy.
The average alcohol level of wine is 12%, with many producers making light-style wines at around 11% alcohol by volume.
- Viticulture: Wine grape growers in different areas of the world employ different growing practices. Vine density-the number of vines per acre differ-we find French and German vineyards to have 2,000 to 3,000 vines per acre-while New World i.e. California vineyards have only 360-1,200 vines per acre. In the past, spacing has most often been influenced by the practical consideration of how much room is needed to maneuver machinery in the vineyard. More recent developments suggest that grape growers have taken the opportunity to increase the density of planting, arguing that by making vines compete for nutrients, they produce fewer bunches, but the grapes are of higher quality in terms of fruit flavor and balance of all other components.
- If the vine is left untrained, it will grow in an abundant but very random manner. The essence of grape growing practices is to arrange the leaves so they intercept light, and use the light energy to make sugars from carbon dioxide and water and render the sugars to the developing fruit. Premier wine vineyards around the world feature thin, open, **canopies**. Dense foliage is associated with shade within the canopy and produces grapes which present major problems in the production of quality wines.
- The practice of training the vines on **trellis** provides a support for the weight of leaves and fruit and makes it easier for vines to be tended. It also allows the grape grower to control the quantity of leaves and grapes the vine produces. Different trellis systems are favored in

different wine growing regions, since soil and climate help to determine what kind of trellis to use.

- Pruning is done during the two or three months following harvest. In fact pruning is a controlling process, since it dictates how many buds will open next spring and therefore how many flowers and grapes will develop. Pruning also trains the vine canes to grow in a certain way as desired by the grape vine grower.

- **MAJOR WHITE GRAPES**

Chardonnay-The best known white grape in our area and it is the grape for white French Burgundies. Also found in abundance in California, Australia, Northern Italy and South Africa. Chablis is also made from Chardonnay grapes in a region adjacent to Burgundy.

Sauvignon Blanc- It is the grape used to make the white wines of the Loire, and the principal grape of some great white wines from Bordeaux.

Riesling – It is the major grape for Germany’s Mosel and Riesling wines. Also found in Alsace-France, New York State, Washington State, Oregon, California, and New Zealand

Pinot Grigio- The current favorite “new” white wine in this market and the grape originates in Northern Italy. Also found in Alsace-France, in Oregon as well as in California.

Other white wines/grapes

- (a) Soave-Northern Italy(*)
- (b) Chenin Blanc-Loire Valley, California
- (c) Gewurztraminer-Alsace- France, California
- (d) Viogner- Cotes du Rhone France
- (e) Semillion-Bordeaux,France
- (*) Not a wine but a popular white Italian wine

MAJOR RED GRAPES:

Cabernet Sauvignon- the major grape responsible for the great wines of Bordeaux. Also found in California, Oregon, Australia, Spain, Chile and Argentina.

Merlot – also a Bordeaux grape. It is blended with Cabernet Sauvignon to produce the great Bordeaux wines. Also found in California, Washington State, New York State as well as in Chile and Australia.

Pinot Noir – The prime grape in Burgundy France. All French Burgundies are 100% Pinot Noir. A difficult grape to grow. Also used to make champagne. Also present in California, New Zealand and Italy.

Syrah – the prime grape from the Northern parts of the cotes du Rhone. Also found in California, Australia and Italy.

Other red grapes

(a) Sangeovese --Toscana, Italy (b) Grenache -- Cotes du Rhone, France

(c) Zinfandel – California (d) Nebbiolo – Piedmont, Italy

(e) Beaujolais – Burgundy, France (f) Valpolicella – N/E Italy(*)

(*) Not a grape but a popular red wine from Italy