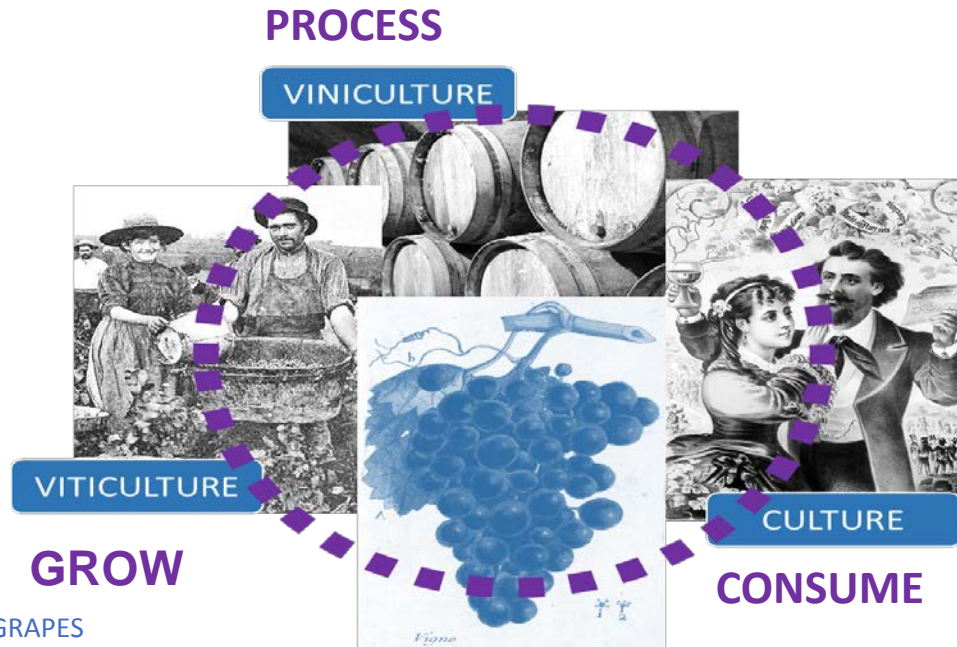


# The Life Cycle of a Grape

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## WINE MAKING

- Wine is the result of the fermentation of the juice of fresh grapes, the only fruit with high enough sugar levels & proper acid balance to sustain natural fermentation to dryness stably
- Yeast, a single-celled fungi, causes fermentation; An enzyme (zymase) converts sugar in the grape juice into alcohol & carbon dioxide & produces heat:  $C_6H_{12}O_6 \xrightarrow{\text{zymase}} 2C_2H_5OH + 2CO_2 + \text{heat}$
- No significant changes in viniculture or enology from ~ 1000 BC 'til ~ 1860 AD
- In the first, aerobic, fermentation, the juice is exposed to air (for 2-4 days) & the primary product is more yeast; The second, anaerobic, fermentation produces most of the alcohol (takes 3 weeks – several months)
- Fermentation can continue until the wine is dry (has no residual sugar) or can be stopped to make a sweet wine
- Most grapes have clear juice whether the skins are white or black; the color of the wine comes from contact with the skins
- To make wine, winemakers crush and press the juice from the grapes & separate the stems & pips; for white wine, pressing occurs before fermentation & the skins & pulp are also separated; reds are pressed after fermentation is completed
- Skins & solids in the must float up in the fermenter, trapping  $CO_2$ ; the must must be punched down to break up the cake
- Racking, or siphoning off the clear wine after the lees have settled out, is done to clarify the wine during aging
- Bottle, drink, repeat!



## GRAPES

- Grapes are the largest fruit crop on earth
- Botanical classification puts grapevines in the Family *Vitaceae*, Genus *Vitis*, subgenera *Euvitis* & *Muscadinia*. Species of *Euvitis* are *silvestris* & *vinifera*. Only *Vitis vinifera* produces fine wine
- It takes 500-750 grapes to make one bottle of wine
- Spanish missionaries planted vines near Socorro in 1629; NM was the first wine-producing state in the US; To grow grapes in NM, select American hybrid varieties hardy enough to survive in Zone 7
- Life cycle of a grapevine: Early spring, vine cuttings are grafted onto root stock & planted in sand to develop root systems (takes 2 – 5 yrs); As daytime temperatures warm, bud-break begins; Canes of mature vines are trained along trellis wires; Flowering begins when temps reach 60-65°F; Grapes ripen 100-120 days after flowering; Grapes are harvested between 19-25° Brix; Picking & crush take 2-3 wks; Grape skins are mixed with fertilizer & spread over the vineyard; When ground is dry & severe winter weather has passed, pruning begins again for the next season

## WINE

- One of the oldest documented beverages consumed; maybe more than 10,000 yrs.
- Consumed as a necessity, not for pleasure; before pasteurization, water & milk full of disease, alcohol naturally sterile
- Renaissance (14<sup>th</sup> - 17<sup>th</sup> centuries) brought wine making to an art form
- Modern wine movement (modern production processes) began during the Enlightenment during the 18<sup>th</sup> c.
- Early US consumption dominated by immigrants from S. and Central Europe, where cultural traditions valued social wine consumption with meals
- 1920: 18<sup>th</sup> Amendment banned commercial production & sale, unless for medicinal or religious purposes; head of household could make up to 200 gal. of wine for personal use; US wine consumption spiked
- 1933: 21<sup>st</sup> Amendment repealed Prohibition & gave control to states; with access to beer and spirits restored, wine consumption dropped
- Through the late 1950's, high alcohol dessert & fortified wines dominated
- 1960's Baby Boomers started the trend toward non-fortified wines
- Early 1980's: white zin all the rage! US wine consumption at all time high
- 1991: 60 Minutes program "French Paradox" sparked interest in merlot
- 2004: Sideways – merlot dumped in favor of pinot noir
- Today: older, more affluent people enjoy wine more than other demographics