

WINES

DEFINITION:

Wine is an alcoholic beverage obtained from the fermentation of the freshly gathered grape juice.

HISTORY:

Wine is probably the earliest of the alcoholic beverages, simply because it could be made without the maker's having to understand the chemical changes that turned sugar in grapes and other fruits, into alcohol. Wine may have been made as long as ten thousand years ago. According to one legend a lady of king Jamshe's court in Persia (present day Iran) being driven to desperation by the loss of royal favour decided to end her life by drinking the juice of some eating grapes which has gone bad in storage jars. She succumbed to the Fermented juice, slept and awoke to find that the stress and strains which has made her life un tolerable had disappeared. Her conduct become so remarkable that king Jam shed with his court made full use of this drink. The earlier wines seem to have been in the Middle East. We know from the wall paintings that the Egyptians used for them funeral rituals around 3000 B.C.

Wine is mentioned many times in the Bible and in the literature of Greeks and Romans. Earlier wines were closely related to religious rite and also used on joyous occasions, such as battle victories and Royal weddings. Early knowledge of Winemaking was passed on from the Greeks to the Egyptians and then to the Romans. As the Roman Empire extended, they spread the Wine making skills into other European countries. As thousand of years rolled by, wine was made and the process of Fermentation, aging and improving it was passed on from generation to generation. Exploration, conquest and settlement each led in its turn to the introduction of the wine making wherever the climatic conditions made it possible, thus wine making became universal.

VITICULTURE:

Cultivation of the wine: Wine is the product of Nature and Man. It benefits from the earth and sun and from the labourers of the vine growers. Wine is the most natural drink in the world. It can be made from fruit, grains, flower petals etc., but we shall concern ourselves here with wines made from grapes. Although there are more than 8000 grape varieties in the world, most of them are not suitable for the production of the wine. The world Vitis which proceeds the terms Vinifera, Labrusca and Rotundifolia, is lation for vine. The earliest known variety of vine species, Vitis sezannensis, was probably wines made out of Vitis vinifera. The type of vine grows best in two broad belts between latitude 30O – 50O in the Northern hemisphere and 40O – 50O in Southern hemisphere. The Northern belt of the equator includes France, Germany, Italy, Portugal, Spain, California, North America and many other countries. The southern belt includes South Africa, Australia, Chile, Argentina and New Zealand. Grapes can be grown outside these belts and be turned into wine, but the quality is not considered as high as that of from vines grown within these belts.

Grapes & Its Varieties: Grape is the basic ingredient of all wines. Only the pips and stalks are discarded. The skin forms a protective covering and when pressed adds tannin and

colouring matter to the must (unfermented grape juice) The skin also outer skin of grapes. The pulp, which forms the bulk of grapes, is basically water. It also contains some minerals (pectin) and sugar, which during fermentation gives brilliance and freshness. From all the varieties only *Vitis Vinifera* species produce fine wines.

- **COLOUR :** The grapes may range in colour from yellow to green (White grapes) and from red to blue black (Block grapes). A few of the most honoured and widely grown grapes are listed below.
- **WHITE :** Aligote, Chardonnay, Chenin Blanc, Emerald, Riesling, Folle blanche, French Colombard, Semillon, Pinot Blanc, Gewvrztraminer, Muscat of Alexandira.
- **BLACK :** Alicante – bouschet, Barbera, Cabernet Franc, Merlot, Melbec, Cabernet Sauvignon, Napa Gamay, Pinot Noir, Zinfandel, Petit Verdot, Ruby cabernet.

FACTORS AFFECTING WINE QUALITY :

- ❖ **CLIMATE :** A good deal of sunshine and rain in a balance of 178 millimetres of rain and 1300 hrs of sunshine in a year will prove to be the most beneficial for the vines. The sun develops the sugar in grapes and minimises acidity. Too much of sunshine produces dull, lazy flat wines while insufficient sunshine on the otherhand produces sharp sour wine.
- ❖ **SOIL :** The best soil is the one which offers good drainage that is why gravel and sand are better than clay. The most satisfactory soil are those composed of gravel, limestone, pebbles and even slates. It contains many minerals (copper, Iodine, Cobalt, Zinc, Nickel) which are largely responsible for the variety in taste and bouquet. Mountain slopes where the vineyards are positioned take advantage of the sun and Lake. Riverside plains which benefit from the sun reflecting from the water seem to be the favoured Vineyard setting.
- ❖ **GRAPE :** The most important is type of grape used. The best wine is produced from *vitis vinifera* which has many different varieties.
- ❖ **YIELD :**
The yield from an acre, or even a single grape vine, can vary greatly, depending on a number of factors, including, clones planted, soil structure, climatic condition, Fertilization, Nutrition and spray treatments, Irrigation as well as root stocks. If the viticulturist didn't prune the grapevines each and every year, they would grow uncontrollably, raising the yield considerably, but to the detriment of quality. Conversely, if the vines were pruned severely, the quality would be excellent but the yield would plummet. So viticulturists prune for a balance somewhere between these two extremes of quality and quantity. The average yield of grapes from an acre is approximately 2 – 4 tons. Each ton produces 135 – 170 gallons of juice.
- ❖ **SKILL :** Skill of Winemaker is extremely important as it can affect the quality of the wine produced. The skills of winemaker will vary according to the local tradition, type of wine to be produced, time required to produce, quantity to be produced and also the type of market to be catered to.
- ❖ **PROCESS OF WINE MAKING:**
there are number of stages involved in the production of Table Wine. They are as follows;
- ❖ **HARVESTING:**
Grapes are plucked when the density of the bloom, or natural yeast present on the skin taken from a number of bunches is constant. To determine when the grapes are ready to be harvested, viticulturists test them numerous times in the field for sugar, acid and PH levels. The instrument used to measure sugar level is called a refractometer. It is a

hand held optical instrument that measures the amount of light bent as it passes through the juice which can be viewed through a eye piece. When the grapes reach the desired sugar / acid ratio, they are harvested. Harvesting can be done in two ways; mechanically or by hand. Special scissors known as “secateur” are used to pick up grapes. They picked the grapes and placed them in “lug boxes”, which held from 35 – 50 pounds. Mechanical harvesting offers are greater efficiency in harvesting and increased control over grape quality. A mechanical harvester is approximately 18 feet in length, 12 feet in width and weights about 18,000 pounds. The “pivotal pulsator” removes the ripe grapes from the vines and the “trunk shaker” Vigorously shakes the trunk on the vines, causing the grapes at the top of the vines to drop into the machine below. As the grapes drop into the harvester they travel along a 15 inch wide conveyor belt past suction blowers which expel any leaves that may have entered the machine along with the grapes. This minimises possible green leaf off flavours and bitterness. Another advantage of it is that they can be used at any time of the day or night, twenty four hours a day, enabling wineries to pick each grape variety at its optimum ripeness. To further ensure the highest quality of grapes, many wineries harvest them in the evening and early morning hours. During these periods of the day the grapes are cool and turgid. Cooler grapes are less susceptible to play phenolic browning of the juice and growth of wild yeasts and bacteria on the grapes and juice. By harvesting at night, a number of problems overcome; there is a little congestion of traffic on the roads to the winery; there are few if any bees or other insects; it also reduces the tendency of grapes to juice before they reach the winery, and the cool night air diminishes color extraction in red grapes.

❖ **GRADING & WEIGHING:**

Grapes are graded according to quality and are weighed to determine the quantity required for fermentation.

❖ **REMOVAL OF STALKS & PIPS:**

The ripe grapes are plucked off from the stalks. Modern technology incorporates a destalking machine. The stalks have a bitter taste due to the presence of tannin thus it should not come in contact with the juice. Pips are also removed at this stage.

❖ **CRUSHING:**

The grapes are pressed or lightly crushed by mechanical press to extract, the juice, which is called, MUST. In Spain, men for crushing grapes used specially studded boots known as “zapato De Pesar”. Commercially hydraulic presses are used more frequently as they are quick, efficient and hygienic. The second part of the crushing / De stemming operation remove the stem from the grapes by centrifugal force with the use of a large auger, which catches the stems, literally ripping of the berries. The stem exits at one side of the machine, while the berries and juice exit at the bottom. The stems, which are good source of Nitrogen, are loaded into trucks and dumped between the vineyard rows to decompose during the winter and be “disced” into the soil in the spring.

❖ **VATTING OR CUVAISON :** At this stage if red wine has to be made, the skin of red grapes are allowed to remain contact with the juice which gets the colour from the skin. In case of white wine the skin is separated immediately. Rose wines are made by allowing the skins of red grapes to remain contact for a short while with the juice to get the desired pink colour. This process of macerating the skin in the must is known as **VATTING** and carried out only for red and rose wines.

❖ **CHAPTALIZATION:** In certain wine producing countries of the world there is sometimes an insufficient amount of sugar present in the grapes at harvest to produce a stable wine. The finished wine would contain a very low alcohol level and would

thus be unstable for travel and subject to bacterial infestation. A limited amount of sugar, set by law, can be added to the must, prior to fermentation when a lack of natural sugar exists. This is called Chaptalization. This increases the sugar content of the must, producing a higher degree of alcohol. When the fermentation is complete, the wine is dry. The purpose of sugaring the must is only to raise the alcoholic content of the finished wine and has nothing at all do with producing a wine with noticeable residual sugar.

- ❖ **FERMENTATION:** Fermentation, simply put, is the conversion of sugar contained in the grapes (by the action of yeast) into ethyl alcohol or ethanol. It was in 1810 by Monsieur – Gay Lussac who correctly devised the overall equation of fermentation.

Gay-Lussac's Formula for Fermentation is : $C_6H_{12}O_6 = 2C_2H_5OH + 2CO_2$
(Sugar Glucose) (Ethyl alcohol) (Carbon dioxide).

The equation describes the following process : Yeast, eats“ (metabolize) sugar and in the process create, in approximate equal proportions, alcohol and carbon dioxide gas (CO₂), with heat as a by product. If yeast is added to a sugar –water mixture, fermentation would produce only alcohol and CO₂; but when grapes and yeast are put together the end product is wine.

- **DRY RED WINE :** If a dry red wine is to be made, harvested grapes are immediately transferred into large stainless steel tanks, where they are lightly sprayed with SO₂ to kill any micro organisms, “Wild” yeast is then added to the must. The culture of pure yeast (*Saccharomyces cerevisiae*) can slightly or dramatically impart aroma and flavour and contribute to Wine's clarity. To Ferment red wine, the temperature of the must is brought between 70O – 90OF. Above 90O there is a chance that the heat will kill the yeast; below 70O the yeast acts at a slower pace, extracting less pigments, flavonoids and so on. At the 70O – 90O range the sugar, converting it to alcohol, is increased. During fermentation, the grape skin rise to the surface of the tank or barrel due to the fact that pigments, flavonoids, tannins and other compounds being extracted, making the skins lighter than the must. When the skins reach the surface, they harden, forming what is known as the “cap” or “hat”. Several times a day this cap must be broken up to allow the carbon dioxide gasses to escape. It is also important for the skins to stay in contact with the fermenting juice, to aid extraction. Some wineries with the aid of long paddles or oars, break up the cap and stir skin back into the juice. If the skins are allowed to rest for prolonged periods of time at the surface, volatile acids form which, if left unattended, could result in the transformation of the wine into vinegar. The other problem associated with volatile acidity is the large number of fruit flies (*Drosophila Melanogaster*) that are drawn by the smell of Vinegar. These fruit flies are carriers of Vinegar bacteria and their numbers must be kept to a bare minimum. The fermentation time for red wines is somewhere between five and seven days. The completion of fermentation is evident from a lack of movement “bubbling” inside the tank. At this point the yeast has totally consumed the sugar, causing the fermentation to cease, with the yeast now dying off, settling to the bottom of the tank, and dissolving (called autolysis) forming what is commonly called the Lees. The red wine is then pumped directly into a winepress, which presses the remaining juice out of the skins until no more comes out when pressure is exerted. The highly compacted grape skin mass (consisting of skin, pulp and pits) is called “Pomace” or the “Cake”. The pomace is, like the stems, a good source, of Nitrogen and like them is loaded into trunks and dumped between the vineyard rows. Some wineries in Italy and France take the pomace to a distillery where it is made into a high proof distillate

called Grappa (Italy) or Marc (France). The wine from the press is pumped into wooden barrels for aging.

- ❖ **DRY WHITE WINE :** The process of making white wine is somewhat different. After going through the crusher/destemmer, the grapes immediately go to the press, which presses the juice from the skins, which are later discarded. Only the juice goes into the fermentation tank, where it is inoculated with the strain of yeast. For the production of white wine, the must is fermented at a lower temperature than red wine 45O F – 60O F. Because of lower temperature, the fermentation time for white wine is longer than for red ten to fourteen days, and often longer.
- ❖ **DRY ROSE WINE :** Technically speaking, there is no such thing as a rose grape, and roses are principally not made by combining red and white wines. To make a rose wine , the initial procedure for making red wines is employed, but instead of the must fermenting for five to seven days, the juice stays in contact with the skins for only a matter of hours. The red pigmentation material (anthocyanin) contained in the skins is not solvable in the juice, but dissolves in the presence of acidity and newly formed alcohol as it is produced during fermentation. After the desired degree of colour has been reached, the juice is quickly separated from the skins, then allowed to finish fermenting. When fermentation is complete, the wine like white wine is put into stainless steel tanks for aging.
- ❖ **WINES WITH RESIDUAL SUGAR:**
For the production of semidry or sweet wines (usually white or rose, rarely reds), the fermentation is stopped before all the sugar the sugar is metabolized. This is generally accomplished by super chilling the fermenting must to a temperature 26O F for several weeks. This not only stops any fermentation but also “cold stabilizes” the wine, helping to crystallize and remove any excess potassium bitartrate. The wine is then filtered through a sterile membrane filter (0.45 microns), which promotes biological stability by removing malolactic bacteria and spoilage organisms; at the same time the yeast is filtered out, eliminating the possibility of future fermentation.
- ❖ **AGING:**
Allowing wines to age has been standard practise for countless centuries, and various methods of maturation (a subjective quality) has been tried. One unorthodox method was used by the Mont – Rouge Vineyard in Livermore, California. Form approximately 1910 - 1920 grapes were grown in nearly vineyards and the wine produced was pumped into barrels and loaded on ships. The wine was then shipped to Liverpool, England and back to Livermore via the Cape of Good Hope. Once returned to the winery, the barrels were emptied and the wine bottled and sold. The rationale for this unusual journey was that the rocking motion of the ship would cause the wines to age faster. Actually, it was probably the heat at the equator and extreme temperature fluctuations that changed the wine.
- **Countless factors influence the again of a wine:**
Fermentation time; Fermentation temperature; the pH and acidity of the juice; the type of yeast used for fermentation; the outside temperature during fermentation and again; temperature fluctuations; humidity, vibrations; how often the wine is racked or moved; if periodic toppings takes place; the geographic elevation; the size and age of the container ; the types of material the container is made of; the condition of the cork if bottle aged ; again time ;

whether or not the wine was ever racked, filtered or fined etc. What is more important, what kind of wine does the winemaker desire to produce as a final product, and when should it be consumed? Wine is living matter, subject to chemical changes that alter its lifecycle; any of the above factors, can change its colour, aroma and taste. During the aging process, extraction occurs as the alcohol in the wine dissolves flavor affecting chemicals present in the wooden barrels. The wine nearest the barrel wall becomes more dense from taking on the added weight of the extractable; this heavier liquid wine from taking on the added weight of the extractable; This heavier liquid then falls away, causing circulation, which brings the lighter wine from the centre of the barrel to the walls to pick up added extractable elements. The smaller the barrel, the more rapid the circulation and the extraction, and hence the more rapid the aging process.

❖ **BARRELS :**

For the aging of most red, and also some white wines, the wooden barrel is essential. In fact, the wine barrel as we know it today was invented in Egypt sometime around 2800 B.C. Although most of the barrels used for wine (over 90%) are made of Oak, other kinds of wood; such as red wood, spruce, Douglas Fir, chestnut, sugar maple, white ash, Beech, black cherry, elm and basswood are also suitable for barrel making. Making the barrels is a time consuming task which is done completely by hand by experienced craftsmen known as coopers. The narrow strip of wood that will ultimately form the sides of casks must be aged in the open air for at least four years before they can be curved into final form over open fires. Nails are never used, which ensures that the aging wine or spirit will come into contact with nothing but wood. As a rule, barrel aging will compromise and actually deteriorate the lively, fresh, fruity character of white wines and of light, fresh red, and the colour, aroma and taste of oak will be extracted by the wine. The only drawback when the wines are not aged in wood and not fermented in contact with skins or stems is that they have a shorter shelf life. The tannin contained in the skins, stems and pits is "bitter" tannin, while the tannin extracted from wooden barrels is "soft". Tannins are natural antioxidants, and since oxygen is the great enemy of aging wine, tannins are responsible for extending the life of bottled wine. This is also why the barrel fermented and oak aged chardonnay and sauvignon blanc will last long in the bottle than ones otherwise produced.

❖ **RACKING :**

Racking is a natural clarifying process that aids in setting suspended particles in the wine and removing them from contact with it – dead yeast cells, grape solids, bits of skin and solidified dead matter. The wine is carefully drawn from one barrel, leaving behind the sediment, and put into a clean barrel where it will rest until the next racking. After racking winemakers are careful to keep the barrels filled to the top with wine to eliminate oxidation; this is called topping. There is no set number of racking that a wine must undergo. There are some drawbacks to excessive racking. Every time the wine is racked it is exposed to a considerable amount of oxygen, which is absorbed by the wine, and the level of SO₂ (a natural antioxidant) drops dramatically.

❖ **FILTERING & FINING:** The wide range of lovely colors of wine, whether shades of red or gold, as reflected in a long stemmed glass, contribute to its appeal. Its beautiful brilliant hues are sometimes taken for granted, except by those involved in the wine making process. To obtain clarity, that we are

accustomed to, wines are filtered to remove all grape particles, which are not only unattractive but many also cause wine to become unstable over a period of time. Solids in wine come from the grape skin, seeds, pulp and tiny particles that become suspended particles and help to prevent bacteria fermentations and off odours initiated by the presence of protein particles.

The process of “Polishing” or clarifying a cloudy or hazy wine to brilliancy by removing suspended particles is known as Fining. Most wineries use fining agents to help clarify wines by removing precipitates of excess pectin, peptides, iron compounds, or unstable protein, which are generally positive charged other wineries use these agents (which carry a negative charge) for the softening of excessive tannin levels in red wines and the removal of browning agents. There are many fining agents used throughout the world; among them are casein, Bentonite (a fine clay), charcoal, colloidal silica, egg white, gelatine, isinglass, sparkolloid on in ancient times animal blood.

❖ **BLENDING** : Some wines are bottled as “Varietals” (reds as well as whites), with the name of the predominant grape variety stated on the label, while others are bottled as “generic blends”. Wines are blended for several reasons. In a given growing season, for instance, two red grapes might ripen completely but one of the grapes may be deficient in natural acidity and the second grape have an excess of it. By blending together these two wines, the acid level will even out somewhat, producing a relatively smooth wine other factors which are the amount of sugar, the PH, Flavonoids, anthocyanin and total phenolic must be considered prior to blending. Blending two or more wines together, either from the same or different years, creates a synergistic effect.

❖ **BOTTLING** : When it is deemed that the wine has aged sufficiently, either in Oak barrels or stainless containers, the final step is bottling. This includes the addition of labels, corks or screw tops, and a foil capsule, finally the bottles are packed in cardboard cases, ready to be shipped. Bottles are more permanent and convenient method of storing wine than at barrels and casks. Most wines continue to age in the bottles, but the length of time a wine stays in the bottle does not determine its quality.

Bottles are cleaned and dried with blast of hot air as this also sterilize the bottles. White and rose wines are usually bottled in light green or light brown bottles but largely in clear glass bottles. For Red wines and champagnes, dark coloured bottles are preferred as they prevent changes in colour. Some bottles have a “Punt” end which strengthens the bottles and act as a stabilizer when pouring wines with sediments.

❖ **STOPPERING**:

The use of corks as closures for wine and champagne bottles has been universal since the seventeenth century corks are occasionally used as stoppers for bottles of cordials and liqueurs, distilled spirits, or even beer, cork, with its great elasticity – expands and contracts depending on temperature and atmospheric conditions – makes the perfect tight seal for the neck of a bottle. Most quality wine bottles are stoppered with porous corks.

Cork: is made from the bark of a tree “Quercus Suber” which is grown mostly in Spain and Portugal, is harvested only when the tree reaches twenty five years of age. Generally speaking, the finest corks have a peak life of about twenty – five years, after which time they slowly deteriorate and should be closely examined for possible leakage. Storage conditions present many

problems for corks. Sustained high humidity causes corks to swell, and it is not uncommon to find them partially out of the about bottle (“ Pumped”) or even leaking when wine is kept in this type of environment conversely, when wines are stored in sustained low humidity, cork will start to dry out , causing shrinkage and the eventual oxidation to the wine.

Screw top bottles has almost, completely replaced corked bottles for distilled spirits, cordials, and beer, for their convenience and because they need not be stored horizontally.

❖ **CATEGORISATION OF WINES**

There are three basic types of wine :

- ✓ Still Wine
- ✓ Fortified Wine
- ✓ Sparkling Wine.

- **STILLWINE :**

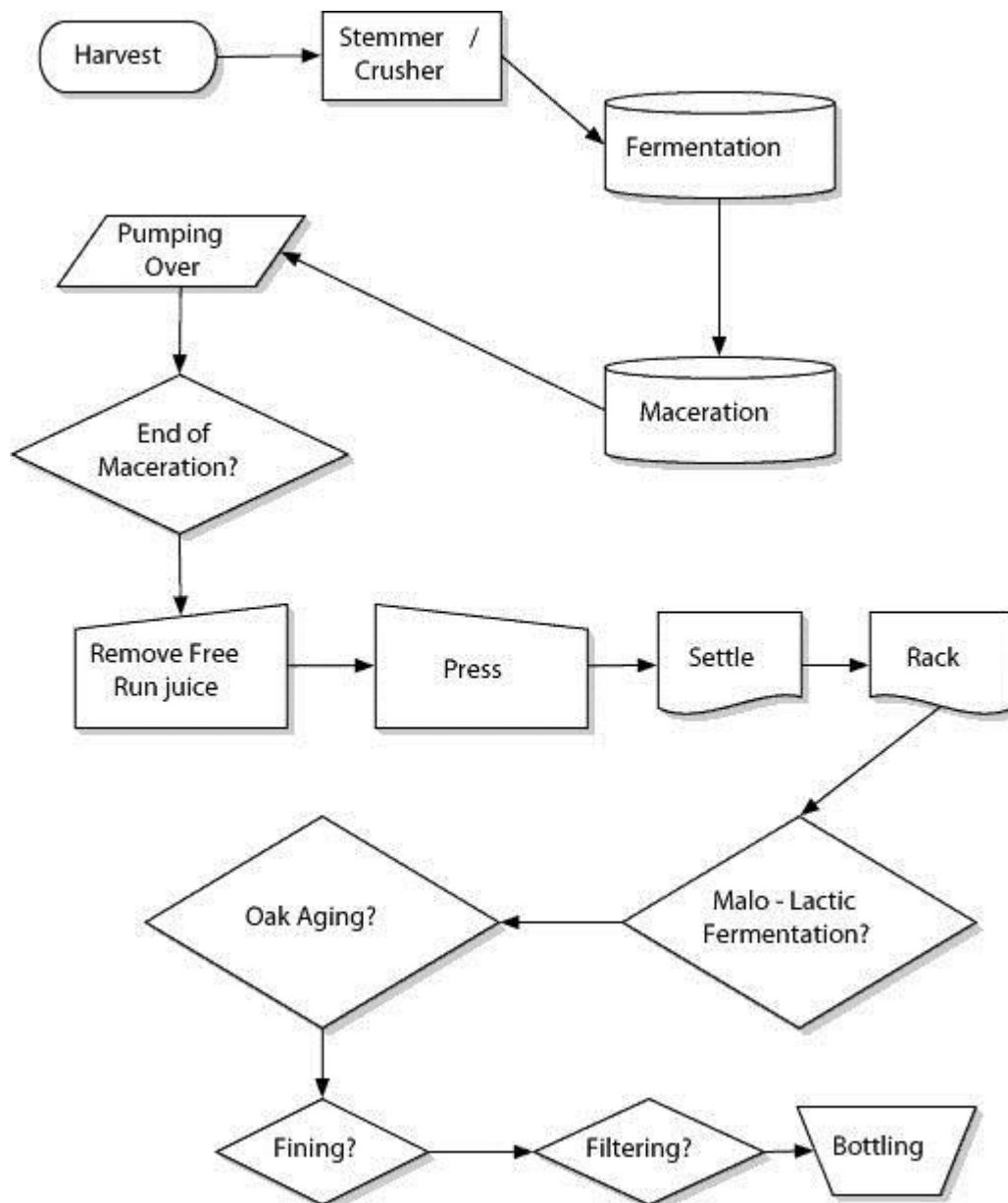
Most wine is still wine which is also known as Dinner wine or Table wine. It can be produced in various shades of Red, Rose and White. It had an alcoholic content generally ranging from 9 – 12 % alcohol by volume. Still wine does not contain CO₂ like sparkling wine. Still wines range from extreme dry to sweet. The word dry when used in regard to wine refers to absence of sweetness.

- **RED WINE :**

These are made from black grapes and the skin is allowed to macerate in the must until the red colour is obtained. Red wine is best served at room temperature 60O F – 65O F although some young red wines full bodied than rose or white wines and are often heartier, tastier and drier. Stored in dark coloured bottles.

Red Wine manufacturing -The Steps:

- Harvest – The grapes are picked when they are ripe, usually as determined by taste and sugar readings.
- Stemmer Crusher – This removes the stems from the grape bunches, and crushes the grapes (but does not press them) so that they are exposed to the yeast for fermenting, and so the skins can better impart color to the wines.
- Fermentation – Yeast turn the sugar in the wine primarily into Carbon Dioxide, Heat and Alcohol.
- Maceration – This is how long the must (juice and grape solids) is allowed to sit, picking up flavour, color and tannin. Too long and the wine is bitter, too short and it is thin.
- Pumping Over – Skin and other solids float to the top, and need to be pushed back down to stay in contact with the must. This “cap” can be punched down with a tool, or you can pump must from the bottom over the cap and submerge it that way.
- End of Maceration? – The winemaker must decide if the must has sat long enough.
- Remove Free Run – The best quality wine is made just from the juice portion of the must. It is removed and the rest of the drier must (now called pomace) is sent to the press.
- Press – This squeezes the remaining juice out of the pomace. If you do it too hard, or too many times, you get low quality wine.
- Settle – The juice, now wine, needs to settle after this ordeal.
- Rack(ing) – Moving the wine from one barrel to a new barrel allows you to leave solids and anything that might cloud the wine, behind.



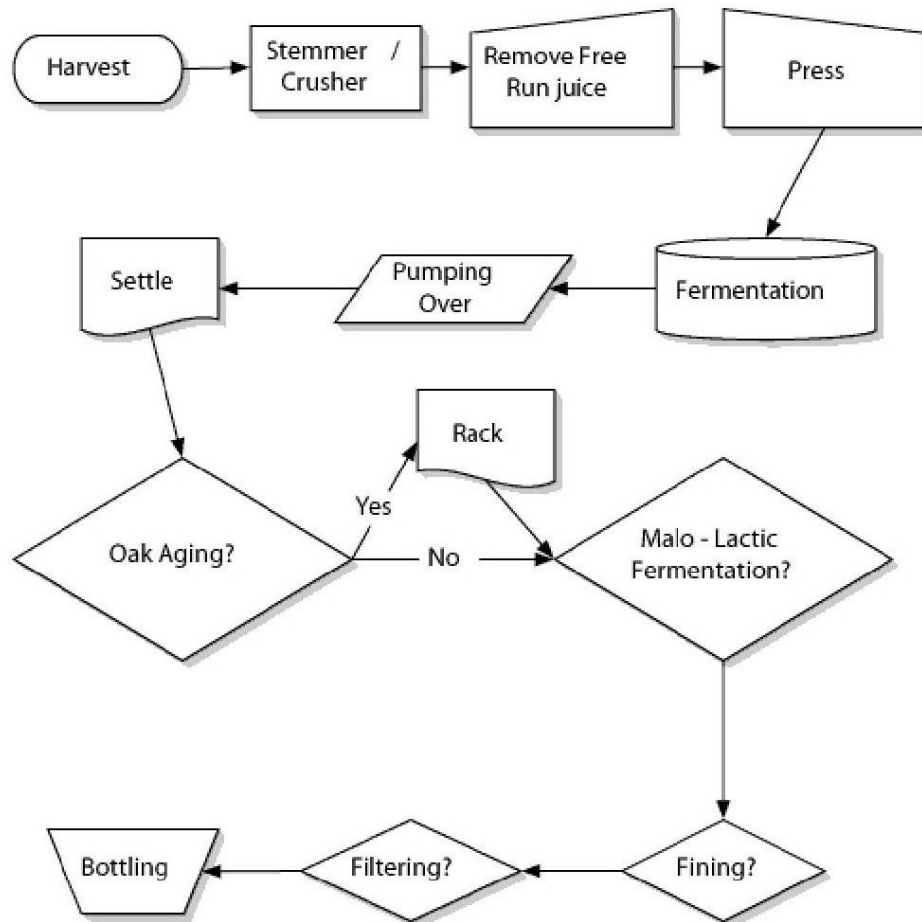
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- Malo-Lactic Fermentation – This secondary fermentation can turn the tart malic acid (of green apples) into the softer lactic acid (of milk). Many, but not all red wines go through this step.
- Oak Aging – Oak is expensive, if the wine is not meant to age for years, the winery may put the wine in oak for only a short time, or not at all.
- Fining – A process that helps to remove anything that may be making the wine cloudy.
- Filtering – A process that removes any fining agents, or other undesirable elements in the wine.
- Bottling – This is done carefully so that the wine does not come in contact with air. Finer wines may be stored for several years in bottles before they are released.
- **ROSE WINE :**
These are made from black grapes or a combination of Black and White grapes and the skin is allowed to macerate in the must until the desired hue is obtained. The color of rosé wines varies from pale pink to red. It may be slightly sweet and often has a fruity flavour. Rosé wines are best served chilled stored in light coloured bottles. made in three ways – from red grapes fermented on the skins for up to 48 hours; by

mixing red and white wines together; or by pressing grapes so that some colour is extracted. It may be dry or semi-sweet. These are called blush wines in the USA when made wholly from red grapes.

- **WHITE WINE:**

These are made from white grapes and also black grapes where the skin is not allowed to macerate in must at all. White wines are lighter bodied and more delicate than red wines. Its taste ranges from extreme dry to extreme sweet and are serve chilled stored in light coloured bottles.

The term still wines used to differentiate it from other two types of wine sparkling and fortified, but not as a determinant quality.



- **FORTIFIED WINE:**

Fortified wines are still wines to which distilled grape spirits such as Brandy has been added. This process of fortification increases the wine's alcoholic content, which ranges from 15% to as high as 24% by volume. It increases the wines shelf life. They have always been considered perfect for both beginning and ending elegant dinners. They vary from very dry to very sweet and have a rich bouquet and taste than other table wines. The best-known fortified wines are port, sherry, Madeira and Marsala.

Fortified wines such as Sherry, Port and Madeira have been strengthened by the addition of alcohol, usually a grape spirit. These are now known within the EC as liqueur wines or vins de liqueur. Their alcoholic strength may be between 15% and 22%, by volume.

- **Sherry** (from Spain) 15-18% ; made from white grapes -fino (dry), amontillado (medium), oloroso (sweet);
- **Port** (from Portugal) 18-22% ; strong sweet; typically drunk as a dessert wine – ruby, tawny, vintage character, late bottled vintage, vintage
- **Madeira** 18% (famous dessert wine; made on the Portuguese island of Madeira) – Sercial (dry), Verdelho (medium), Bual (sweet), Malmsey (very sweet)
- **Marsala** 18% – a dark sweet wine from Marsala in Sicily

Aromatised wines:– These are flavoured and fortified. Typical example is Vermouth.

- **SPARKLING WINE:**

Sparkling wine contains CO₂ bubbles, which provides their effervescence. The CO₂ is produced either through a natural process of fermentation that does not allow the CO₂ to escape during the conversion of the grape sugar into alcohol or CO₂ is added to still wine after the fermentation is complete. Red, Rose and White wines all can be made into sparkling wines. Whatever the color, sparkling wine is best served chilled. Sparkling wine ranges from 9 – 14 % alcohol by volume. The best known naturally produced sparkling wine is champagne although only the sparkling wine produced in the champagne region of France is true champagne with the capital letter „C“ In Germany, sparkling wine is given the name “Schaumwein” and in Italy it is called *summate*.

- The most famous is Champagne. This is made by the *methode champenoise* (secondary fermentation in the bottle) in an area of north-eastern France.
- Effervescent wines made outside this area are called *vins mousseux* or sparkling wines and are made by either the *methode champenoise* (now to be called *methode traditionnelle*), the *Charmat* method (tank fermented and sometimes termed the *methode cuve close*), the transfer method, or the carbonation method.
- They may vary from *brut* (very dry), *sec* (medium dry), *demi-sec* (medium sweet), to *doux* (sweet).

VINTAGE WINE:

This is a wine made in a particular year when all the conditions are favourable for production of grapes of excellence. When a vintage wine is sold, the year in which the wine has been bottled is stated on the label.

- **Top ten Wine Producing Countries:**

- France
- Italy
- Spain

- US
- Argentina
- Australia
- China
- South Africa
- Chile
- Germany

THE WINES OF FRANCE

- Appellation Contrôlée (controlled naming) laws – the name of wines reveals quality – helps prevent fraud & gives authenticity.
- Production and labeling governed by INAO – Institut Nationale des Appellation d’Origine des vins et Eau-de-vis
- The ground rule for naming French wines are basically geographical – area, grape-variety, yield, viticulture, vinification, ageing, alcohol-content and a **taste-test**.

Gradings	Meaning
AOC	Appellation d’Origine Contrôlée; Highest quality and most prestigious grading for French Wines but produces only 25% of all wines
VDQS	Vins Délimités de Qualité Supérieure; Taste-test is a must; 5% of all wines.
Vin de Pay	Literally means ‘Country Wines’
Vin de Table	Fully blended.
Vin Ordinaire	Labeled by alcohol-content; Sometimes cheaper than even mineral water!

Wine Producing Regions of France

Regions	Popular Wines
BORDEAUX :- Probably the most prestigious wine-region.	Château Lafite-Rothschild – Pauillac (Red)
	Château La Tour-Pomerol (Red)
	Château Pape-Clément (red)
	Château Olivier (white)
	Château Couhins (white)
	Château d’Arche (white)
BURGUNDY	Chambertin- R
	Le Corton (r)
	Les Grèves (r
	Charlemagne (w)
	Montrachet (w)
	Morgeot (w),
	Rully (both red & white)
	Montagny (white)
CÔTES-DU-RHÔNE	
VAL DE LOIRE	Anjou (w & r – sparkling)
	Muscadet (w – dry)
	Pouilly Fumé (w – dry)
	Vouvray (w – still & sparkling)
ALSACE	Alsac Riesling
	Alsac pinot blanc
JURA	Château Chalon

	Arbois
PROVENCE	Cassis
LANGUEDOC-ROUSSILLON	St. Chinion
SOUTHWEST	Montravel
SAVOIE	Crépy (w – dry)

WINES OF ITALY

- Half the size of France but quantity is almost equal.
- 60% reds – probably second only to Bordeaux and Burgundy
- More like Burgundies – robust, full-bodied, deep red.
- Wine regions:- LOMBARDY, TUSCANY, VENETO, PIEDMONT, SICILY
- Production and labeling governed by **DOC (Denominazione di Origine Controllata)**

Popular wines:-

White	Red	SPARKLING WINES
Est! Est!! Est!!!	Bardolino (hardy red)	Asti Spumante
Falerno	Barolo (R)	Lacrima Christi
Capri	Boca (r)	Asti Spumante
Etna	Fara	
Lugana	Barbaresco	
Galestro	Soave	

WINES OF SPAIN

- The third largest wine-producing country in the world.
- Home of fortified wine of Sherry
- Wines labeled DO (Denominacion de Origen) are of guaranteed standard
-

POPULAR WINES:-

RED	WHITE
Marques de Riscal Gran Reserva	La Cana Albarino
Torres Mas La Plana	Burgans Albarino
Vega Sicilia Unico	Poema White Blend
Dominio de Pingus	Protocolo Blanco
Clos Erasmus	Shaya Verdejo
Clos Mogado	

PORTUGAL

- Climate not quite conducive for viticulture.; Even then, great variety and sufficient quantity.
- 15% of the populace is involved in wine trade
- Best wines are labeled Designacio de Origen (DO).
- Home of PORT & MADEIRA

POPULAR WINES:-

PORT WINES	SHERRY	RED	WHITE
Churchill's Crusted Port	BLANDY	CAMPOLARGO	BIOMANZ
Quinta do Naval Black	LEACOCK	JULIA KEMPER	FILIPA PATO
Dow's White Port	PERIQUITA	QUINTA DO NOVAL	QUINTA DA PELLADA
	BARBEITO	CASCA WINES	AFROS

WINES OF U.S.A:-

- The 5th largest wine-producing country.
- Rosé wines are referred to as **blush**
- Quality is also commendable.
- Wine production started after the arrival of the European settlers in the 17th century

WHITE	RED	SPARKLING
Heron California Chardonay	SKN Nappa Valley Cabernet Sauvignon	NV Gruet Brut
Windmill Lodi Chardonay	Bears Nappa Valley Cabernet Sauvignon	Mirabella Brut
Pine & Post Washington Chardonay	Mark West California Pinot Noir	Sofia Blanc de Blanc
Morgan Sauvignon Blanc	Lange Twins California Merlot	
Geyser Peak Sauvignon Blanc	Kendall Jackson California Syrah	

INDIAN WINES :-

- Harvest normally takes place in September and is usually done by hand
- Indigenous table grape varieties:- Anabeshahi, Arkavati and Arkashyam
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Wines Producing Regions	
Nasik	· Located in the state of Maharashtra.
	· Region include Pune,Nasik,Ahmed Nagar.
	· Several top wineries are located here.
	· Chateau Indage, Sula wines.
Sangali Region	· Also located in Maharashtra.
	· This region includes places like
	-solapur,sangali,satara and latur.
Bangalore Region	Grover Vineyards, located in Nandi Hills (45 kilometer North of Bangalore City)
Himachal Region	· It is upcoming state for the wine in India.

Some Famous Wine Makers:

Indage à Narayan Gaon (Pune)

Grover Vineyards à Bangalore

Sula à Maharashtra

Renaissance Wines à Nashik

ND Wines à Nashik

<u>Red Wine</u>	<u>WHITE WINES</u>	<u>Rose wines</u>	<u>Sparkling wine</u>
Syrah	Sailo Rio	Shiraz rose	Sula Brut
Galaxy	Et tu Brutus	Maderas rose	Sula Seco
Vallet Sailo	Mark Antony	Sula Blush Zinfandel	
Satori Merlot	Sauvignon Blanc		
Cabernet Shiraz	Dia white		
La Reserve	Madera white		