

## **Racking Wines\***

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When a fermentation ceases, the suspended particles settle rapidly and form a sediment. The sediment, referred to as lees, usually consists of macerated grape tissue, dead yeast cells and yeast autolysis products. The young wine is separated from the lees by transferring the wine to another container, leaving the lees behind. This process is called racking.

### **Racking accomplishes several objectives:**

1. It aids in wine clarification.
2. It prevents new wines from picking up off odors. For this reason, prompt and early racking, usually within a week or sooner, is recommended.
3. It discourages malolactic fermentation and other kinds of microbial spoilage. This is important for high pH wines.
4. Racking aerates and helps in aging (especially red wines) unless it is done under the blanket of N<sub>2</sub> or CO<sub>2</sub> gas.

Racking is a simple operation and is often done without consideration of its impact on wine quality. It should be done with planning and care. Special attention should be paid in those cases where racking needs to be done in the middle of a vintage, but is postponed due to inconvenience or lack of time. The racking procedure depends on the kind and style of the wine.

### **Racking White Wine**

A white table wine with a fruity aroma should be racked early. This is very critical if the must is high in nonsoluble solids and the fermentation is conducted with no temperature control. Sometimes a white must fermented at low temperatures (e.g. 45°F) is given a mid-fermentation racking.

White wine should be racked gently and excessive aeration should always be avoided. Uncontrolled aeration of wine (during racking) causes a loss of fruitiness and a darkening of color. To minimize air contact and oxidation, many vintners rack wine under a nitrogen or carbon dioxide blanket.

### **The following steps will assist in reducing aeration of white wine during racking:**

1. Check the pump for leaks, particularly on the suction side. Use of a defective pump for racking will cause excessive aeration.
2. Always use a short hose on the suction side.
3. When transferring wine from a fermentation tank to a receiving tank, connect the suction side to the racking valve and delivery side to the bottom most inlet on the receiving tank. Allow the wine to flow by gravity to the receiving tank until the level of wine in the receiving tank is above the inlet valve. Then gently start the pump and transfer the wine. To prevent lees from being sucked in during the transfer, slow down the pump when the liquid level (wine level) in the fermenter gets close to the lees surface. If you do not have a variable speed pump, you may still be able to control the speed of the pump by partially closing the valve on the suction side of the pump.
4. Use an in-line sparging device to sparge the wine with N<sub>2</sub> or CO<sub>2</sub>,
5. Add SO<sub>2</sub> to the wine as it is being racked. This will prevent oxidation.
6. Chilling wine before racking will help in settling the lees and discourage malolactic fermentation. But, extra care should be taken to avoid aeration because more oxygen dissolves at a lower temperature.
7. Clean, sanitize, and sparge the receiving tank or container with nitrogen.
8. After careful racking, the receiving container must be kept completely full.

### **Racking Red Wine**

In racking red wine, one of the first things to consider is a malolactic fermentation. If the wine has been through MLF, and looks translucent, it is ready for racking. If MLF has not occurred and you intend to encourage it, then leave the wine on the lees, and maintain other conditions favorable to MLF.

A key difference in racking red wine as opposed to white is that in red wine limited aeration during racking is desirable since it helps in aging.

Young red wines are rich in phenolic compounds such as pigments and tannins. These substances impart a coarse, astringent and bitter taste to wine. Aeration (oxidation) helps polymerize phenolic compounds.

Oxygen also participates in numerous complex reactions that cause aging.

Since controlled or limited aeration is essential for aging, it should be done early in the life of a wine, preferably during the first racking. In a traditional approach, the wine is splashed. This also drives off some

off odors.

In a modern approach, oxygen is introduced on the suction side of the pump and the amount dissolved is monitored on the delivery side. It is important to note that each wine has a specific need for the amount of oxygen required and the degree of aeration should be experimentally determined.

Rector (1984) reported a method to determine the extent of aeration as follows. Prior to racking a wine, take a barrel or bottom-valve sample and aerate the wine by splashing it several times until you have achieved complete aeration as verified by an oxygen meter. Then tightly stopper aerated wine in a completely full bottle and monitor the dissolved oxygen level on a daily basis, trying to avoid additional aeration.

If oxygen levels decrease rapidly (in 1-3 days), then the wine typically can withstand more aeration.

Even though red wine can stand some aeration, caution should always be practiced not to over aerate the wine. This means maintaining adequate levels of free  $\text{SO}_2$ , topping wine barrels (twice a week in the beginning, once a week thereafter), and not splashing the wine during subsequent transfers.

#### **Reference**

1. Rector, Bruce. 1984. Q & A's quality approach. Practical Winery, September/October. pp 12.

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