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## Making White Table Wines

Figure 7 is a schematic presentation of the steps involved in making white table wines. As in red wine making, each step is discussed in detail. In making white wines *do not use as fermentors, barrels that have been used for red wine making*, as the red pigments will leach into the white wine. Plastic or stainless steel equipment, that has been thoroughly washed with hot water detergent solutions to remove red pigments after each use, can be used interchangeably for white and red wines.

### Crushing, stemming, and pressing

In contrast to red wine making, crushing, stemming, and pressing are discussed as one operation to emphasize the importance of separating the juice from the skins, seeds, and pulp (pomace) as early and as quickly as possible. This is done so that only minimal amounts of tannins or bitter substances are extracted from the pomace into the juice. Crushing and stemming is accomplished as in red wines. The must is then pressed

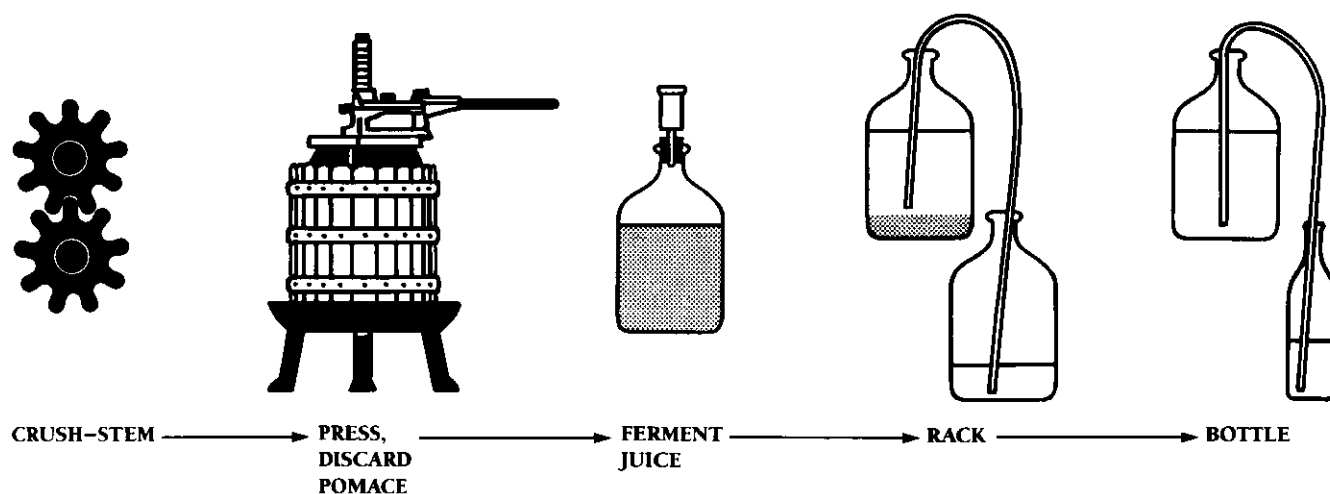
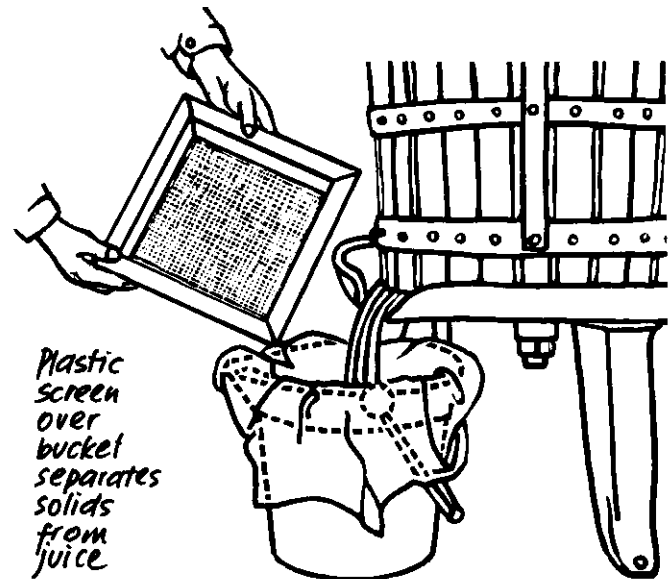
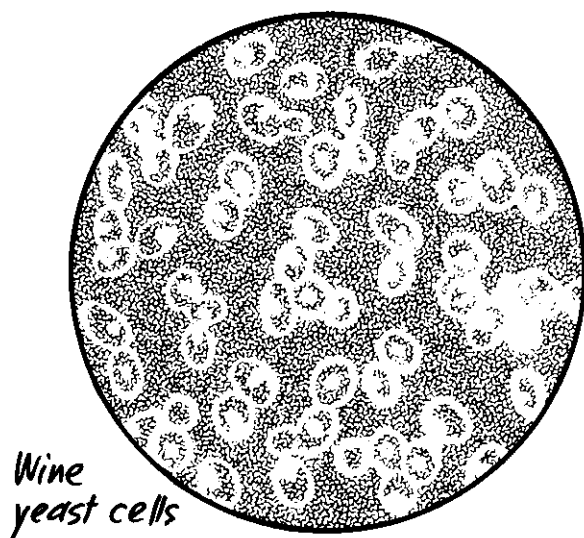


Fig. 7. Essential steps in white wine making



immediately to obtain the juice for fermentation. Pressing juice from freshly crushed white grapes is not as easy as pressing in red wine making, where fermentation has rendered the skins less slippery. If pressing in a basket press, allow all of the free-run juice to drain from the basket without pressure. Apply pressure gradually, using not too much for prolonged periods. With some varieties it may be necessary, as pressure is applied, to place some stems around the slats near the top in the basket to help keep the juice and skins from squirting sideways through the slot openings. Clean rice hulls or any other inert press-aid added to the must, as the basket is filled, may also facilitate pressing.

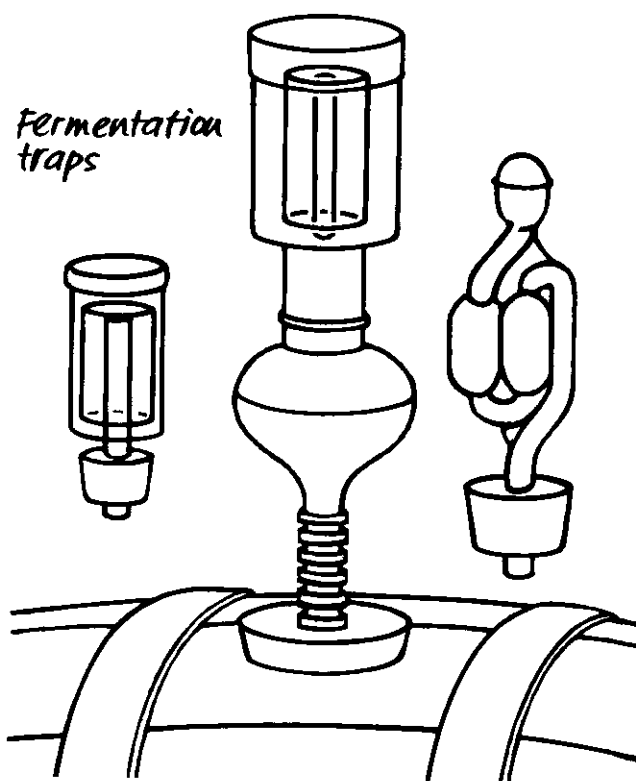
There are two possible exceptions to pressing immediately in white wine making. The first is related to flavor enhancement. Some commercial producers of Chardonnay and Sauvignon blanc believe that the wines of these varieties obtain increased varietal aroma and flavor with some juice and skin contact time. Thus, after crushing and stemming, but before pressing, the juice is allowed to remain in contact with the skins from 2 to 8 hours at 50° to 55°F (10° to 12.8°C). Skin contact should only be practiced if the must can be kept cool, as at higher temperatures than indicated more bitter and possibly other undesirable phenolic components are extracted. In addition, skin contact should not be used with overripe, moldy, or rotten grapes. Excessive skin contact can lead to cloudiness or haze formation in the wine at some later stage. Also, note precautions about adding SO<sub>2</sub>.

A second possible exception to immediate pressing is a supplement to pressing, variously referred to as the "crush/drain tank method" of juice separation or "crush and drain." This method allows for separation of the free-run juice from suspended solids (skins, seeds, and

pulp) by natural means, but it does not replace pressing. With draining, the must in a "crush tank" or "drain tank" is allowed to stand for several hours while the skins float to the surface of the juice and form a cap, similar to the cap formation in red wine making. As soon as possible, usually after about 8 hours, draining of the free-run juice is commenced from near the bottom of the tank. The free-run juice is thus collected and separated from the pomace, after which the pomace is transferred to a press for further juice extraction. This method of juice separation is convenient for very large operations that involve large volumes of juice; it is not recommended for small operations, since the prolonged time required for cap formation greatly increases the risk of browning and oxidation, even when SO<sub>2</sub> has been added. Perhaps it could be considered in conjunction with skin contact when desired, if time and temperature are carefully controlled. A third juice separation method is the use of "Potter" drainers or similarly designed draining tanks. These specially designed tanks are internally fitted with sieve-screens that not only separate skins and seeds, but also substantially reduce suspended solids. The free-run juice, so drained, can be fermented without clarification, and draining can be started about 1 hour after filling the drainer.

Due to the high susceptibility for browning or oxidation in white wine making, it is important to provide reducing conditions for the juice as soon as practicable, as when alcoholic fermentation commences.

As in red wine making, collect the free-run and light-press juice in a plastic or stainless steel bucket covered with a plastic window screen to catch skins and grape particles. The free-run and press-juice can be kept separate or combined. The juice is then transferred to narrow-necked glass fermentors that are then fitted with



a fermentation trap (fig. 4). Clean barrels may also be used and of course must also be fitted with a fermentation trap. The fermentors are filled to about two-thirds capacity.

Because of the physical characteristics of unfermented crushed white grapes, juice separation (pressing) from the pomace is difficult. Thus, juice and wine yields will be less than that obtained in red wines. In home wine making, usually only about 100 gallons per ton can be expected with white grapes, with some varieties yielding less and others slightly more.

Note that white wines, such as the so-called “Blanc de Noir,” “White Zinfandel,” or “White Gamay,” can be made from red grapes if they are pressed immediately after crushing and stemming. Such wines will have a slight orange or pink hue, but if processed as in white wine making, palatable wines can be made, although they cannot be expected to possess much varietal aroma and flavor.

### **Adding sulfur dioxide, settling, adding yeast, and fermentation**

Generally, these steps are the same as in red wine making, but there are important differences. White wine making is inherently more difficult than red wine making because, as mentioned, the juice used in making white wines, as well as the wines themselves, are more

susceptible to oxidation and browning. Browning is a change in the usual light straw yellow or light greenish yellow color appropriate to white wines, to a dark yellow, amber, or brownish color—similar in appearance to some sherries. Browning-oxidation reactions occur in the presence of air and are accelerated under warm to hot temperatures. They are retarded under cool conditions in the absence of air. These undesirable color changes are prevented by promptly adding sulfur dioxide to the must and thoroughly mixing. With grapes that are sound and free of mold or rot, use about  $\frac{1}{3}$  ounce, or  $1\frac{1}{4}$  teaspoon,  $K_2S_2O_5$  (equals about 100 ppm  $SO_2$  for each 10 gallons of juice) or the appropriate amount of 10 percent  $K_2S_2O_5$  solution. If the grapes show signs of mold or rot or have broken skins, double these amounts of  $SO_2$ .

Another important difference from red wines is that in white wine making the best quality is obtained by fermenting clarified juice. Not only is the aroma enhanced by fermenting the clarified juice, but if the grapes had been dusted with sulfur shortly before harvest (used in powdery mildew control), elemental sulfur present in the juice will settle out. Juices fermented when elemental sulfur is present commonly result in wines containing hydrogen sulfide, a most unpleasant and undesirable off-odor. Therefore, keep the juice cool (preferably not above 60°F) and allow to stand overnight, so that suspended material will fall to the bottom. The clear juice is then racked from the lees. Do not take any of the not-so-clear juice near the bottom, even though 10 percent or so of the initial volume may be lost. Large quantities of juice (200 gallons or more) may take 24 hours or longer to settle, but the resulting quality is worth the wait.

Follow the instructions, as in red wine making, for adding pure wine yeast starter cultures. Other instructions regarding measurements of temperature, °Brix, titratable acidity, pH, and free and total  $SO_2$  also apply. Fermentation of white wines should be conducted at a temperature cooler than that employed for red wines, a constant temperature not above 60°F (15.6°C), with 55°F (12.8°C) ideal. At these cooler temperatures, the fermentation will require from 2 to 3 weeks to reach dryness with a decrease in Brix of about 1° to 2° per day. Temperature control is achieved as suggested in red wine making. Again, more heat is generated during the stage of vigorous fermentation activity. Monitor the decrease in °Brix and the temperature at least twice daily or more often as indicated by the evolution of  $CO_2$  gas bubbles in the fermentation trap.

Once fermentation has been completed, leave the fermentation trap in place and allow the spent yeast cells and other suspended matter to settle to the bottom of the fermentor, again keeping the wine between 55° to

60°F. After 1 or 2 weeks, the new wine should be racked from the fermentation lees into another clean container (preferably glass), and the free SO<sub>2</sub> adjusted to about 50 ppm. The container should be filled completely with wine and fitted with a fermentation trap or loosely stoppered to allow any residual CO<sub>2</sub> to escape and to prevent air from entering.

### **Racking, topping, aging, and bottling**

The new wine should be kept at about 60°F (15.6°C) or lower. To facilitate further clarification, the wine should be carefully racked at 3- to 6-week intervals; usually three to five more rackings are needed. Keep the storage container completely filled by topping and tightly stoppered to prevent oxidation. Alternatively, a fermentation trap can be used until rackings have been completed. It is wise to check the free SO<sub>2</sub> level after each racking and to adjust as needed to about 25 to 30 ppm free SO<sub>2</sub>.

As indicated previously, most white wines are not aged in wood or aged for prolonged periods since, with most varieties, the objective is to preserve as much as possible the grape's fresh and fruity aromas and flavors. One notable exception, the variety Chardonnay, many agree, does obtain complexity from brief oak aging. Another possible exception: Sauvignon blanc. This

should be done according to taste preference. Again, if oak flavor is desired, consider using oak chips, granules, or extract. Certain white wines may develop a cloudiness (an opaque or "milky" haze) after treatment with granular oak or oak chips. This is most likely caused by a tannin (from the wood) and protein (present in the wine) combining to form an insoluble complex; the wine should clarify upon standing after several days to a week or so. To remove this material, the wine is carefully racked, or filtered. Such cloudiness more often develops in white wines that have been treated with European oak chips or granules and will expose or identify those wines that contain an excess of unstable protein.

If careful rackings have been practiced, the wine should be clear enough for bottling after about 3 to 6 months and ready for consumption then or after a year or more of bottle aging. Bottling procedures and bottle aging are the same as described for red wines, except that white wines should be bottled with a free SO<sub>2</sub> content of about 35 ppm. Screw-cap bottles may be used, if the caps have plastic inserts or liners; bottles with such closures do not need to be stored on their sides, but should not be stored for prolonged periods. Ideal wine storage temperature is 52° to 60°F (11.1° to 15.6°C).

