

Winemaking in Cool Climates

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Winemaking Principles:

Making wine in cool climates is essentially the same as making wine anywhere else: it requires attention to the fundamentals of sound wine production. That begins with clean, ripe fruit from the vineyard and is followed by the use of clean and sanitary process equipment that handles fruit gently. The resulting juice must be analyzed for sugar, acid and nutrients and corrected where necessary when it is racked to the fermentation vessel. A small amount of SO₂ added to the must is good protection against growth of unwanted yeast and bacteria that may create off odors and flavors in the wine. Yeast inoculum must be prepared with adequate nutrients and acclimated to the must before adding. The fermentation itself has to be monitored and controlled. White wine fermentations should be conducted under relatively cool conditions (i.e. 60 – 65°F) while red fermentations are conducted at warmer temperatures of 80 – 85°F. Allowing white fermentations to get too warm causes a loss of varietal aromas. Allowing any fermentation to get above 90°F can lead to yeast death and a stuck fermentation. Stuck fermentations are particularly problematic as the must can spoil quickly at elevated temperature. Twice – daily monitoring of Brix decline and temperature enables the winemaker to intervene before a problem occurs.

Cool climate musts are typically high in natural grape acids and often require deacidification prior to fermentation. Laboratory trials of deacidification procedures should be done before treating an entire batch of must in the cellar. The double salt deacidification process is the most common approach used and winemakers in cool climates should be familiar with the procedure. Color extraction and stability are often problematic in cool climate red wines. The use of oak and / or oak extracts in red fermentors to aid in color stabilization is common in many parts of the world and is gaining wider acceptance in the eastern US. SO₂ is often added at the end of malolactic fermentation to protect the wine but has the undesirable side effect of bleaching pigments and reducing color. Thus a judicious use of SO₂ is required in order to protect the wine from spoilage without bleaching pigments. Micro oxygenation of wines following fermentation is becoming more common in eastern wineries to aid in pigment polymerization and stabilization. Once pigment polymers form they are more resistant to SO₂ bleaching and result in more deeply colored wines. The production of high quality, deeply colored red wines relies on clean fruit and sanitary winery practices.

Wine Quality Assurance:

Once fermentations are complete, wines should be racked into full tanks, clarified and stabilized. If tanks cannot be filled then headspace must be sparged with an inert gas. Argon is preferred since it is heavier than air and will blanket wine in a partially filled tank. Monthly sampling of wines for volatile acidity (VA) and free SO₂ (FSO₂) will insure that any problems are detected early and can be controlled before the wine spoils.

Pre-bottling Quality Assurance:

Before bottling wines should be checked for heat and cold stability, alcohol content, TA, VA, pH, TSO₂ and FSO₂. Instabilities not corrected before bottling may lead to precipitates or haze in the bottle. Wines bottled with residual sugar should always have potassium sorbate added as a preservative along with adequate FSO₂ for 0.8ppm molecular SO₂ at the pH of the wine. All wines with residual sugar should be filtered through a 0.45 micron membrane into the bottle filler to insure yeast counts are as low as possible in the bottle. One of the biggest problems in small wineries is the re-fermentation of sweet wines in the bottle. This problem can be prevented by following the proper steps in preparing the wine for bottling.

Winemaker groups:

In southwest Michigan where I make wine we have formed an informal group of winemakers who get together monthly during the winter to taste one another's wines. These tastings have proved invaluable in helping solve problems in winemaking and sharing experiences so we can all learn more quickly. The tastings are educational and fun. We all learn something from others experiences and we have become better acquainted so it's easier to pick up the phone and call someone if we have questions, need help or supplies during harvest. I highly recommend forming groups of local winemakers to make everyone's wines better and raise the quality and status of the wines in your area.