

San Diego Amateur Winemaking Society

September 19, 2009

Good Winery Management – why so much spoiled wine?

Presentation by John York

The importance of cleanliness and sanitation within the winery **cannot** be overemphasized – they are of the utmost importance in the production of consistently high quality wines.

The strongest influence that the winemaker has regarding wine quality is through proper sanitation.

Improves:

- Quality
- Consistency
- Product safety
- Aging potential
- Retention of positive flavor attributes

Poor sanitation practices WILL sooner or later, ruin your wine.

Uncontrolled proliferation of microorganisms eventually leads to product deterioration and spoilage.

Not hard to find flawed wine in San Diego – both “amateur” and bonded winemakers are guilty

Two general categories of practice you can use to reduce risk

- Good winery sanitation
- Good wine making habits

Sanitation – reduction of viable cell number to acceptably low numbers – the elimination of hospitable environments for microbial growth

Simple rule that all winemakers **MUST** follow – Clean and sanitize everything before you use it and after you use it.

- Barrels – inside and out
- Tanks – inside and out
- Carboys – inside and out
- Drums – inside and out
- Bins
- Bunges

- Punch downs
- Test equipment
- Wine thief
- Pumps, Hoses, hose clamps, fittings (have the potential to be the most unsanitary item in the winery)
- Bottling equipment (must purge the siphon tubes)
- Crusher/destemmer (pull it apart!! Get back into the corners. UNPLUG IT FIRST!!)
- Press (scrub every part of it)
- Floors (dirtiest place in the winery - sweep them, mop them, remove clutter, keep them clean)
- **Everything that touches your wine**

Clean - if it's not clean it CANNOT be sanitized

All sanitation regimes must start by basic cleaning – get the dirt off!

- Spray everything with pressurized water
- Use hot water and detergents after all the big stuff is removed
 - Detergents are required to remove surface adherents
 - There are many detergent products – fitting into several categories
 - Dishwashing liquid works fine, but don't use household products with scents, chlorine, or other "odd" additives
 - Alkalis (lye, sodium carbonate, potash) are excellent for big operations, and can be obtained from commercial suppliers
 - Tri Sodium Phosphate (TSP) – a workhorse for many wineries. It's a powerful cleaner.
 - OxiClean or ProxyClean are good cleaners and initial sanitizers
 - Sodium carbonate peroxihydrate (granular form of hydrogen peroxide combined with sodium carbonate)
 - Water temperature is important – Hot water (180 degrees) is a good sterilant on its own, and helps to activate cleaning materials.
 - If you use steam or sterilize lines with hot water, there are specific application times that are recommended for effectiveness (typically 20 minutes)
 - Don't use chlorine base products (like bleach)
 - Recent studies have shown evidence that chlorine promotes cork taint (TCA)
 - Chlorine used on porous surfaces (barrels) will affect taste of wine
 - More is not better! Use the portions recommended by the manufacturer of the product. Some cleaning agents can be caustic or cause other unwanted side effects if used to excess.
- Use a brush – scrub your stuff!!
 - Get a couple different sizes and shapes that are suitable for different jobs
- Take your equipment apart and get in all the nooks and crannies
- Purge your pumps

- Run hot water with detergent through them with hoses attached
- Remove hoses and use a brush around fittings
- Always drain hoses and don't let water accumulate in them when drying
- Be sure they are well rinsed before pumping wine through them.
- Keep your barrels hydrated throughout the year – every 3 months or so.
 - Clean with ProxyClean or Oxyclean before you plan to put wine in them
 - Rinse thoroughly – 3 times, to ensure you get all of the cleaner out.
 - Rinse – rinse, rinse, rinse. Get all the detergent off of and out of your equipment.
 - Citric acid rinse is often used to neutralize the base nature of detergents – which also needs to be rinsed after application
 - Always use a sulfur wick after hydration and keep a bung tightly in bung hole

Bottom Line – ANY particulate matter, even stuff you can't see, is a breeding place for microbes

- Sanitizing is less effective if there is a hospitable environment for microbial growth

Sanitize

Sanitizing is not disinfecting! Disinfecting is the 100 percent elimination of all living organisms. That is usually reserved for bottling microbially unstable wines – to produce a sterile finished product (not where you want to go!)

- Sanitize after you clean.
- Several products available that work well in the winery:
 - Star-San – is a phosphoric acid based, foaming sanitizer. Works within 30 seconds of contact. The foam helps to prolong surface contact time and get into difficult nooks and crannies. It only takes 1 ounce for 5 gallons of water. It is no rinse, and has a long residual protection capability. It does not contribute any off flavors.
 - QUATS (Quaternary Ammonium Compounds) - a standard food industry sanitizer. Can be purchased on line or at restaurant supply stores.
 - Iodine based sanitizers – effective against bacterial endospores and fungal spores. Will stain plastics and human skin. Typical dilution is 1 ounce per 5 gallons of water.
 - SO₂ (potassium metabisulphite) – very common sanitizer in wineries. Does not require rinsing. Standard mixture is 4 ounces to 1 gallon of water. More than this is not cost effective. SO₂ is a good sanitizer for keep in a spray bottle around the winery for intermittent applications , like on your wine thief, bungs and around bung holes when topping or sampling, test instruments, etc.

Winery Practices

A few simple rules will help keep your wine out of trouble:

- After crushing, pressing or any winery operation, quickly hose down equipment and containers to get large material off. It comes off easily when it's still moist, but very difficult when dry.
- Get rid of your pomace immediately after pressing. Pomace quickly acetifies and draws fruit flies. They in turn will pick up acetic bacteria and bring it into your winery. Put it out and spread it around in your vineyard.
- Keep the temperature of your must down below 90 degrees. Don't ignore your cap management – punch down. Heat is retained in the cap. High temperatures and oxygen promote the proliferation of volatile acids.
- After fermentation add SO₂ to your pressed wine. There is no SO₂ left in your wine at this point. Add enough to bring the free sulfite level up to at least 30ppm. No SO₂ in your wine will result in all kinds of problems.
- Keep your wine topped (or variable tank seals tight). This simple practice is most often ignored. Oxidized wine is not good, and the increased oxygen levels promote the growth of several, bad microbes in your wine, including Acetaldehyde, Ethyl Acetate, VA, and Candida Acetaldehyde (surface yeast).
- Minimize exposure of your wine to oxygen at all times. Treat it gently when racking, using a diaphragm pump if possible.
- Don't introduce problems at bottling. Minimize exposure to oxygen during the bottling process. Make sure all of your bottling equipment is clean and sanitized – including the filler tubes. Wine bottles MUST be sterilized –use pre-sterilized (new) bottles if possible. If you reuse bottles, thoroughly clean them with HOT water and detergent, rinse with citric acid to neutralize the detergent, rinse with clear water, and rinse again with an SO₂ solution. Drain. Store upside down to keep out dust, etc. Wash your hands before bottling. Don't handle corks with unwashed hands. Keep your corks bags, and pour out what you need into a separate container for use in corking.
- Store newly bottled wine upright for 24 hours, then lay them down. Store them in a dark cool place.

More on this subject:

Texas Cooperative Extension, Texas A&M University –
<http://winegrapes.tamu.edu/winemaking/sanitation.html>

Washington State University, Practical Sanitation in the Small Winery –
<http://learningcenters.wsu.edu/skagit/images/PracticalSanitation.pdf>