



# Wine BMP: Pre-Bottling Techniques for Improved Quality and Stability

Florida Agricultural and Mechanical University  
College of Agriculture and Food Science  
Center for Viticulture and Small Fruit Research  
Vineyard and Wine Management Virtual Workshop  
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# Pre-Bottling Techniques for Improved Quality and Stability

Racking

Analysis

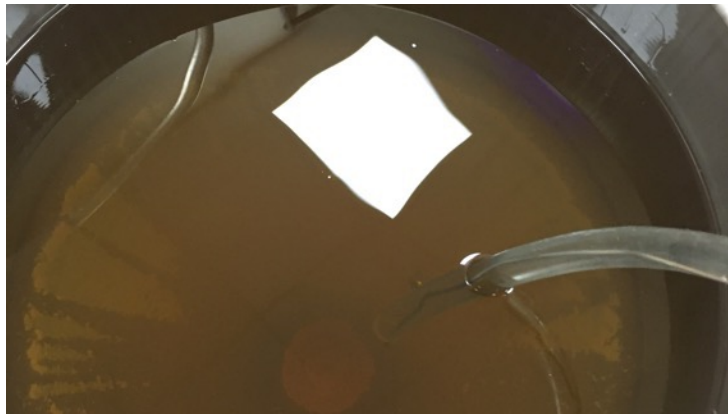
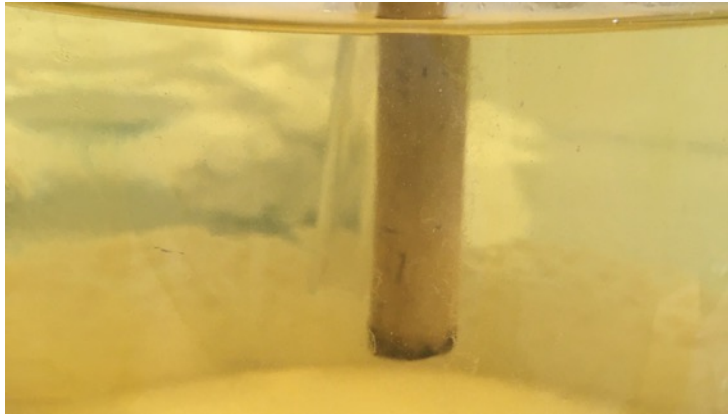
Blending

Wine Additives

Fining Agents

Filtration

# Static Racking



Transfer of wine above its solid sediments (lees)

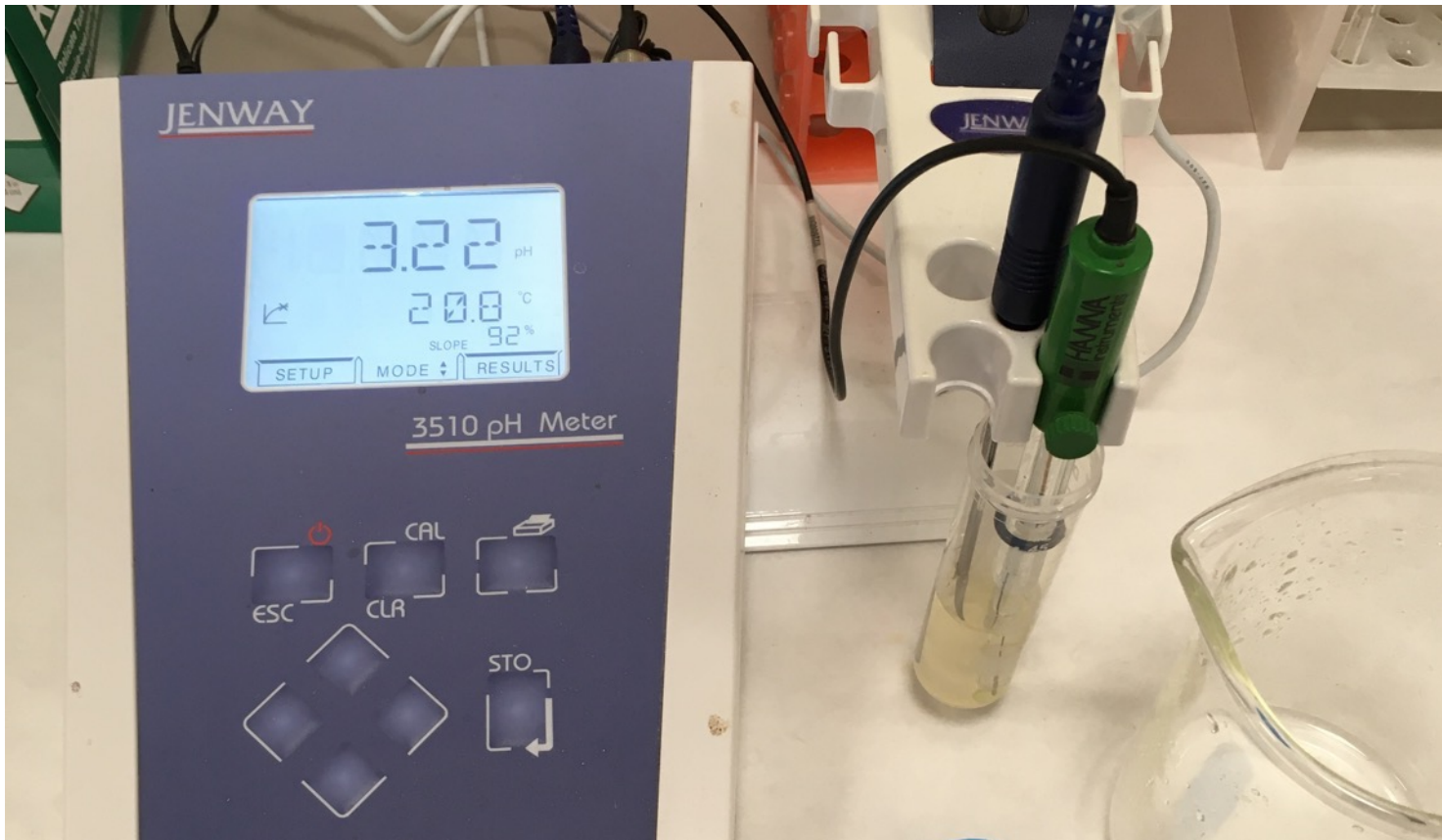
also known as decanting

Can use a syphon or pump

Lees can be composed of many different things including yeast, bacteria, proteins, tartrates.

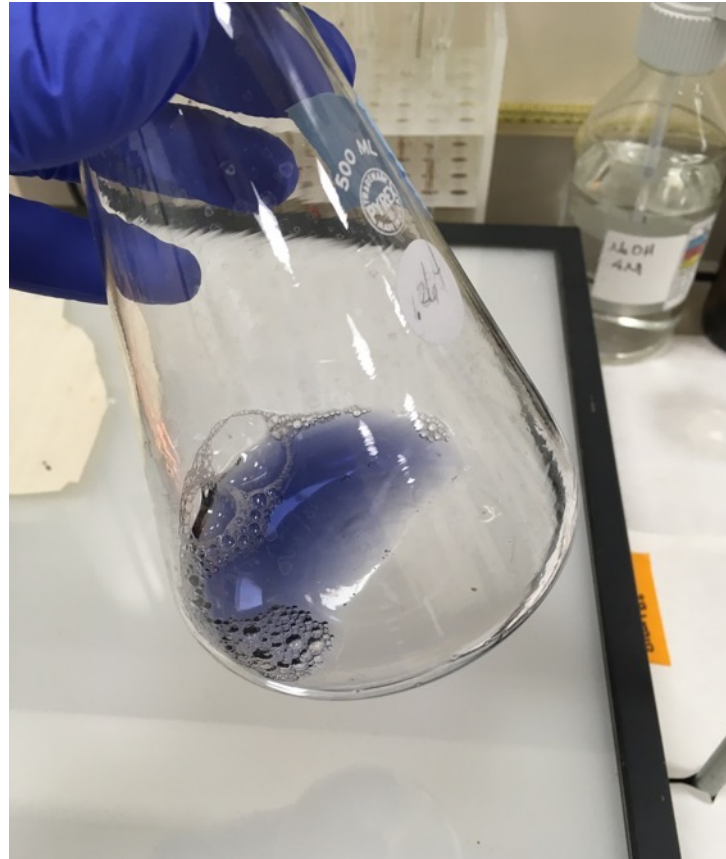
Racking can be done before, and several times post fermentation

# Analysis: pH & Acidity



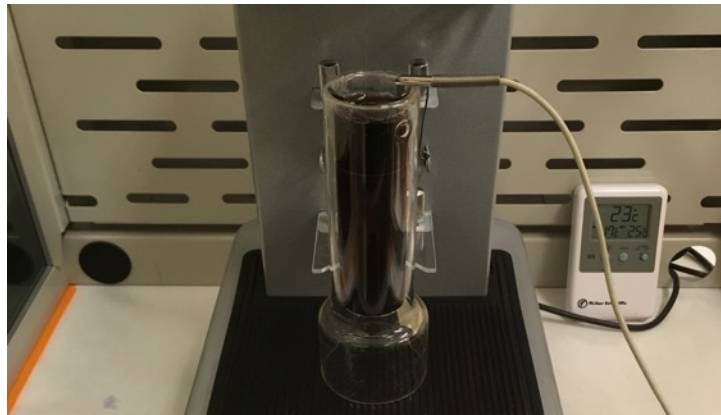
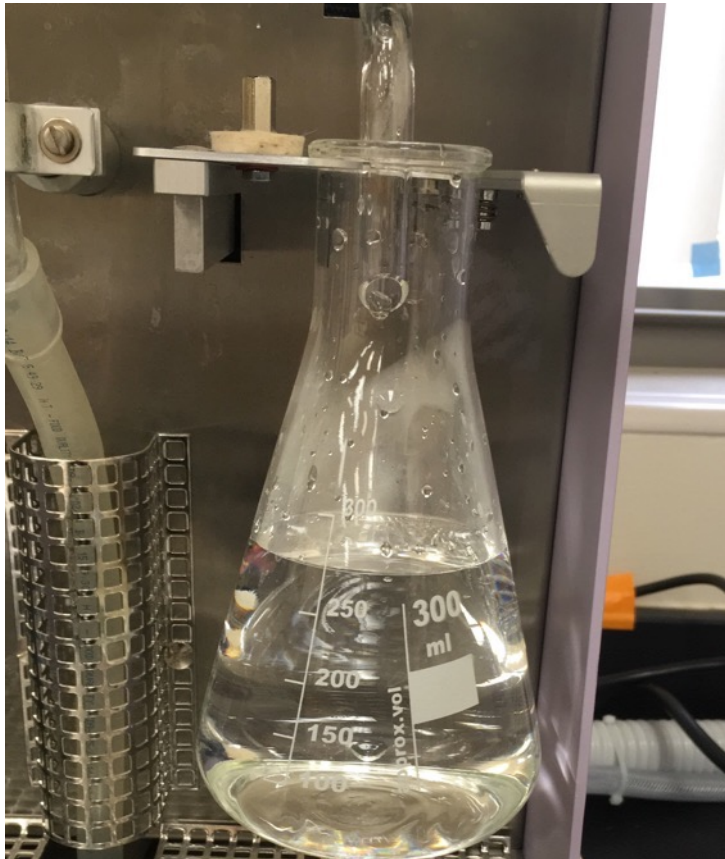
- Most important parameter for winemaking
- Typical wine pH: 2.8-3.5
- Depends on style; balance
- Affects flavor, aroma, color, acidity, microbial stability, sulfur dioxide effectiveness.
- pH meter

# Analysis: Sulfur Dioxide



- Antimicrobial and Antioxidant additive
- Free & Total Sulfur
- Different forms based on pH
- Ripper Titration
- Health concern; Risk for people with Asthma
- Yeast actually produce a small amount during fermentation

# Analysis: Specific Gravity & Alcohol Content



- Alcohol content important for style
- Distillation
- Hydrometer
- $(FG - OG) \times 131.25 = ABV \%$
- Gravimetric scale

# Blending



- Purpose: overcoming defects, enhancing complexity, or adjusting characteristics
- Can occur at any time in winemaking process; field blending, or after fermentation
- Varietals require at least 75% of labeled variety
- Some blends may cause stabilization issues

# Popular Wine Additives



## Sorbic Acid

Antimicrobial used to kill yeast. Stops fermentation and prevents refermentation. Sweet wine production.

## Lysozym

Enzyme which is antibacterial. Degrades peptidoglycan cell wall.

## Tannins

Phenolic compounds which can enhance aging and color stability.





# Fining Agents

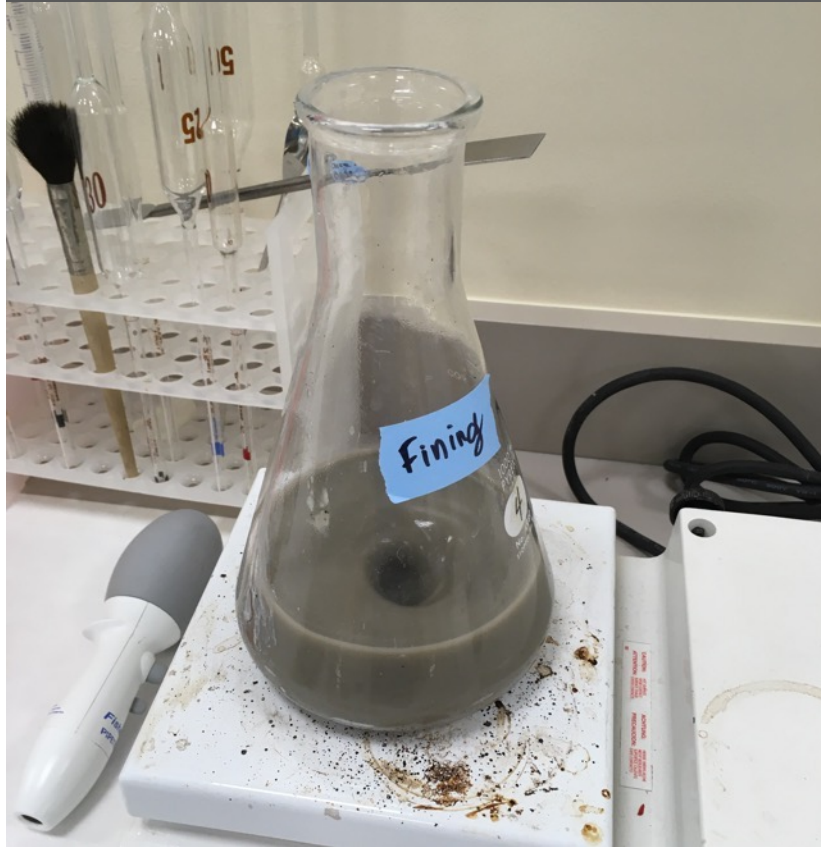
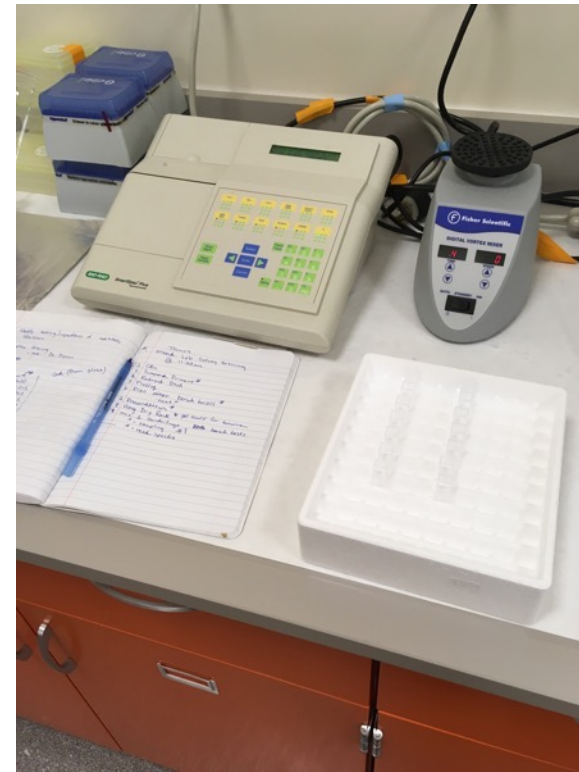


TABLE 1. The most important fining agents used during winemaking.

Fining agent	Product form	Purpose	Preparation (Dosage)
<i>Active carbon</i>	Powder or granules	Removal of undesirable colour and flavour	None. (0.1 - 0.4 g/l)
<i>Bentonite</i>	Powder or granules	Removal of protein. Often in combination with gelatine.	Allow to swell overnight. Mix with lukewarm water before adding. (0.1 - 1.0 g/l)
<i>Egg white</i>	Eggs or albumin powder	Fining of red wine. Reduces tartness in red wines.	Separate yolk and white of egg. Dissolve in 0.5% table salt solution or Dissolve albumin powder in 0.5% table salt solution. (3 eggs/200 litres or 0.1 - 0.5 g/l albumin)
<i>Gelatine</i>	Powder	Reduction of tartness in red wines. Often in combination with bentonite and silicasol.	Leave to swell overnight in cold water. Dissolve the next day by heating water. (0.05 - 0.15 g/l)
<i>Casein</i>	Milk or powder	Reduces bitter taste in wine.	Dissolve in alkaline warm water that contains one third of the casein weight's potassium carbonate. (0.05 - 0.3 g/l)
PVPP <i>Polyclar AT</i>	Powder	Prevents browning and pinking in white wines.	Dissolve in a small amount of wine. (0.2 - 0.5 g/l)
<i>Silicasol Kieselsof Baykisol</i>	Aqueous solution	Accelerates fining lees. Often used after gelatine fining.	None. (0.06 - 0.2 g/l)
<i>Isinglass</i>	Ground or unground isinglass strips	Reduces tartness and bitterness.	According to product prescriptions. (0.02 - 0.1 g/l)

# Benchtop Testing



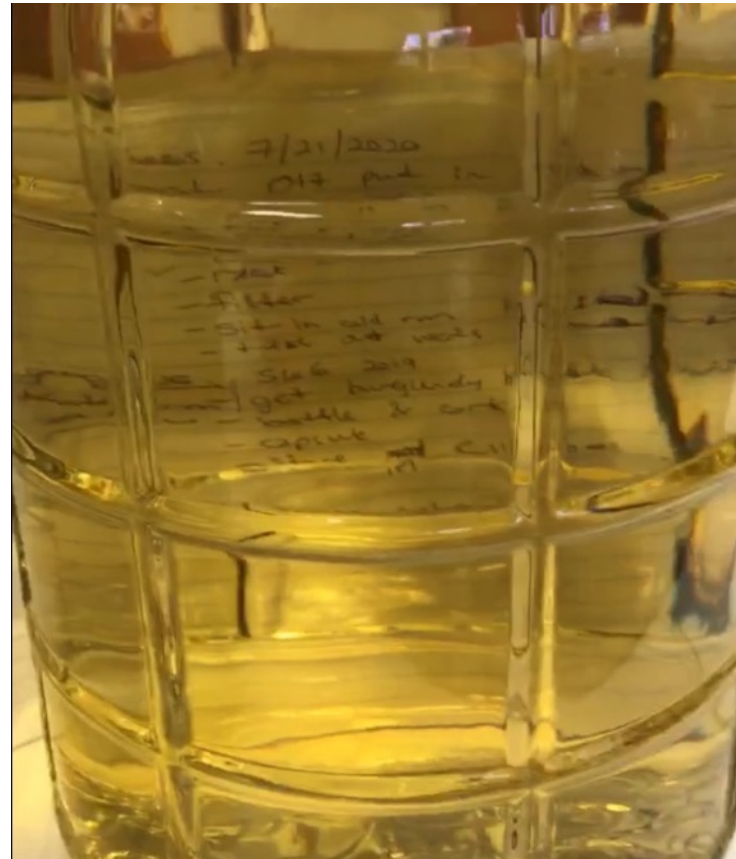
- Testing dosage on small scale
- Sensory and spectrophotometric analysis
- Choose the best dosage and continue forward
- Let settle for 3-5 days, then rack

# Cold Stabilization

- Potassium Tartrate may form from cold storage/shipping
- Wineries try to prevent using cold stabilization



# Filtration




- Different pore sizes
- Removes any remaining solid compounds
- May remove yeast and bacterial cells
- Will cause some aeration so its better to let sit for a couple of days before bottling

# Bottling



- Must ensure the wine is stable; no bubbles or haze.
- Different options for packaging:
- Bottles: glass or plastic
- Closures: traditional, compound, synthetic, screwcaps.
- Affects how much oxygen goes into the bottle.



Thank You!  
Any Questions?