

Yeast: Natural Tools for the Modern Winemaker



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Tools for Winemakers

- **Yeast** and Bacteria
- Enzymes
- Nutrients
- Tannins
- Fining
- Filtration
- Stabilization



A winemaker needs to be:

- Part Artist



- Part Craftsman



- Part Scientist

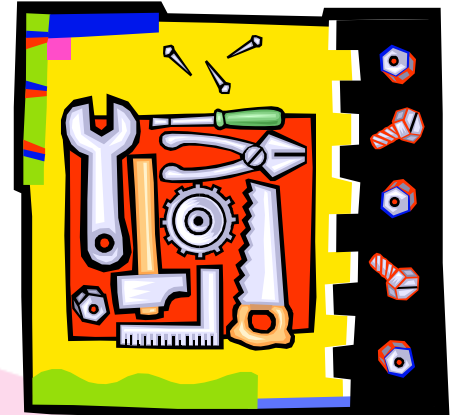


- Lucky

A winemaker's customer wants a wine that:

- Taste and smells good
- Looks nice (good color and clarity)
- Is a good value
- Tastes like what it supposed to be

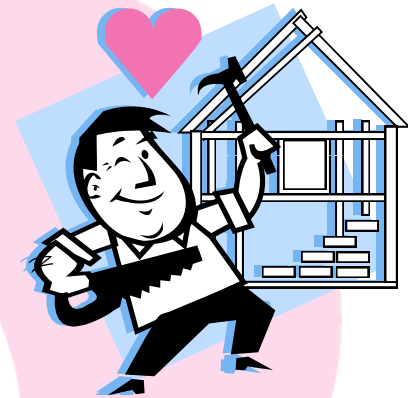
Use what techniques work best for local grapes and wine



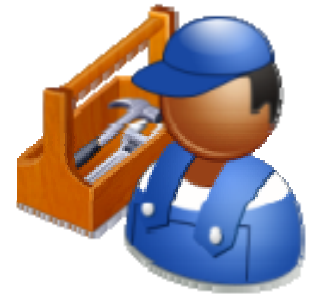
- Tendency to use “famous” winemaker’s techniques
- Do trials correctly with a control
- Call on technical resources (manufacturer, universities etc.)
- Use the full tool set available

Would you build a house with just a hammer, saw and a screwdriver?

- Have a vision of what the wine should be
- Understand the nature of your grapes
- Choose your tools accordingly to get as close to the target as possible and minimize risks
- Use you whole tool set



Yeast as Tools:



- Turns sugars into alcohol
- Can add flavor and aroma (good and bad)
- Sanitize by removing nutrients used by other micro-organisms
- Need to be viable enough to finish fermentation
- Can help emphasize or add characteristics

What you need to know about yeast choice



- Indigenous vs. Selected strain
- Nutrition and physical conditions of must
 - pH, nitrogen, color, sanitation, temperature
- What kind of wine is your grapes really capable of producing
 - Varietal characteristics
 - Climatic/Terroir variation

“Indigenous” vs. Selected strain

Understanding the choice:



- Traditional or “old school” says that wild or indigenous yeast adds complexity
- Most yeast strains have various defects and problems
- Wild fermentations usually are a succession of yeast with the strongest finishing
- Indigenous strains rarely gain sufficient cell numbers
- Typically, the strains reflect what has been used prior
- Native bacteria compete for same nutrients
- Adds risk and unpredictability

“Indigenous” vs. Selected strain

Understanding the choice:



- Selected strains are collected from nature and rigorously tested for:
 - Strength under real world conditions
 - Production of undesirable products: H_2S , VA, Biogenic Amines
 - Nutritional and temperature requirements
 - Capability of surviving drying process and re-animation
- New genetic testing allows for a much higher degree of understanding critical characteristics
 - Genes for H_2S , Thiol conversion, Terpene release, Ester production, polysaccharide production etc.

New technology for yeast development:



- Genetically modifications (GMO) are possible but not currently acceptable by market
- Directed breeding allows faster and more confident selection of viable strains

Making good choices for yeast:



- Yeast used as a tool are like choosing which pastel colors you want to use-
Subtle changes
- Yeast can add:
 - Aromas
 - Flavors
 - Textures / Mouthfeel
 - Stability with lees aging



What do you want from your yeast strain?



- Understand what your grapes have to offer
 - White
 - Aroma precursors- Sauvignon blanc, Gewürztraminer
 - Low varietal character- Chardonnay
 - Red
 - Specific varietal characteristics
 - Thinness
 - Bitter or astringent
- Take time to read what characteristics yeast strains can supply

What can your yeast strain do for you?



- Yeast can add aroma characteristics:
 - Thiol conversion (grapefruit, tropical, grassy)
 - For varieties containing thiol precursors
 - Sauvignon blanc, Gewürztraminer, Traminer
 - Zymaflore VL-3 and X-5 have conversion genes
 - Terpene release (floral)
 - For varieties containing Terpenes
 - Riesling, Gewürztraminer, Traminer
 - Zymaflore VL-1 and Zymaflore X-5
 - Improved Mouthfeel- Polysaccharides etc.
 - Reds - Zymaflore RX 60, F-15
 - Whites Zymaflore VL- 3, X-5

What can your yeast strain do for you?



- Ester Formation (fruity or floral)
 - Cool fermentation temps (\downarrow 60° F)
 - Zymaflore VL-1, VL-2 and X-5
 - Low varietal or climactic characteristics
 - Chardonnay, Seyval, Vignole, Chardonel, Vidal
 - Zymaflore X-16, VL -1
 - Mask Vegetal Characteristics (bell pepper, tomato leaf)
 - Reds
 - Zymaflore FX 10
- Emphasize neutrality of variety
 - PDM, Actiflore B0213, Davis 522
- Survive difficult conditions and Restarts
 - High alcohol potential, low pH, low temp, or historically difficult fermentations
 - Actiflore B0213, PDM, Uvaferm 43

What yeast strains are not likely to do:



- Lower Alcohol levels
 - Little or no difference in strains
- Only GMO yeast can convert malic acid
- Know what kind of grape they are fermenting
- Ferment well at really cold temperatures
- Make a good wine from poor grapes
- Make an Indiana Cabernet taste like a Bordeaux Cabernet

What can you do for your yeast strain?



1. Understand nutritional status
 - Know nitrogen status- lowers H₂S risk
 - If nitrogen is low, thiamine is also low
 - Add both (Thiozote) after the first third of fermentation
2. Supply yeast with re-hydration nutrient
 - Dynastart is the most important thing you can do – improves survival and aroma production
3. Follow manufacturers instructions for re-hydration
4. Understand sanitary conditions
 - SO₂ addition
5. Ferment at a moderate temperature

What can you do for your wine?



1. Consider ML co-inoculation
 - In cold climate- use the heat of fermentation
 - Choose compatible yeast strain and ML strains
 - Don't do if you have high risk fermentation
2. With known color problem grapes
 - Oak does not help with color
 - Choose a strain that is less color absorbent
 - Zymaflore RB2
3. To improve aroma retention in whites:
 - Protect from oxidation
 - BioArom addition (glutathione)

Thanks for your attention



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