



### FERMENTATION EVALUATION GUIDE

PRE-FERMENTATION FACTORS	CONSIDERATIONS/ACTION
Juice or must composition	
Nutrients	Evaluate according to fermentation regime
Nitrogen	NH <sub>4</sub> , assimilable amino nitrogen, possibly amino acid profile. Yeast need 140-500mg/L
Vitamins, minerals	Needed by yeast; vitamins can be depleted by processing or by indigenous yeast and bacteria
pH	Low pH affects nutrient uptake
Brix	Select suitable strain, higher brix requires additional nitrogen, sugar inhibition can be a factor in high brix must
Solids	Excessively clarified juices difficult to ferment
SO <sub>2</sub> protocol	May be needed to control indigenous bacteria. Also for control of PPO
Residues/toxins	Inhibit yeast activity
Mold presence	Nutrient depletion, yeast-toxic metabolites
<b>YEAST FACTORS</b>	
Yeast selection	Appropriate for variety, brix, nutrients, temperature, final alcohol, winemaking protocol, desired style.
Strain choice	
Indigenous fermentation	Evaluate microbial populations, control lactic acid bacteria, time nutrient additions for Saccharomyces
Inoculation	
Yeast handling	Per instructions: chlorine free water, proper temperature, timing
Timing	Per winemaking protocol. Are nutrients available if inoculation is delayed?
Temperature	Ideal: 59°F or above; cold shock with petite mutants formed if must is more than 18°F or 7°C colder than starter
Winery grown yeast	Adequate O <sub>2</sub> and nutrients needed for sterol production. Tank to tank inoculations deplete nutrients and survival factors, transfer toxins and other microbes.
<b>FERMENTATION FACTORS</b>	
Temperature control	Extreme shifts disruptive to metabolism. Heat kills: monitor cap as well as juice. Cold: may induce stress
Alcohol	Affects cell transport, tolerance dependent on growth conditions, pH, temperature.
O <sub>2</sub> availability	O <sub>2</sub> at 48 hrs strengthens yeast fermentation ability, survival factors.
Lactic acid bacteria	MLB will slow yeast ferm. Hold inoculations until primary is complete; monitor/control indigenous bacteria (Lysozyme, SO <sub>2</sub> )
<b>EVALUATING SLUGGISH OR STUCK FERMENTATIONS</b>	
Fermentation history	Monitor fermentation to identify pattern of slowdown, sticking
Yeast condition	If viable may encourage with temp. adjustment, yeast hulls, racking
Alcohol	If excessive, reduce to encourage fermentation
MLB presence	May need to control with SO <sub>2</sub> , Lysozyme, filtration if excessive
VA	Monitor. Filter out bacteria if high; VA reduction if needed
Auto-toxic yeast metabolites	Impractical to measure; add yeast hulls
Glucose/fructose ratio	May need to balance to aid uptake
<b>MANAGING THE RESTART</b>	
Plan in conjunction with overall winemaking procedures	When needed, press, rack, SO <sub>2</sub> adjust, filter if spoilage organisms high, treat for VA or alcohol reduction prior to reinoculation
Follow VQ instruction sheet	Process sets up continuous fermentation conditions, more successful than reinoculations for finishing stuck fermentations.
Temperature	Adjust to 68°-72°F to encourage activity, minimize alcohol toxicity

Provided for planning and review purposes only. Not to be considered as recommendations for specific wine treatments.