NCWGA Pre-Harvest Workshop 2022

SCOTT LABORATORIES

- Non-Saccharomyces yeast
- Prevention of oxidation in juice
  - Tools for lowered use of SO2/minimal input winemaking
- Using bentonite during fermentation
- Nutrients and yeast selection- tips, tools, timing

SCOTT LABORATORIES

Non-Saccharomyces Yeast

- Antimicrobial
- Antioxidation
- Acidification
- Aroma and Mouthfeel Enhancement
- Tips for Success
  - Rehydrate at lower temp
  - YAN, temperature, free SO_2
  - Inoculate with a compatible Saccharomyces as recommended

SCOTT LABORATORIES

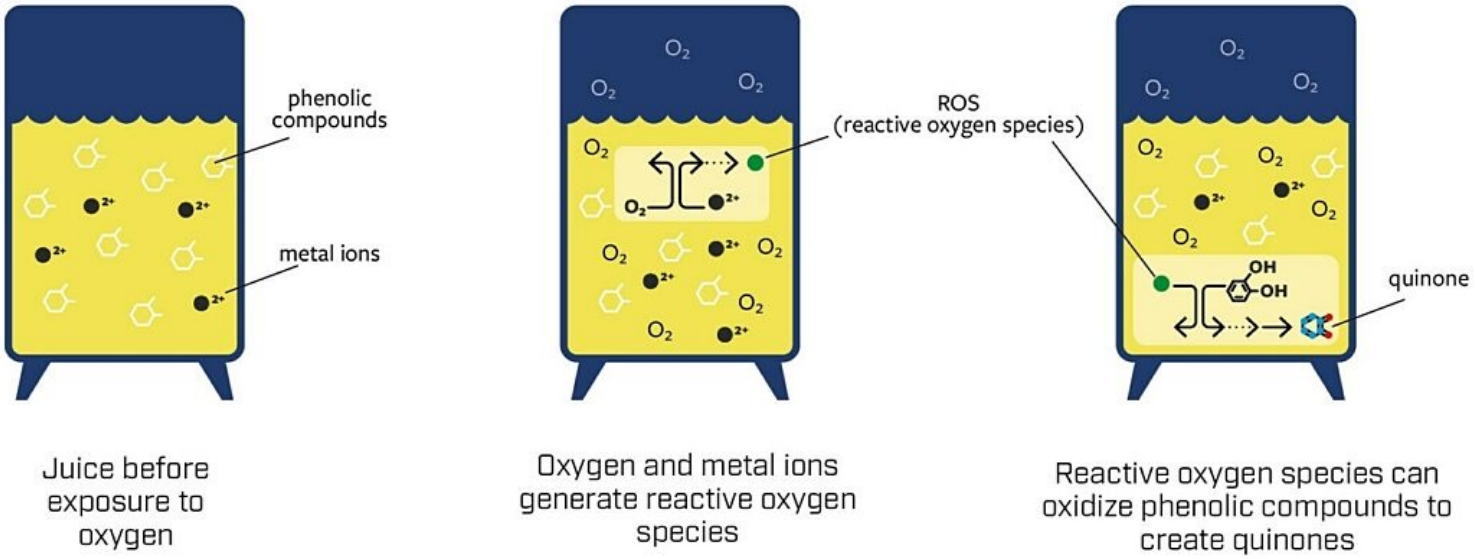
SELECTING NON-*SACCHAROMYCES* YEAST FOR SUCCESS

Non-*Saccharomyces*	**BIODIVA™**	**FLAVIA™**	**GAIA™**	**INITIA™**	**LAKTIA™**
Organism	*Torulaspora delbrueckii*	*Metschnikowia pulcherrima*	*Metschnikowia fructicola*	*Metschnikowia pulcherrima*	*Lachancea thermotolerans*
Main activity	Produces polysaccharides and aroma compounds (esters). Consumes some sugar to alleviate osmotic (high sugar) stress on *Saccharomyces*	Enzyme production to cleave aroma precursors to reveals terpenes and thiols	Bioprotectant against VA producing native microflora	Utilizes oxygen as a growth factor, acts as a bioprotectant inhibiting VA producing native microflora	Converts glucose to lactic acid
Winemaking application	To enhance the mouthfeel, fruit esters and complexity of white, rosé and red wines. Suitable for late harvest, ice-wine and high sugar where VA can be a challenge	Optimize the tropical, citrus and floral notes of certain white and rosé wines	Can be added to white or rosé juices for protection during transportation. Can be added to red grapes to protect during transportation or cold soak	Scavenges oxygen thereby protecting white and rosé juice from oxidative damage and microbial spoliage	Acidification of low acid musts adding freshness and complexity
When to add Non-*Saccharomyces*	Directly to the fermentation vessel	Directly to the fermentation vessel	Directly to grapes (to protect during transport or cold soak) or juice (protect during juice transport)	To freshly pressed juice to protect during cold settling	Directly to the fermentation vessel
When to add *Saccharomyces*	After 1.5–3°Brix drop	24 hours after Flavia	Upon juice receipt, or end of cold soak	Once juice racked to fermentation vessel	24–72 hours after Laktia

SCOTT LABORATORIES

Oxidation- Quinone Formation

Figure 1. *Chemical Mechanism of Quinone Formation*



SCOTT LABORATORIES

Preventing Oxidation

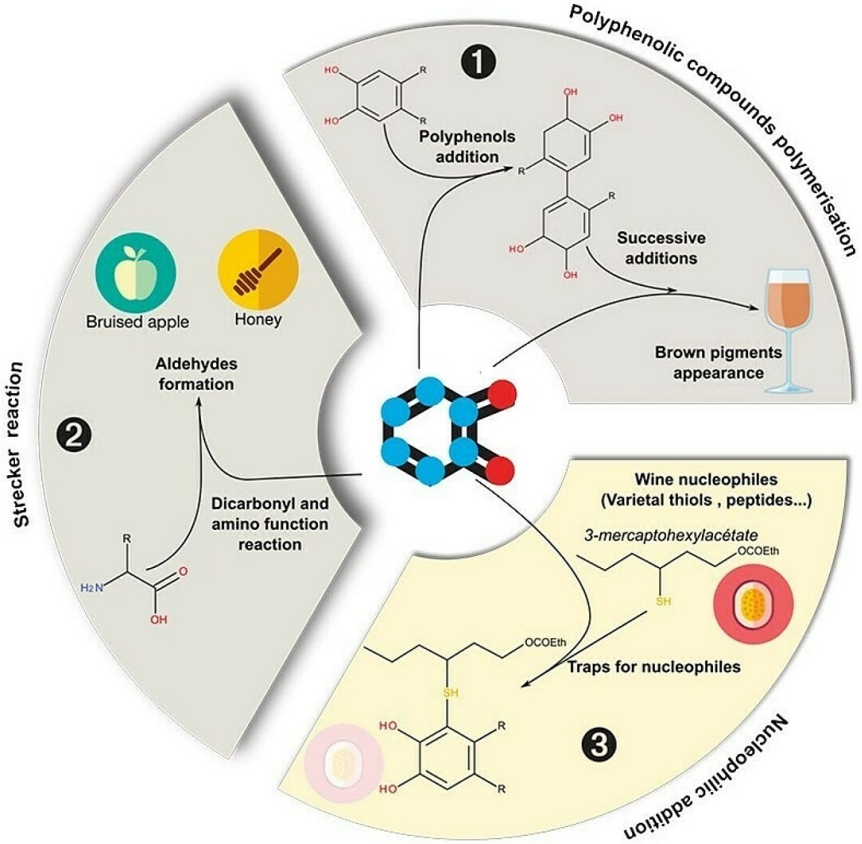


Figure 2: *Quinone Reactions in Wine*

SCOTT LABORATORIES

Preventing Oxidation

- Limit Quinone Formation or Quinone Reactions
- SO_2 is most commonly used
  - Negative sensory impact
  - Negative impact on ML
  - “low chemical input” wines
- Many points to disrupt the oxidative cascade

SCOTT LABORATORIES

Preventing Oxidation

- Yeast Derived Nutrients
  - React with quinones to limit reactions
- Non-Saccharomyces Yeast
  - Consume Oxygen rapidly
  - Lower copper levels
- Tannin
  - Scavenge metal ions and quinones
  - Inhibit laccase

SCOTT LABORATORIES

Removing Oxidized Characters in Juice

- Chitosan offers an alternative to casein
  - Animal-free, non-allergenic
  - Brighter color and increased aromatics
  - Remove off odors and compounds from mold or from green fruit

SCOTT LABORATORIES

Fermentation on Bentonite

- May eliminate or reduce the need for protein stabilization before bottling
- Preservation of aromatics
- Minimizes racking steps/saves time
- Limit wine loss
- Must use an ultrapure form of bentonite
  - Leaching of copper and iron
- Tank fermented white and rosés

SCOTT LABORATORIES

Fermentation on Bentonite

- May eliminate some post-fermentation processes
- May stimulate fermentation by increasing surface area for the yeast
- FERMOBENT PORE-TEC compacts well and leads to lower lees volumes than post-fermentation bentonite treatments

SCOTT LABORATORIES

Fermentation on Bentonite

Juice with moderate protein content	500-1500 ppm	50-150 g/hL	4.2-12.5 lb/1000 gal
Juice with high protein content and pH values	2000-3000 ppm	200-300 g/hL	16.7-25lb/1000 gal

SCOTT LABORATORIES

Nutrients- Determining YAN Additions

Table 1: *Measurable yeast assimilable nitrogen (YAN) needs of yeast at different starting sugars*

	YAN Required for Fermentation (ppm N)		
°Brix	Low N need	Medium N need	High N need
20	150	180	250
22	165	200	275
24	180	220	300
26	195	240	325
28	210	260	350
30	225	280	375

- Measure **SUGAR** (Brix) and **YAN** of the juice/must.
- Choose a yeast strain.
- Determine the chosen yeast strain's **NITROGEN NEED** — low, medium, or high. This information is listed in the product description.
- Determine **YAN REQUIRED** for fermentation ppm by consulting table.
  - *For example: If the juice is 24 °Brix and ALCHEMY I (a medium N need strain) is selected, the fermentation will need 220 ppm YAN*.
- If the **YAN REQUIRED** is higher than the **JUICE YAN**, then **ADDITIONAL YAN** is required. To calculate: **ADDITIONAL YAN** = **YAN REQUIRED** - **JUICE YAN.**

SCOTT LABORATORIES

Making A Nutrient Plan

Stage of Winemaking	Fermentation Goal*	ADDITIONAL YAN REQUIRED		
		0-50 ppm	51-100 ppm	101-150 ppm
At Rehydration	All Fermentation Goals	GO FERM PROTECT EVOLUTION – 30 g/hL		
At 2-3 °Brix Drop	Fermentation Security	N/A	FERMAID O – 20 g/hL	FERMAID O – 40 g/hL
	Increase Varietal Aromas	STIMULA SAUVIGNON BLANC or STIMULA SYRAH - 40 g/hL		
	Increase Fruity Esters	N/A	FERMAID O – 20 g/hL	FERMAID O – 40 g/hL
At 1/3 °Brix Drop	Fermentation Security	FERMAID O – 30 g/hL	FERMAID O – 40 g/hL	FERMAID K – 40 g/hL
	Increase Varietal Aromas	FERMAID O – 10 g/hL	FERMAID O – 20 g/hL	FERMAID O – 40 g/hL
	Increase Fruity Esters	STIMULA CHARDONNAY or STIMULA CABERNET - 40 g/hL		

NUTRITION PLAN

	Dosage		Nutrient
At Rehydration	30	g/hL	GO FERM PROTECT EVOLUTION
At 2-3 °Brix Drop		g/hL	
At 1/3 °Brix Drop		g/hL	

SCOTT LABORATORIES

Yeast Selection

SCOTT LABORATORIES

Tools available at ScottLab.com

- Fermentation - Scott Labs
- Best-Practices-For-Rot-Whites-Rosé.pdf (sfo3.cdn.digitaloceanspaces.com)
- RotProtocol_Reds_072920.pdf (sfo3.cdn.digitaloceanspaces.com)
- Troubleshooting Stuck or Sluggish Alcoholic Fermentations - Scott Labs

SCOTT LABORATORIES

Questions?

MEGANH@SCOTTLAB.COM

1-540-239-9211

THANK YOU!

SCOTT LABORATORIES