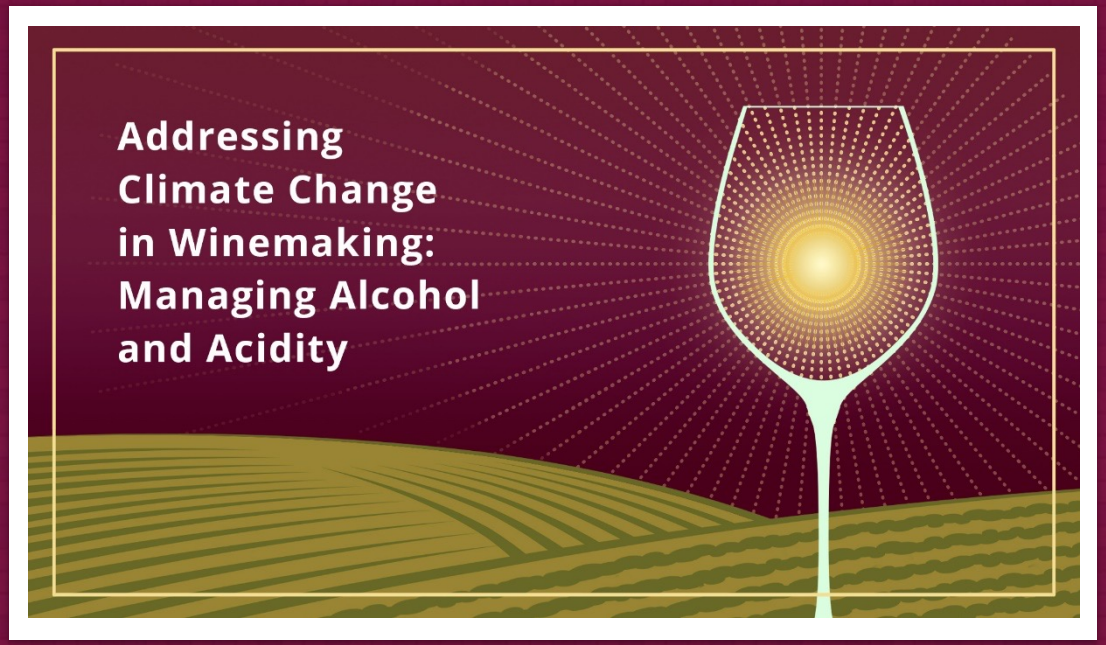
EMS USA PRESENTS

WINEXPO

TRADE SHOW & CONFERENCE

2012 10th ANNIVERSARY 2022

DECEMBER 1 • SONOMA COUNTY, CA



Track: Winemaking

9:30am - 10:30am

Conference Track
Presented by:

WINE INDUSTRY ADVISOR & AFTERNOON BRIEF NEWS

MODERATOR

Eglantine Chauffour

Enology Director / Bucher Vaslin
North America

Isabelle Mort

Winemaker /
Flanagan Winery

CLIMATE CHANGE: SOLUTIONS FOR WINEMAKING

Eglantine Chauffour, Oenology Director, Bucher Vaslin North America
Isabelle Mort, Winemaker, Flanagan Winery

Climate Change: Oenological Consequences

- Degradation of malic acid
  - pH increases => Microbial instability + Mouthfeel impact + Colloidal instability
- Higher sugar concentration
  - Increase alcohol content => Impact on Mouthfeel + Colloidal instability
- Change in aromatic maturity
  - Lack of freshness
- Change in phenolic maturities
  - Color instabilities
  - Mouthfeel impact

Unstable and unbalanced wines
Not in the consumer trend

Climate Change Winemaking Solutions: Program

1. SO_2 alternatives for microbial control
   - Bio-protection as alternatives to SO_2 on grapes
   - Alternatives to SO_2 for microbial control on wines during ageing

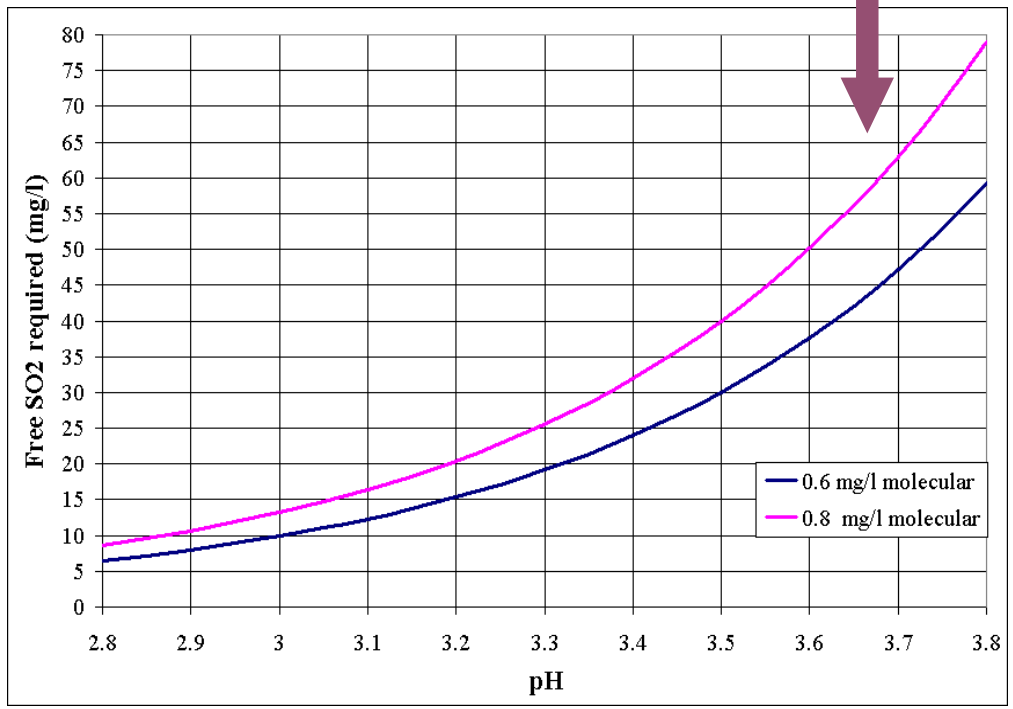
2. Balance acidity and alcohol in wines
   - NEW! Natural acidification of wines during fermentation
   - Isabelle Mort: Trial Tasting + Winemaker feedback

3. Increase freshness in wines
   - Boost fresh aromas production during fermentation
   - Increase wines aromas expression during ageing => Trial Tasting

1- SO_2 Alternatives for Microbial Control

- pH increases => SO_2 not effective as anti-microbial

	Bound SO_2	FSO_2	
		HSO_3^-	SO_2
ANTIMICROBIAL	0		+
ANTIOXIDANT	0	+	+
ANTIOXIDASIC	0	+	+



Alternative to SO_2 for microbial control on grapes | Bio-protection

Natural way to inhibit unwanted microbial development by introduci neutral micro-organisms.

Excellence B-Nature: bio-protector

- ✓Pure *Metschnikowia Pulcherima* (MP)
- ✓Efficient anti-microbial effect
- ✓Strong dominance, Fast implantation
- ✓No/Low fermentation capacities
- ✓No inhibition of *Saccharomyces cerevisiae*
- ✓No off-flavors production: low H_2S, low ethylacetate, POF(-)
- ✓Resists to (35-85°F), TSO_2: 60 ppm, pH >3
- ✓Easy to Use in Winemaking: Sprinkle on grapes/juice/equipment. 50 g/ton

Alternative to SO_2 for microbial control during ageing |Chitosan

KILLBRETT = 100% chitosan

- Polysaccharide derived from *Aspergillus niger*
- Vegan, allergen free, biodegradable, anti-microbial agent
- Wide spectrum anti-microbial effect
- Efficient treatment at low dosage

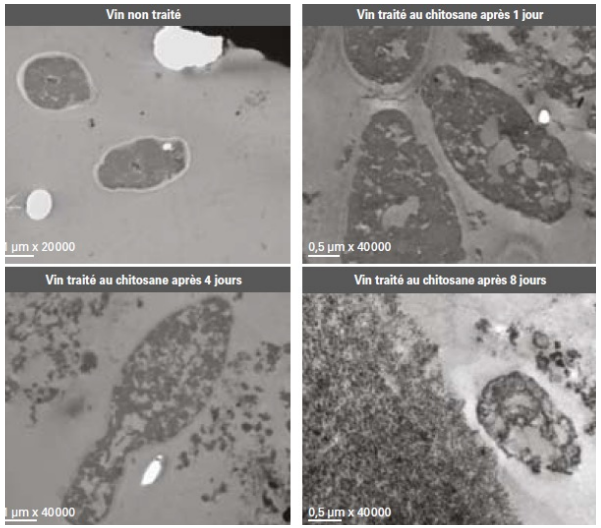
Prevention

- 4 g/hL

Curative

- 6 - 8 g/hL
- Racking
- 2 g/hL for protection

Leakage cells, death cells



Mecanisms of chitosan on Brettanomyces. 1, 4 and 8 days after addition. Electronic microscope x15000
Nazaris et al, 2016

2- Tools for Acidity Management

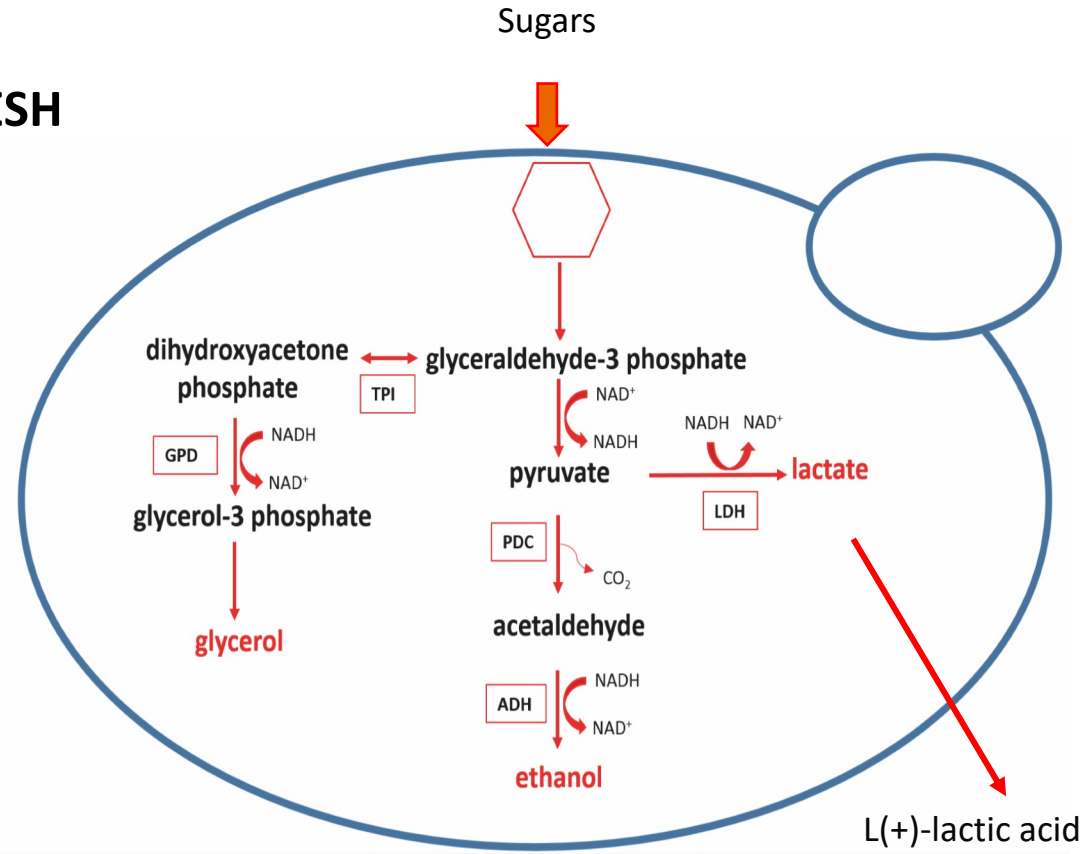
Treatments with acids :

- Tartaric ⇨ Variable efficiency because of K^+ potential, Unstable, Hard Mouthfeel.
- Malic ⇨ Unstable, Hard Mouthfeel
- Lactic ⇨ Stable, Soft Acid, Fining agent.

Natural Acidification with yeast: *Lachancea Thermotolerans*

What is *Lachancea Thermotolerans*?

- Non-*Saccharomyces* strain (also known as *Kluyveromyces thermotolerans)*
- Strong genetic diversity => Selection of **Excellence XFRESH**
- Medium fermentation capacity (7 – 9% vol.)
  - Need *S. cerevisiae* to complete AF
- Metabolize sugar into L-lactic acid
  - Decrease Alcohol
  - Decrease pH
  - Increase TA (Lactic acid)
- Produce esters/acetates



(HRANILOVIC et al., 2018)

How to use Excellence X-FRESH ?

- Max 50 ppm SO2 at harvest
- Rehydration in chlorine-free water, 104° F, with 20 g/hL **OenoStim**
- Dosage: 20 g/hL
- Nutrition: + 20 g/hL of DAP 24h after inoculation
- Min temp: 59° F

- Addition :
  - Co-fermentation: Excellence XFRESH + *S.cerevisiae* on the same day
  - Sequential: (1) Excellence XFRESH + (2) *S.cerevisiae* 48-72 hrs after

Excellence XFRESH: Winery Trial Results

CS
Results post MLF

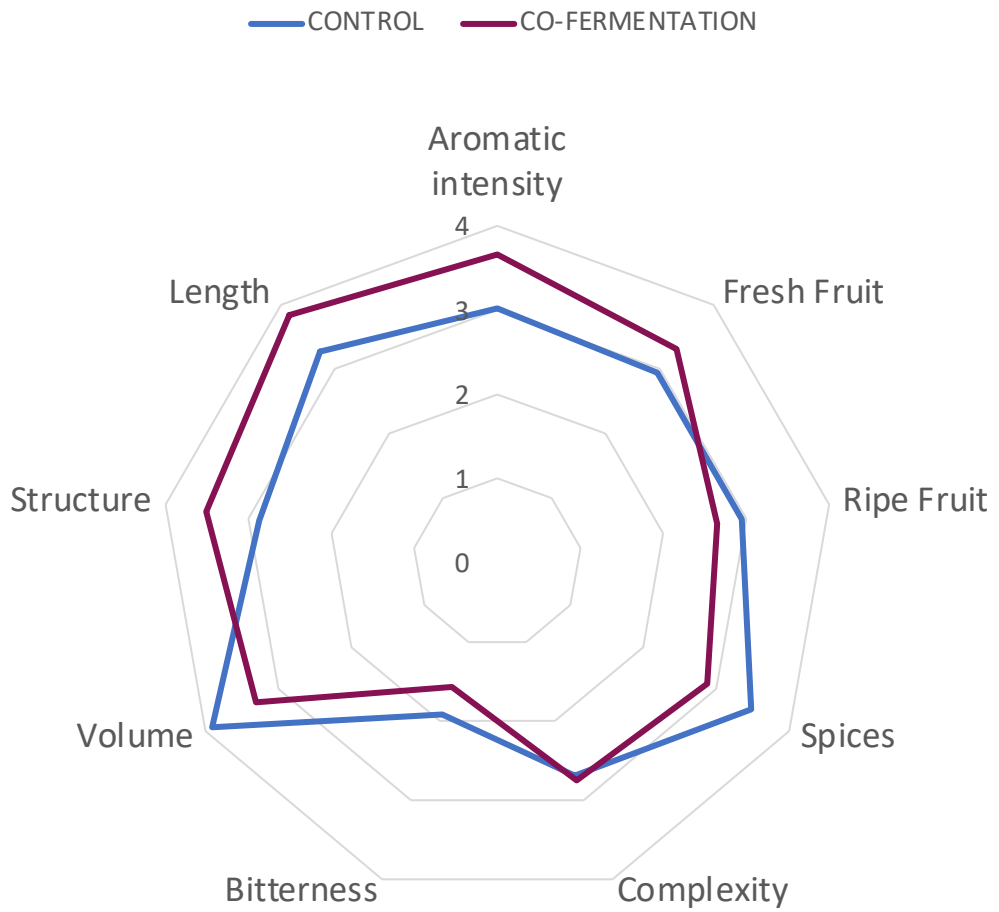
	CONTROL	CO-FERMENTATION	SEQUENTIAL
Alcohol (% vol.)	**13.7**	**13.6**	**13.4**
Total acidity (g/L)	**4.51**	**5.47**	**6.49**
pH	**4.03**	**3.92**	**3.76**
Volatile acidity (g/L)	**0.5**	**0.4**	**0.4**
Lactic acid (g/L)	1.24	2.32	2.82
Molecular SO2	0.11	0.14	0.2

- Co-fermentation and Sequential
  - Lower alcohol than control (- 0.3)
  - Higher total acidity
  - Lower pH (- 0.27)
- Sequential = higher impact than Co-fermentation

Excellence XFRESH: Winery Trial Results

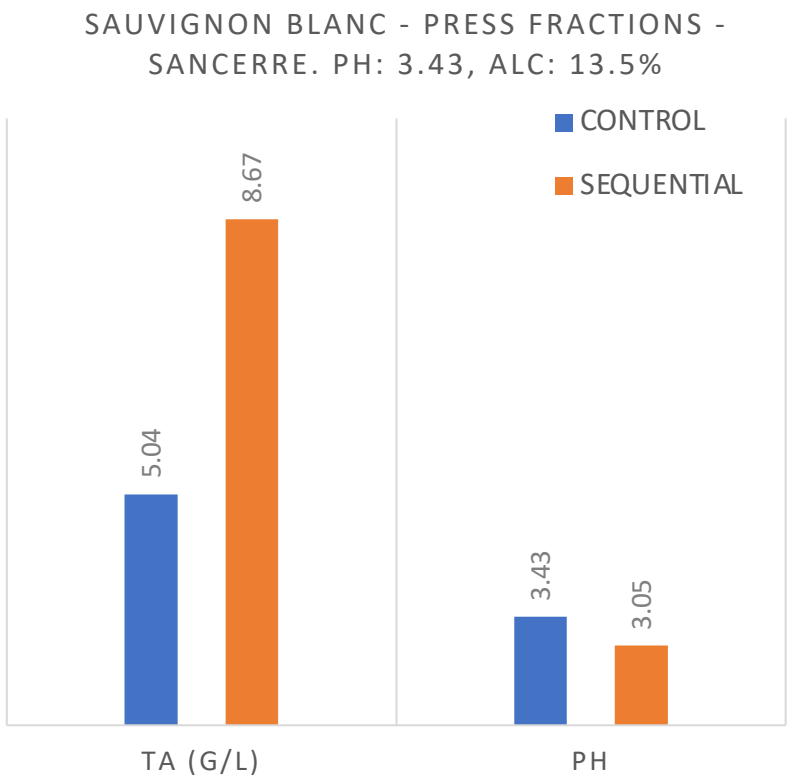
Merlot
Results post MLF

	CONTROL	CO-FERMENTATION
Alcohol (% vol.)	16.4	**16.0**
Total acidity (g/L)	5.41	**6.55**
pH	3.69	**3.57**
L-lactic acid (g/L)	0.24	**1.8**
VA (g/L)	0.4	0.4
Molecular SO2	0.32	0.41

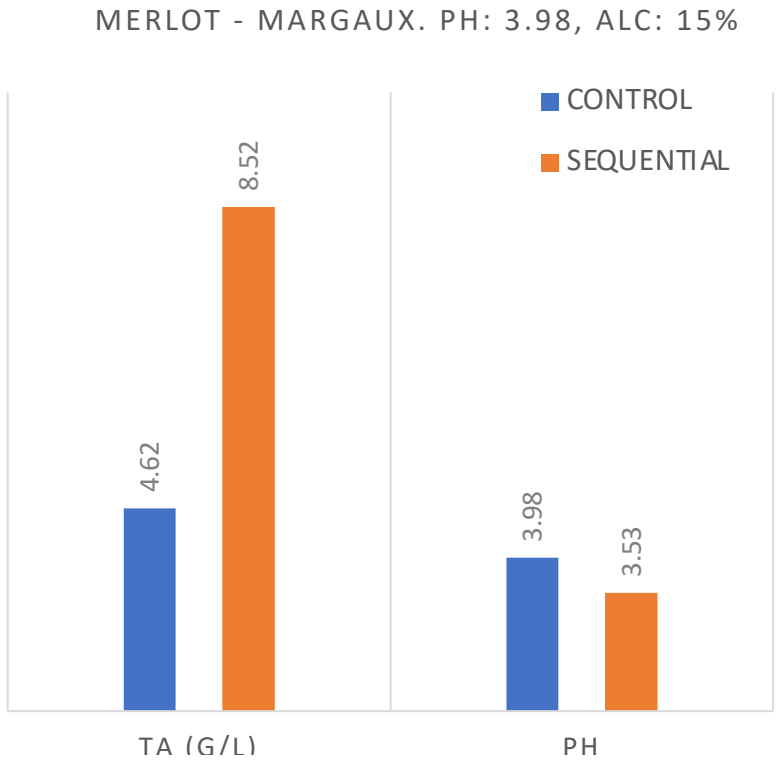


Excellence XFRESH: Winery Trial Results

- pH initial : 3.43 - Alc: 13.5%
- Temp : 64-66°F
- Sequential inoculation : 24h – 20 g/hL



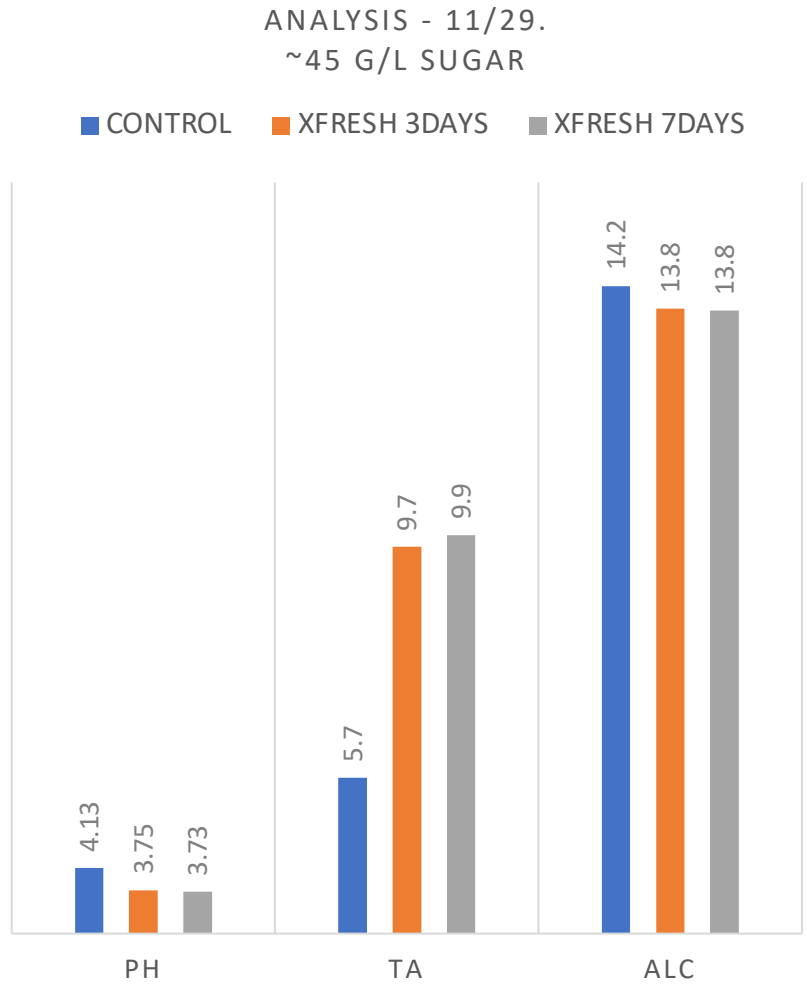
- pH initial : 3.98 - Alc:15%
- Température : 70°F
- Co-fermentation – 20 g/hL
- Ø SO2 at Crush - bio-protection



Excellence XFRESH: Trial at Flanagan Winery

- CS – Brandt Ranch, Kelsey Bench – 2022
- Harvest: 10/27 - pH: 3.98 – TA: 3.41 – Malic: 2.13 - Brix: 27.7/29
- Trial
  - Control: Excellence XR
  - Trial1: Excellence XFRESH + 3 days after Excellence XR
  - Trial2: Excellence XFRESH + 7 days after Excellence XR
- Tasting

Control | XFRESH + 3days | XFRESH + 7days



Excellence XFRESH Applications

Co-inoculation

- *0.5 g/L of Lactic acid*
- *Light effect on analysis*
- *Excellent organoleptic impact : freshness and aromatic complexity*

Sequential

- *48h after inoculation : ~ 1 g/L of Lactic acid*
- *72h after inoculation : ~ 2 g/L of Lactic acid*
- *Best results in term of pH and total acidity modulation*

Blender Tank

- Excellence XFRESH: max 12 g/L Lactic Acid
- Tank = acidifier for blending
- ⚠ MLF is not posible. Blend before

Tools to Manage Acidity: Economic Study

Example Trial - CS - Entre Deux Mers

	Control	Sequential
Total acidity (g/L)	4.51	6.49
pH	4.03	3.76
Lactic acid (g/L)	1.24	2.82

⇨ TA: + 1.98 g/L

To reach same result with tartaric acid: +2 g/L

→

For 100 L
Excellence X-FRESH : 20 g ($183/kg)
Tartaric acid : 200 g ($20/kg)

→

$ for 100 L
Excellence X-FRESH : **$ 3.6**
Tartaric acid : **$ 4**

→

EXCELLENCE X-FRESH can be economically interesting

3- Refresh Wine Aromas

- Wine aromas
  - Esters/Acetates
  - Thiols
  - Terpenes /Nor-isoprenoids (enhancement of aromas)

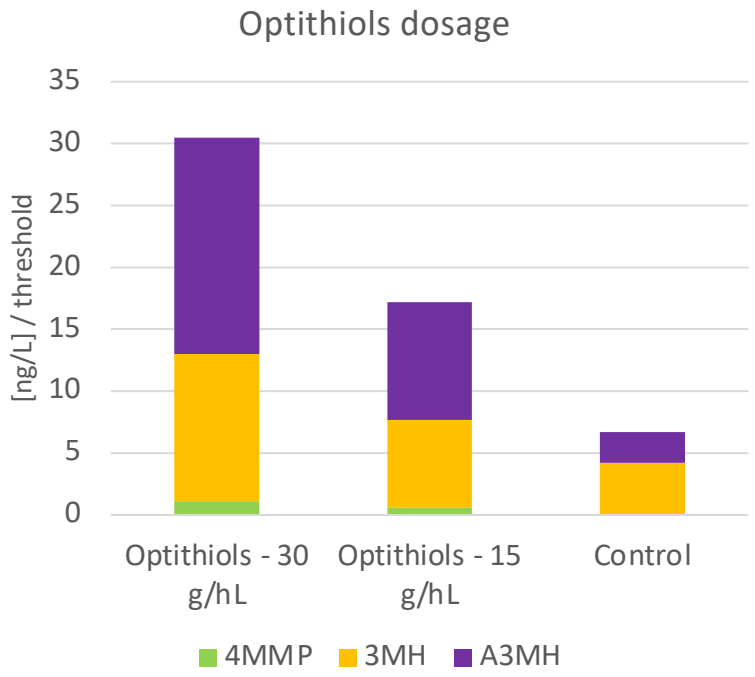
- Boost **production of aromas** during fermentation with yeast metabolism
  - Yeast choice
  - Yeast nutrition

- Boost **aromatic expression** during ageing with enzymatic activities

OptiThiols/OptiEsters: Trials Results

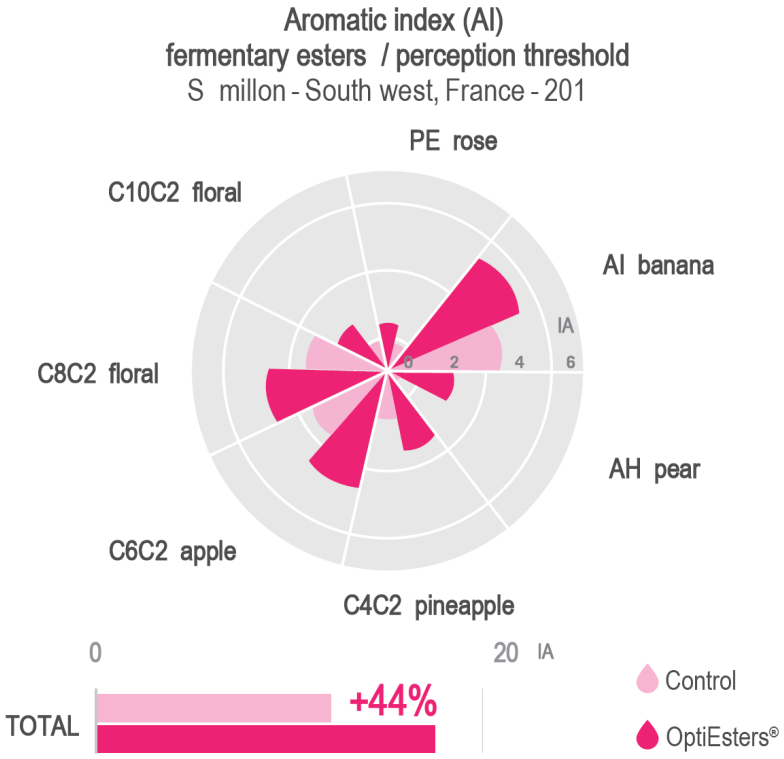
OPTITHIOLS®

- Inactivated yeasts, rich in –SH peptides
  - Cysteine, Homo-cysteine, Glycine-Cysteine, Glutamyl-Cysteine, N-acetylcysteine, Glutathione
- At inoculation, 15-30 g/hL



OPTIESTERS®

- Selection of amino acids and ergosterols
- Early fermentation, 30 g/hL

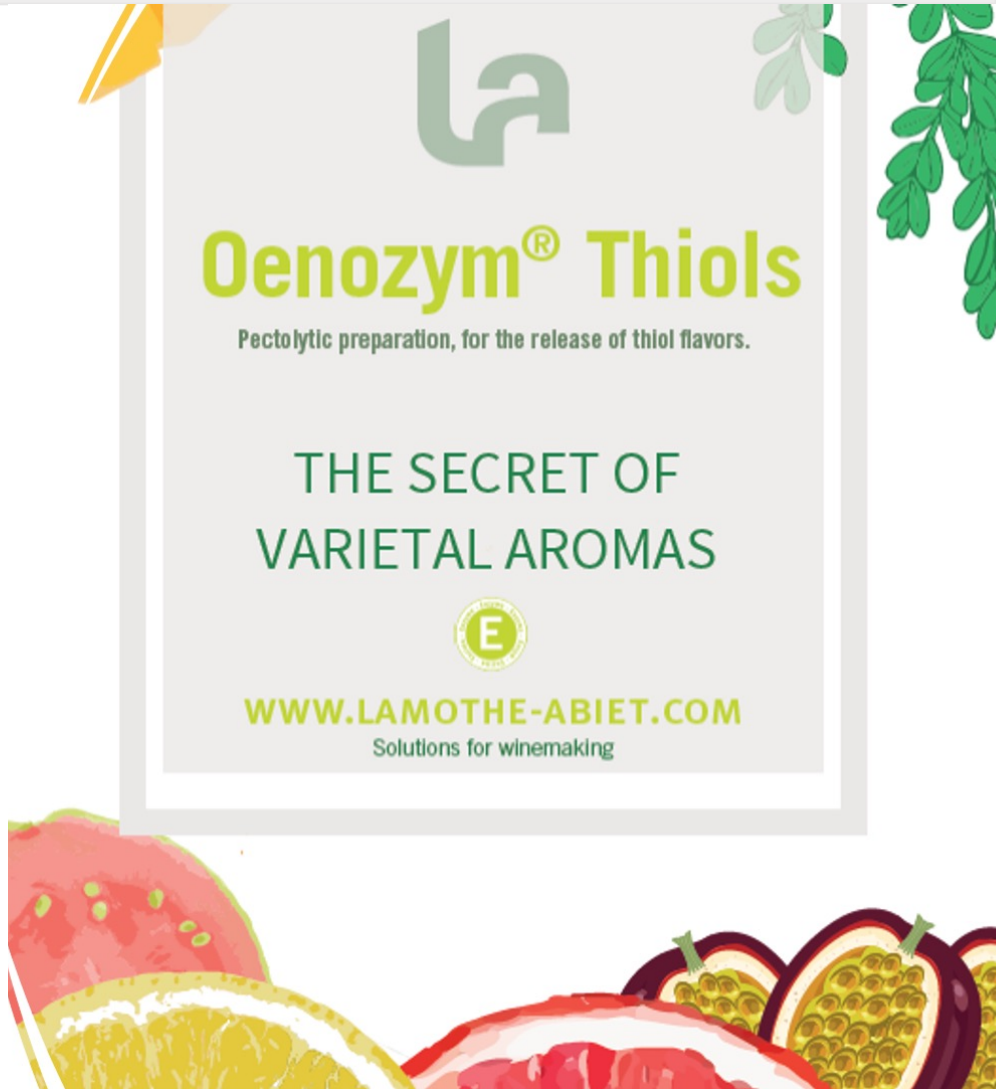


Boost Varietal Aromas Expression During Ageing

- Varietal aromas
  - Thiols
  - Terpenes
  - Nor-isoprenoids
- Need enzymatic action to express aromatic precursors

OENOZYM THIOLS

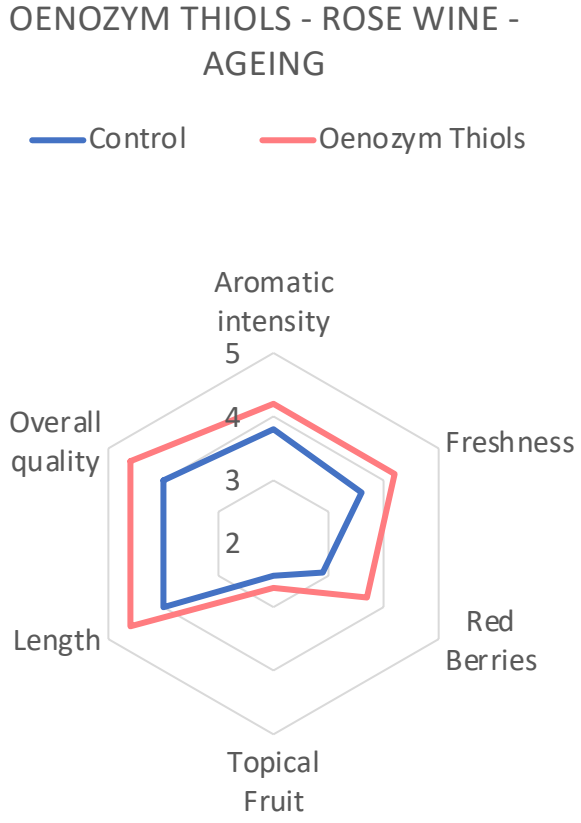
- Liquid pectinase with β-Lyase and β-Glycosidase activities
- Express thiols precursors + terpenes/norisoprenoids
- Increase aromatic intensity of wines, wine freshness
- Applications:
  - During fermentation, Ageing, Pre-bottling
  - 4 – 6 mL/hL



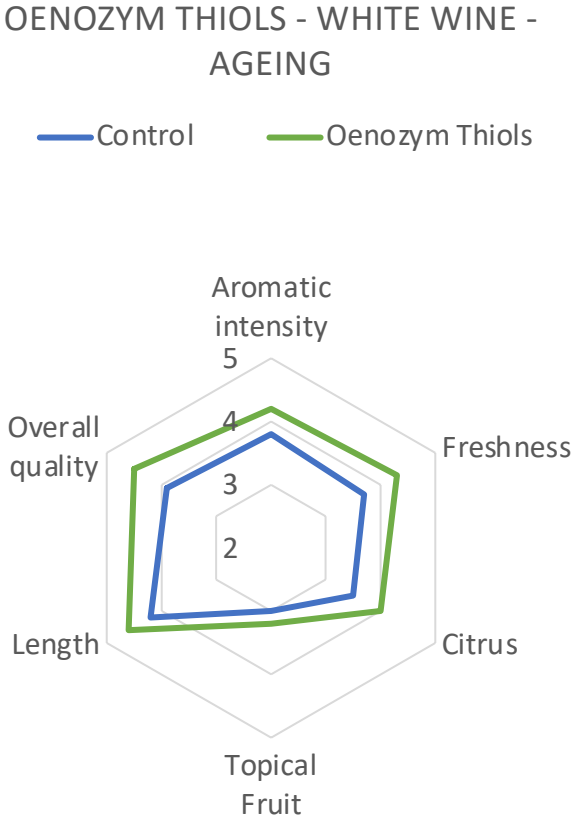
Oenozym THIOLS: Winery Trial Results

Impact of the addition of Oenozym Thiols (5 ml/hL) on wines during ageing. Contact time: 3 weeks.

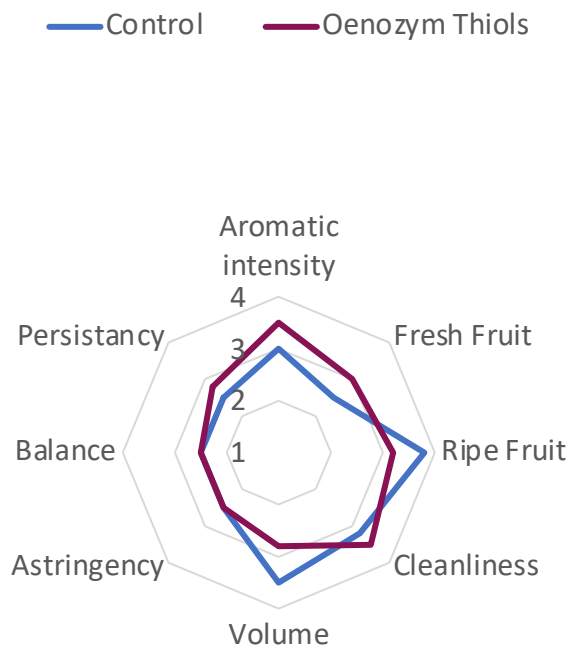
OENOZYM THIOLS - ROSE WINE - AGEING



OENOZYM THIOLS - WHITE WINE - AGEING



OENOZYM THIOLS ON RED WINES



Tasting

- Control: Red Blend PN
- Oenozym Thiols
  - Added 11/07/2022
  - 5 ml/hL
  - Temp: 65°F

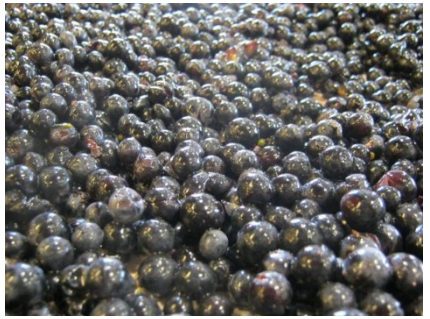
Control

Oenozym Thiols

Climate Change: Winemaking Solutions

- pH increases
  - **Excellence XFRESH** to naturally acidify wines
  - SO_2 alternative for microbial stability: **Excellence B-NATURE/KILLBRETT**
  - Finishing products to balance mouthfeel
- Change in aromatic maturity: lack of freshness
  - Boost aromatic production during fermentation: **OPTITHIOLS/OPTIESTERS**
  - Express varietal aromas during ageing: **OENOZYM THIOLS**
- Higher sugar concentration => higher alcohol content
  - **Excellence XFRESH** to naturally decrease alcohol content
- Offset phenolic maturities
  - Finishing products to balance mouthfeel
- Raisins, heterogeneity in berries, …
  - Quality destemming, Sorting

Mouthfeel Balance Trial Tasting
11.15- 12.15
Booth #718



THANK YOU FOR YOUR ATTENTION

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Visit Us at Booth #441

Join Us Booth #718 – Hall Flower – 11:15-12:15 - Mouthfeel Balance Trial Tasting

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