# Aromatic White & Rosé Winemaking

## Grape to Cellar


Presenter:

Marcy Mallette – Technical Winemaking Rep

California Central Coast and Southern CA

805-234-8446

Marcy.Mallette@laffort.com


1895 2015

120 YEARS OF INNOVATIONS

LAFFORT

l'œnologie par nature

U.S.A.

# A little bit of history….

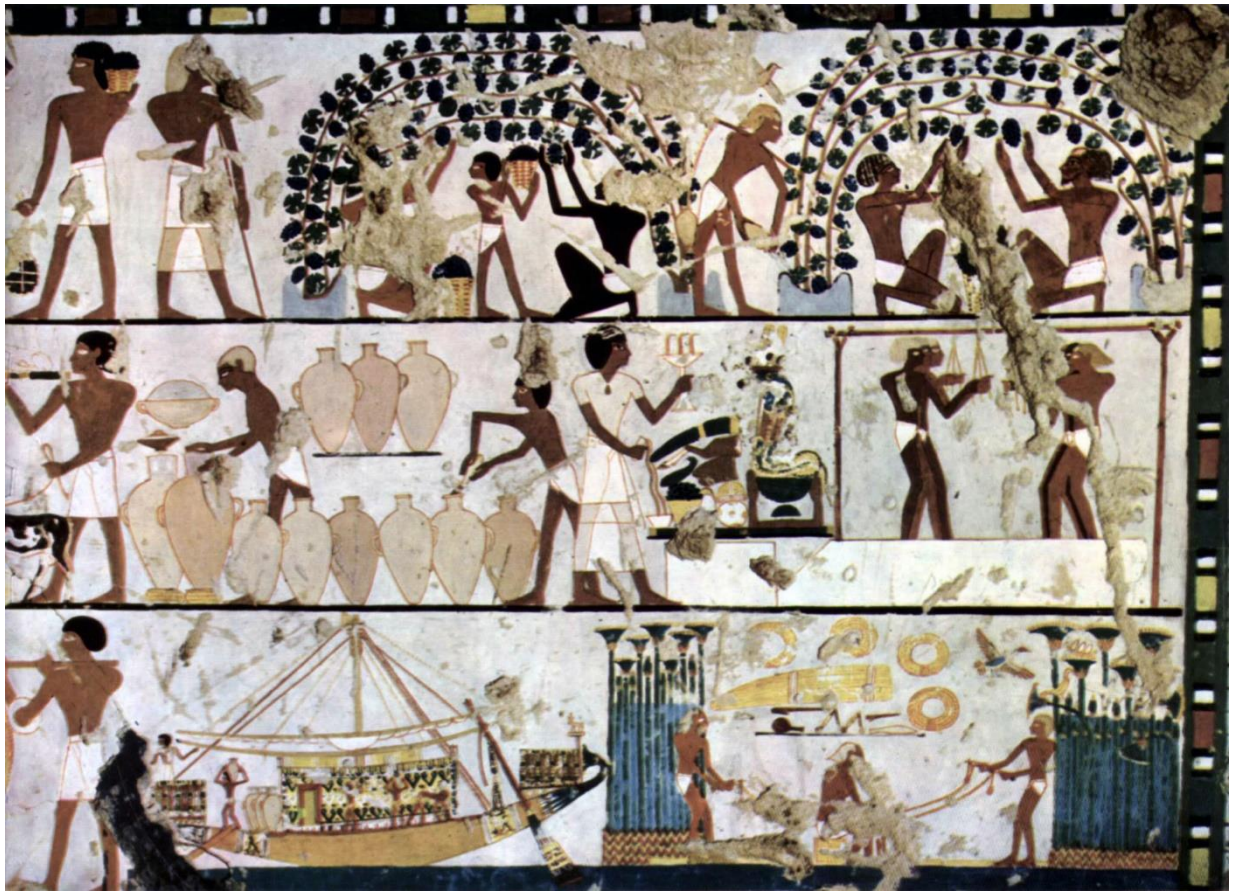
- First winemaking process in Mesopotamia
  - 3000 B.C.

- Grapes were crushed without vatting

- Rosé was hence the first wine ever made!

# A little bit of history…

- Representations studies



Fresco in a funeral room, Egypt 1500 B.C.

# A little bit of history…

- Representations studies

Harvest represented on a tapestry, middle age, 16th century.

# A little bit of history…

- At the 13th century, Bordeaux was producing 87% of Clairet while just 13% of Vinum Rubeum.

- At the 16th century, Dutch shippers started using sulfur as a preservative during transport

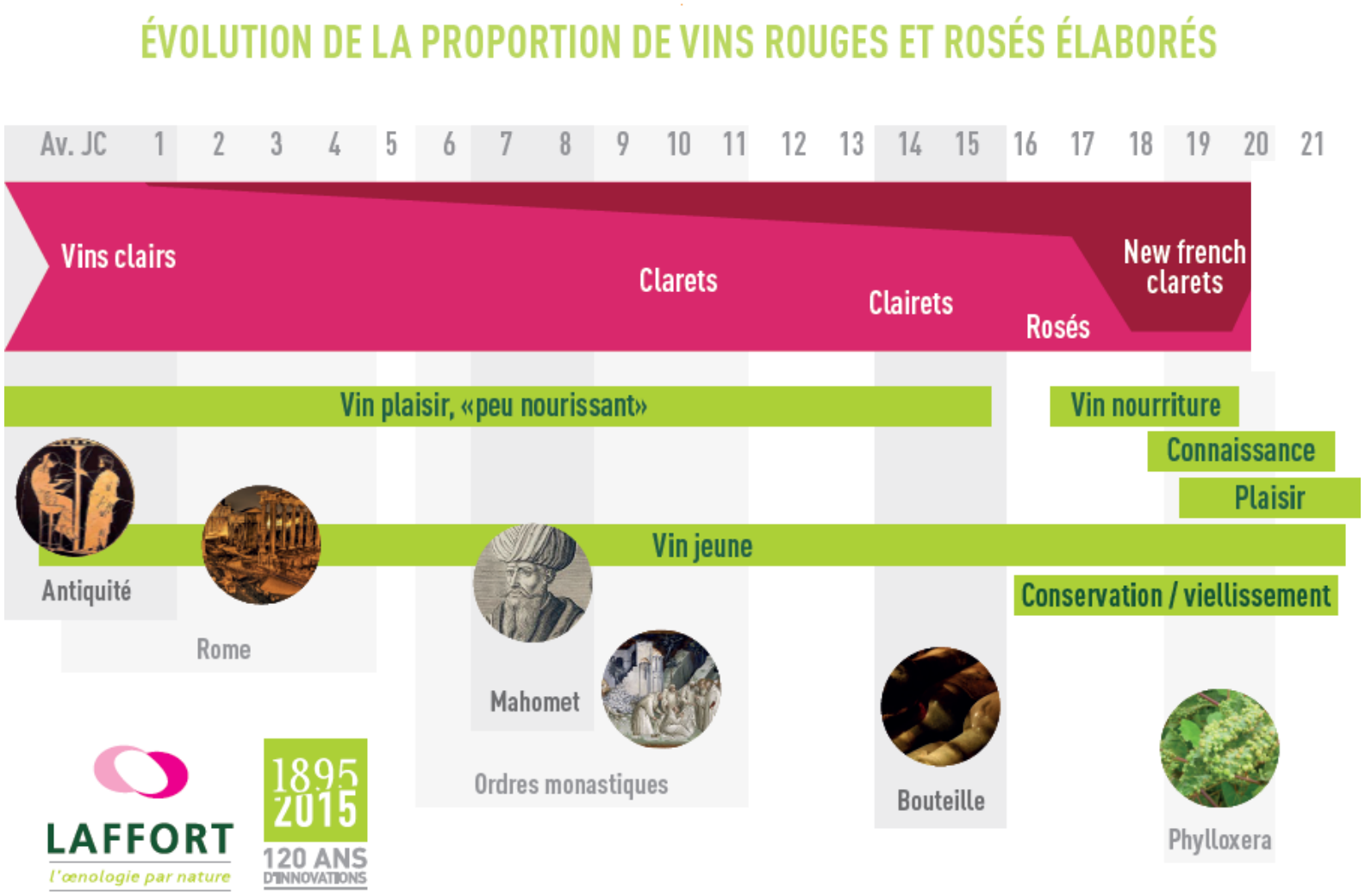
- 17th century: first wine inventory in Paris showed that cellars were 80% of Clairet.

- 1682 : First mention of the « Vin Rosé » term.

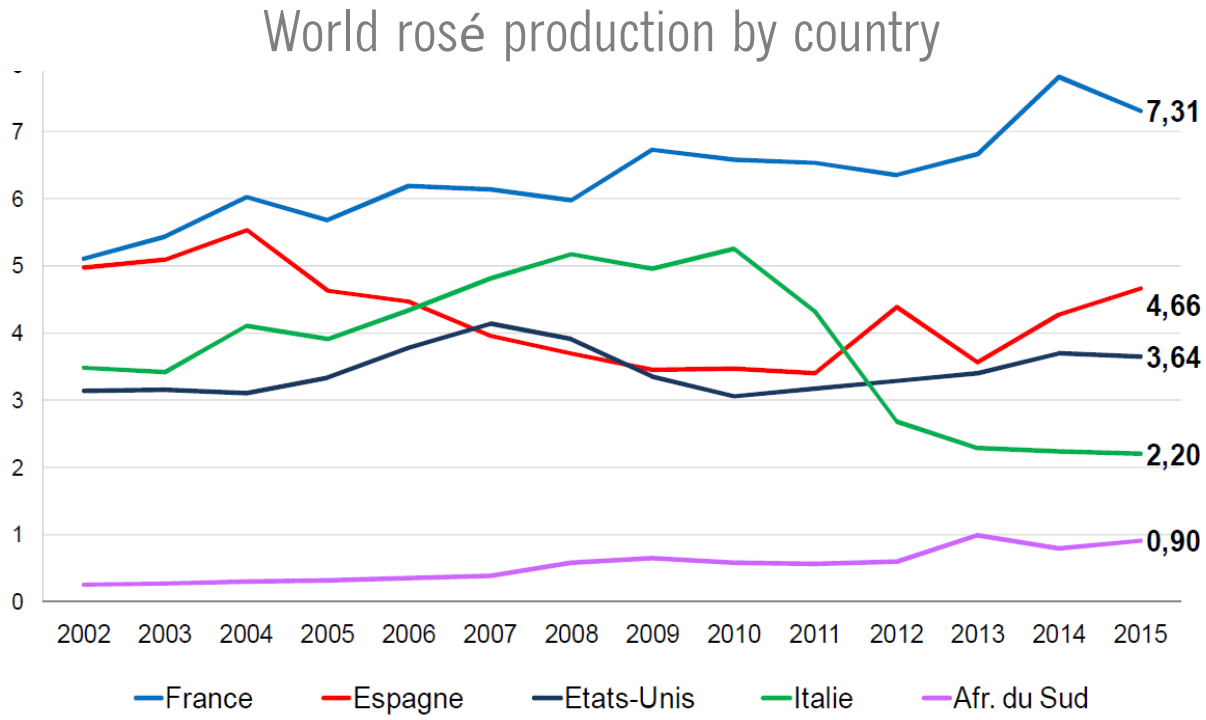
# A little bit of history…

- At the 17th century, workers ask for more « nourishing » wines.
- Emergence of « vins noirs » (Black wines) in Bourgogne, Gaillac, Cahors, Béarn and Spain.
- oak cask aging duration increased for these vins noir wines: « New French Claret »
- Market switch in the 20th century: rosé wines represent only 10% of the total wine consumed in France.

# A little bit of history…



# Rosé wines, a few numbers




Source : CIVP/FranceAgriMer - Abso Conseil

France : 1st world producer with 31%

# Rosé wines, a few numbers

- Worldwide production increased by 8% within the last 10 years.
  - With a regular annual growth of 1%, we will need an extra **2 to 3** millions Hl (52-78 Mgal) of rosé wines **each year**
- Rosé wine production is close to 10% of the total worldwide wine production.

# Rosé wines, a few numbers

- Rosé shows the highest rate of growth in most of countries concerning :
  - Production volume
  - Value
  - International exchange
  - Consumption

# General Outline Today

- Methods for “growing” rose
- Grape Handling – managing phenolic extraction (bitterness)
- Rose fruit processing - skin contact time, color extraction
- White & Rose – techniques for increasing aromatics
  - Juice settling & preparation
  - Fermentation techniques
  - Glutathione
  - Stabilization

*Aromatic White & Rosé Winemaking*

*Grape to Cellar*

Définition

# Vinification

- G. Masson's definition (director of the research and experimentation center of rosé wine):

« A wine which is produced through the fermentation of a must, obtained after **the well managed prefermentative pellicular maceration** of red grapes. »

- Varieties :
  - Cinsault, Grenache, Tibouren, Mourvèdre, Carignan, Syrah, Nielluccio,…
  - Cabernet franc, Merlot, Zinfandel,…

# Grape Harvesting Stage

Aromatic White & Rosé Winemaking

Grape to Cellar

*Aromatic*

*White*

*&*

*Rosé*

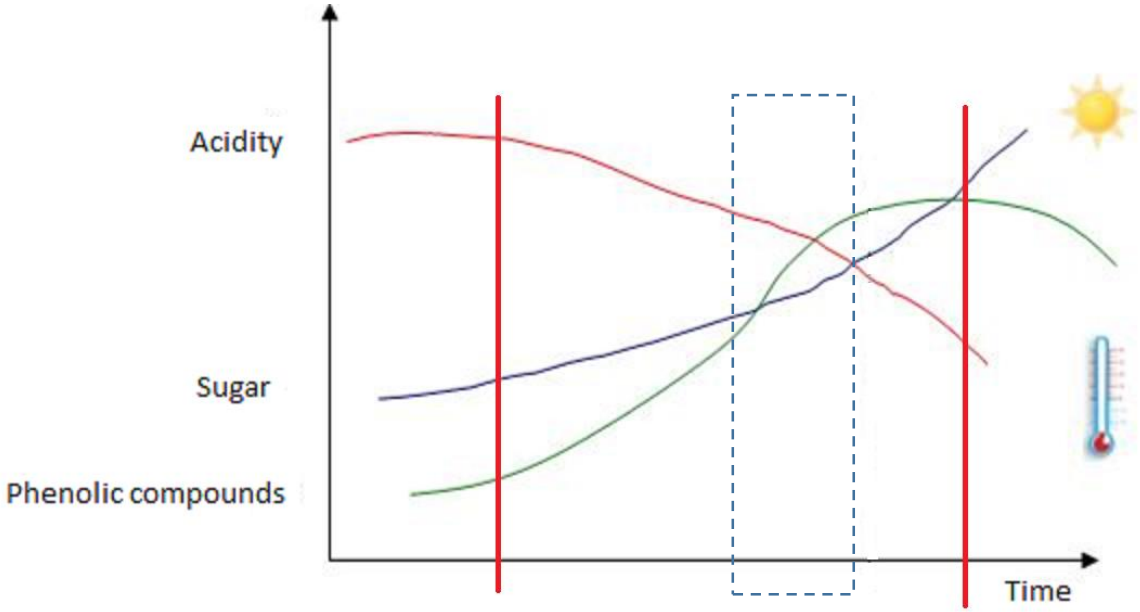
*Winemaking*

*Grape to Cellar*

In the vineyard

# Vinification

- Think rosé in the vineyard
  - VAT : 13°
  - TA : 6 g/l Tartaric Acid



# Rosé Methods

**Method #1** – Grow your crop for rosé
**Method #2** – Grow your crop for red wine and bleed off juice for rosé (saignée)

**Method #3** – Grow your crop for red wine and crop thin late. Process the thinned fruit for rosé instead of throwing it on the ground.

**Method #4** – Blend red and white wine – NOT RECOMMENDED

*Aromatic White & Rosé Winemaking*

*Grape to Cellar*

# Rosé Style - America

- Any variety
- Saignée method is most common
- Not afraid of phenolics, can be balanced with RS
- Huge range of color

Your style will determine your harvest parameters

*Aromatic White & Rosé Winemaking*

*Grape to Cellar*

# Aromatic Profile

Thiols

Chenin Blanc, Riesling, Sauvignon Blanc, Gewurtztraminer Grenache, Syrah, Mourvedre for rose

Esters

Muscat, Viognier, Rousanne, Trebbiano, Pinot Grigio

*Aromatic White & Rosé Winemaking*

*Grape to Cellar*

# Phenolic Management

Longer skin contact time → More phenolics extracted → Greater need for Juice Fining

Phenolics = Bitterness
Astringency
Pinking
Oxidation

*Aromatic*
*White*
*&*
*Rosé*
*Winemaking*
*Grape to Cellar*

# Rosé Skin Contact

Color Extraction

Grenache Cinsault Mourvedre Zinfandel Syrah

*Aromatic White & Rosé Winemaking*

*Grape to Cellar*

- You will lose 30% of your color from juice to post SO2 addition.
- More time on skins = more phenolics extracted.
- Use a fining agent at juice settling to remove bitter phenolics.

# Pressing Stage

Aromatic White & Rosé Winemaking

Grape to Cellar

*Aromatic*

*White*

*&*

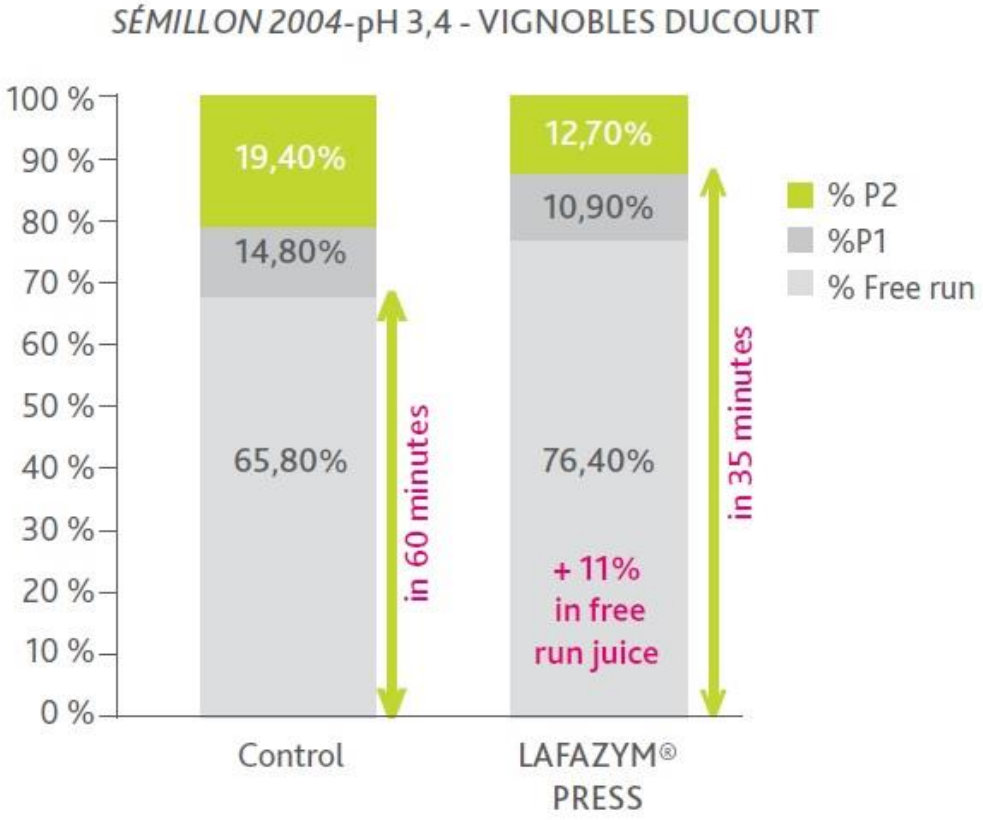
*Rosé*

*Winemaking*

*Grape to Cellar*

# Pressing Enzyme Treatment


***Phenolic Management***



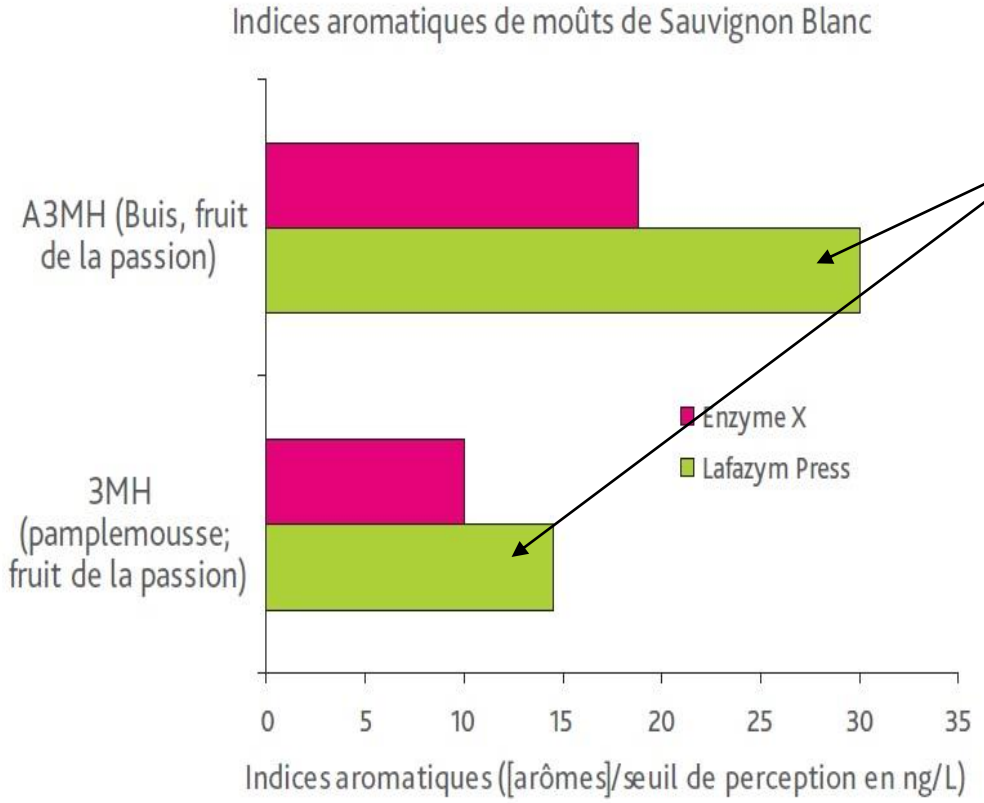

- Increase free run juice by 11%
- Decrease pressing time to reduce phenolic extraction
- Lowers juice turbidity

*Aromatic White & Rosé Winemaking*

*Grape to Cellar*

# Pressing Enzyme Treatment

***Phenolic Management***




Lafazym Press

Enzyme treatment will increase thiol concentration in the wine


*Aromatic*

*White*

*&*

*Rosé*

*Winemaking*

*Grape to Cellar*

# Pressing Enzyme Treatment

***Phenolic Management***

## How to Apply Lafazym Press:


1. Calculate the amount of Lafazym Press needed – average dosage is 20g per ton of fruit
2. Dissolve Lafazym Press in water, wait 15 minutes.
3. As fruit is loaded into the press, spray the liquid enzyme mixture evenly over the fruit.
4. Ideally, it needs about one hour of contact time for effect.

*Aromatic*
*White*
*&*
*Rosé*
*Winemaking*

*Grape to Cellar*

# *Winemaking Idea*

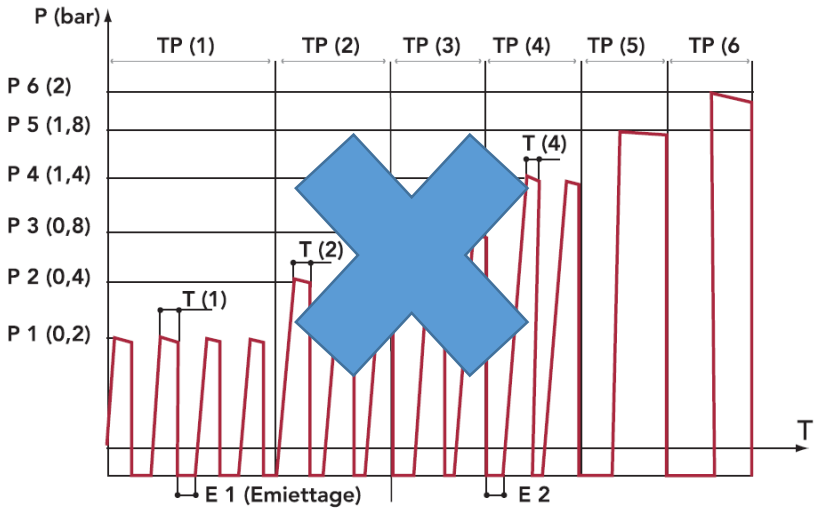
## Dry Ice – 2 functions:

1) Protect the juice from oxygen – prevents browning and aromatic precursor loss
2) Cool juice temperature – will slow down enzymatic reactions, preventing excessive oxidation

*Crisp*
*Refreshing*
*White*
*&*
*Rosé*
*Wines*

# Press Cycles

***Phenolic Management***




- **Reduce deflation events**
- **Reduce rotations**

Reduce maceration, lowering extraction of phenolics from skins

*Aromatic*

*White*

*&*

*Rosé*

*Winemaking*

*Grape to Cellar*

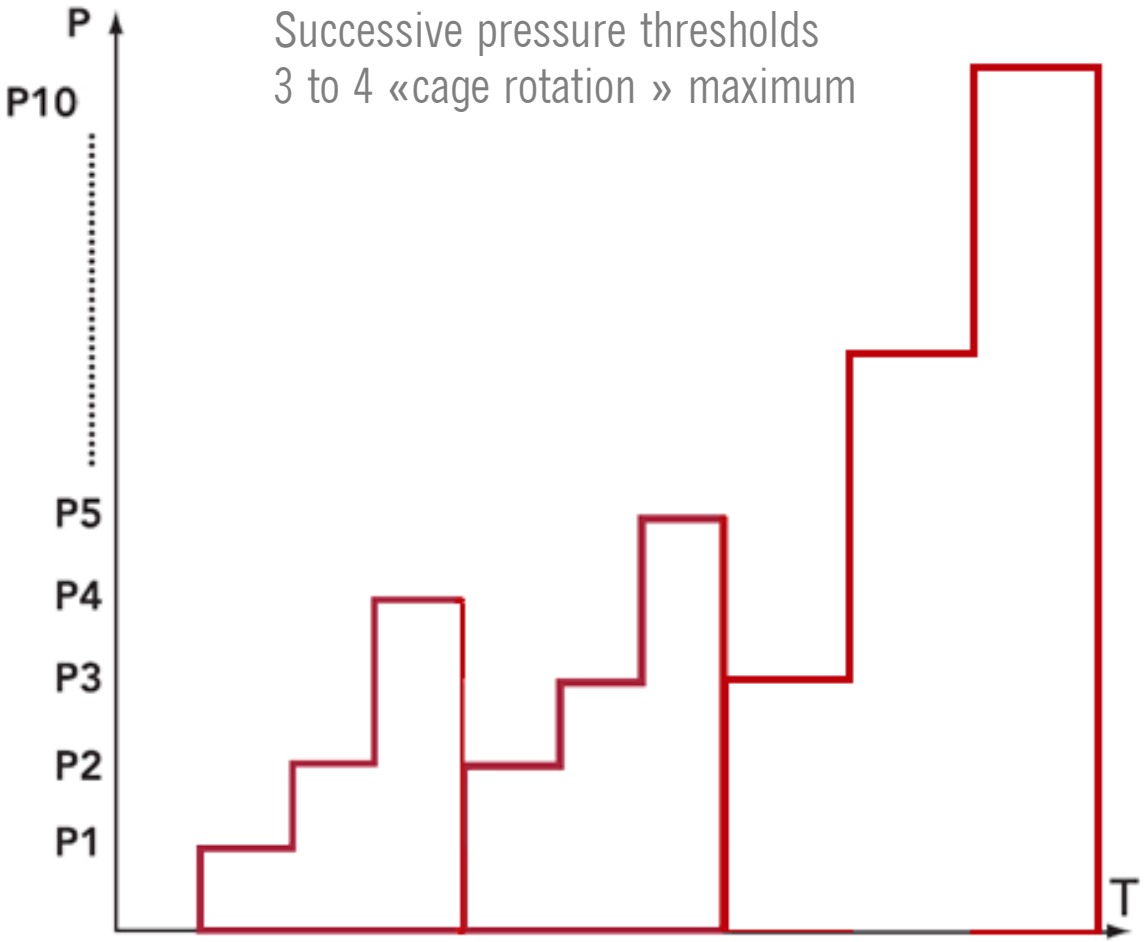
# Vinification

Pressing

- Manage the pressing cycle

Champagne cycle

Successive pressure thresholds
3 to 4 «cage rotation » maximum



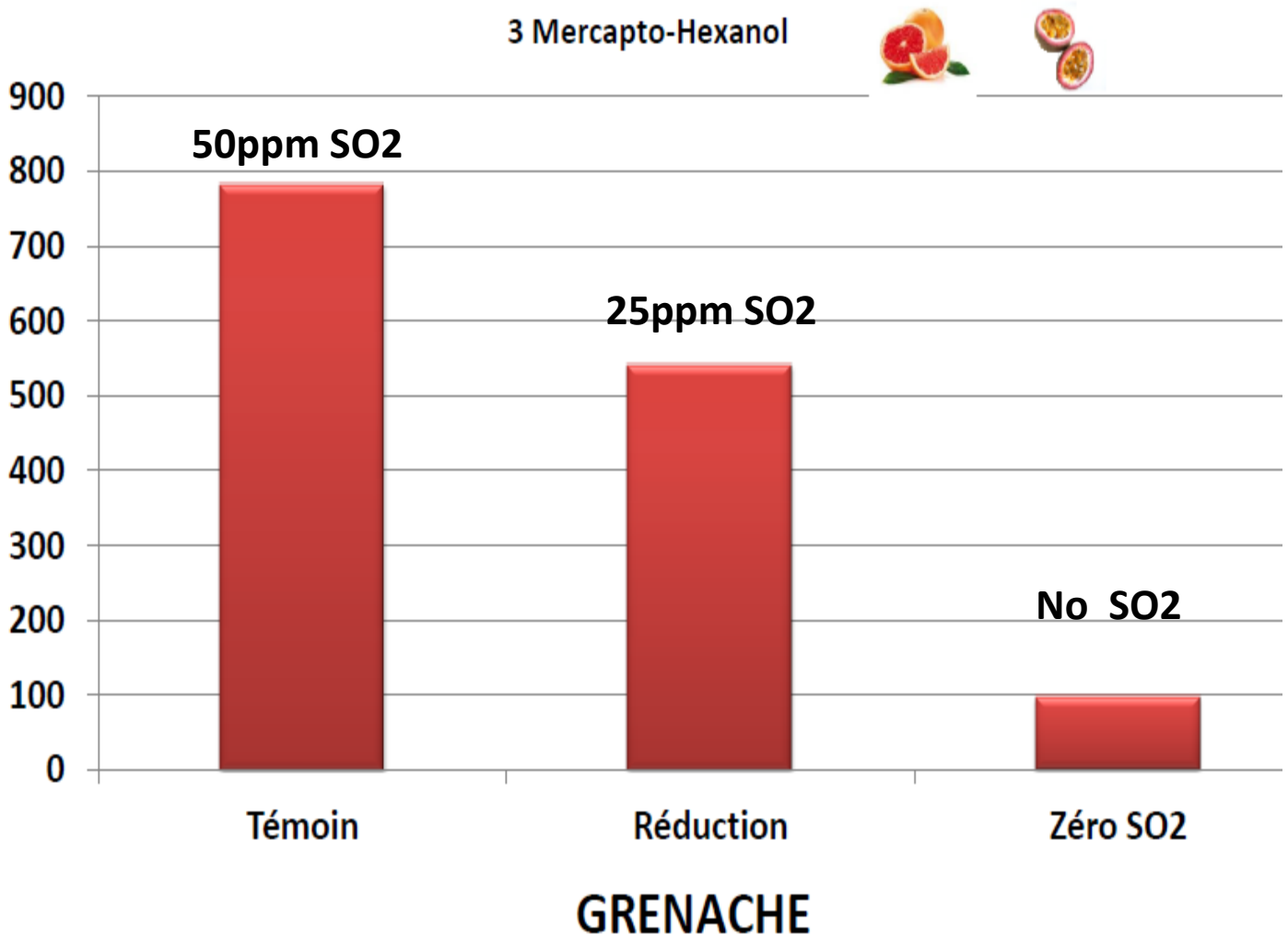

**Keywords:**

Oxidation

Trituration

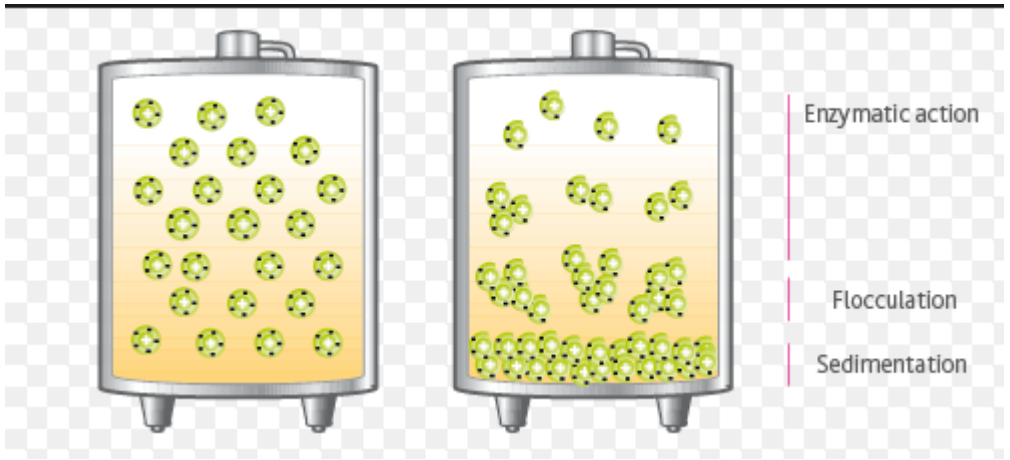
Phenolics in press juice

# SO2 & Aroma Preservation




*Aromatic*
*White*
*&*
*Rosé*
*Winemaking*

*Grape to Cellar*




# Juice Settling Stage

Aromatic White & Rosé Winemaking

Grape to Cellar

*Aromatic White & Rosé Winemaking*

*Grape to Cellar*

# Settling Enzyme Options


## Lafazym 600 XL ICE

Highly concentrated purified liquid pectolytic enzymes preparation high in side chain activities. Fast and efficient for white and rosé juice – effective down to 40F. Dose 0.5-2mL/hL

## Lafazyme CL *Clarification*

Clarification enzyme

- Juice depectinization and compact settling
  5-20 ppm

*Aromatic*
*White*
*&*
*Rosé*
*Winemaking*

*Grape to Cellar*

# Winemaking Idea

- Settling lees Stabulation

Keep the whole juice

Enhance the contact with gross lees

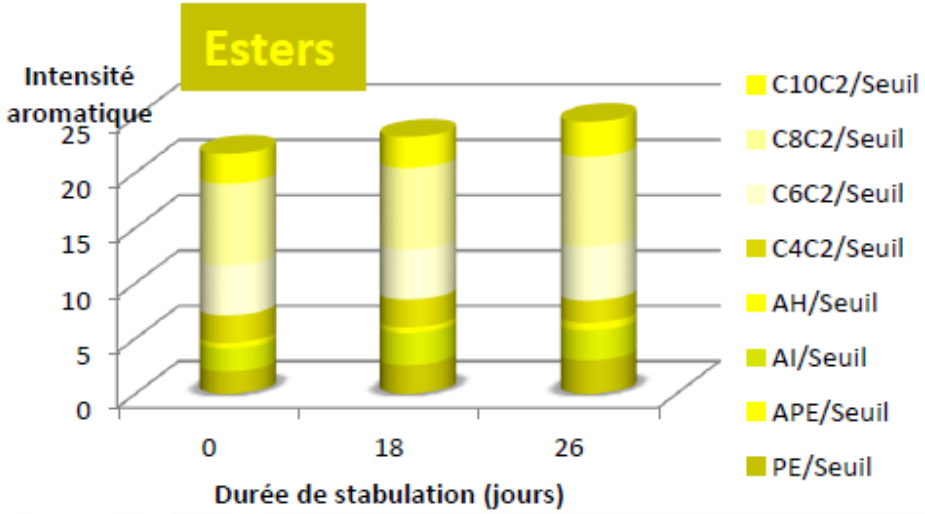
Increase aroma compounds

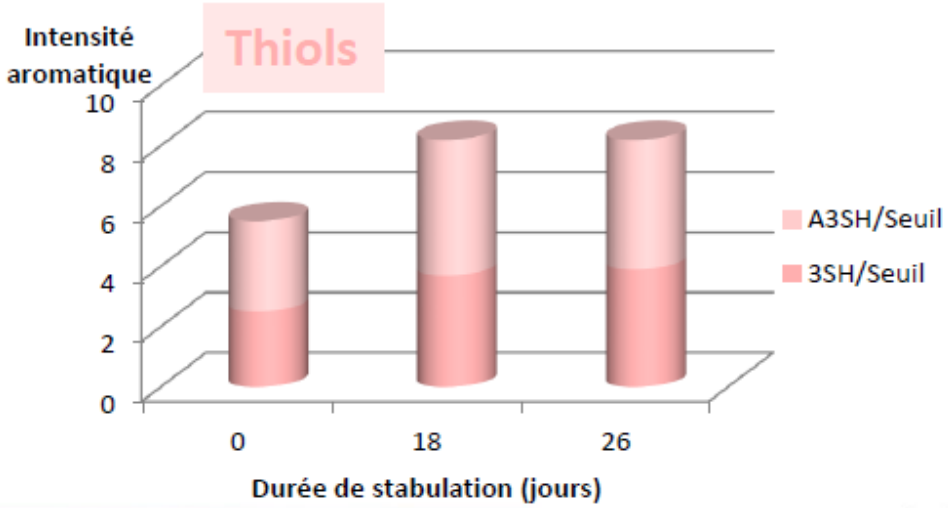
Raise mouthfill

Augment sucrosity

*Aromatic White & Rosé Winemaking*

*Grape to Cellar*




Mix
with

# Winemaking Idea

| Temperature °C | Products | Stabulation time |
|---|---|---|
| 0 - 2 °C (32°F) | | 1 to 3 weeks |
| 6 - 8 °C (45°F) | 2,5g/hl ZYMAFLORE® EGIDE | 48 h to 5 days |
| 10 - 12 °C (50°F) | 5ml/hl LAFAZYM®THIOLS + EGIDE | 24 to 48 h |


Stabulation Protocols:

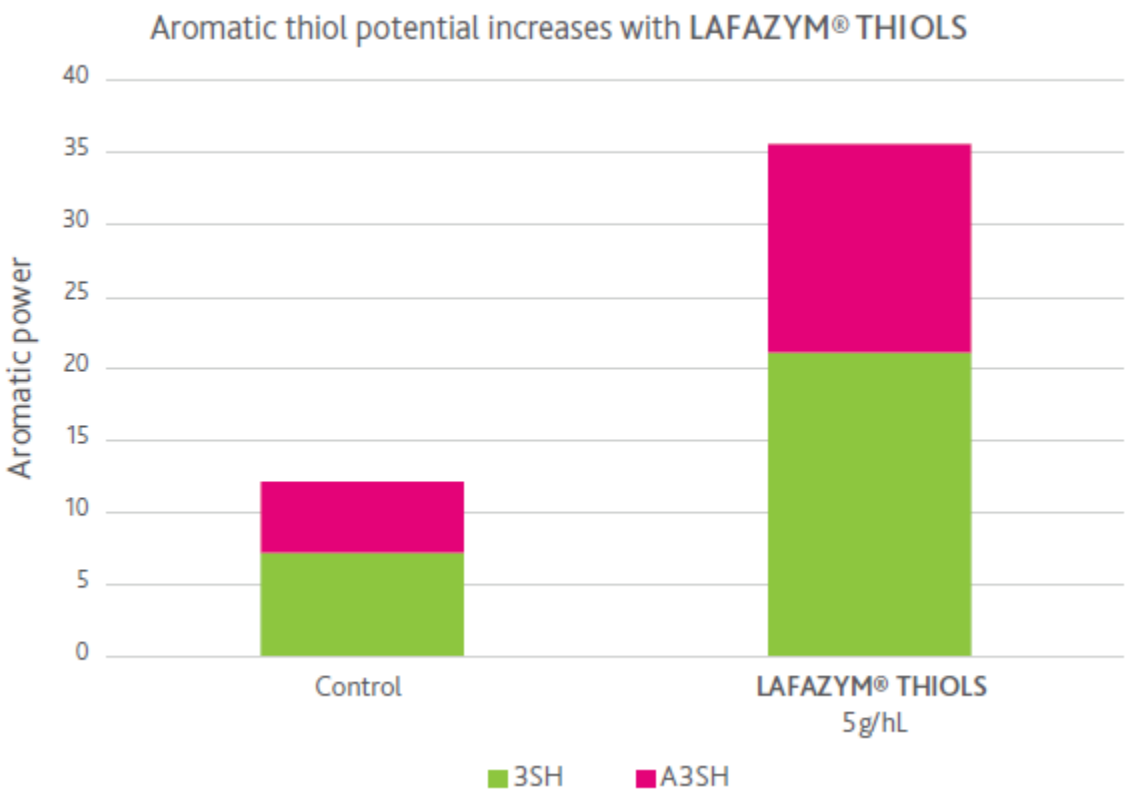
- Steer clear of oxygen
- Avoid indigenous fermentation
  - Cool down temperature
  - Add non-Saccharomyces
- Agitation: Dry ice or CO2 Sparge
- Temperature rises – add enzyme Lafazym THIOLS

*Aromatic White & Rosé Winemaking*

*Grape to Cellar*

# Lafazym THIOL

***New product – reduce stabulation time***





- Trial done in Argentina 2016 (Sauvignon Bl.)
- Lafazym THIOL added 5g/hL
- 192% increase in aromatic thiol potential of Sauvignon Blanc

*Aromatic White & Rosé Winemaking*

*Grape to Cellar*

# *Lafazym THIOL*

- Enhancement tool for wines aromatic profile and intensity.
- Reduce the time needed for traditional Stabulation
- Can be used on a wide variety of white grapes: Sauvignon, Colombard, Gewurztraminer, and Riesling.  On rosé juice as well; Grenache, Syrah, Merlot, Mourvedre, Cinsault

*Aromatic*

*White*

*&*

*Rosé*

*Winemaking*

*Grape to Cellar*


Added after pressing, before alcoholic fermentation

**30 – 60ppm**

# *Lafazym THIOL*

**3-Mercaptohexan-1-ol (3MH)**
Aroma: **Grapefruit**, passion fruit, gooseberry, guava

**3-mercaptohexylacetate (3MHA)**
Aroma: **Passion fruit**, grapefruit, box tree, gooseberry, guava

**4-methyl-4-mercaptopentan-2-one (4MMP)**
Aroma: **Box tree**, passion fruit, broom, black current

*Aromatic*
*White*
*&*
*Rosé*
*Winemaking*
*Grape to Cellar*

# Juice Preparation

## *Juice Fining*

Longer skin contact time → More phenolics extracted → Greater need for Juice Fining

*Crisp*
*Refreshing*
*White*
*&*
*Rose*
*Wines*

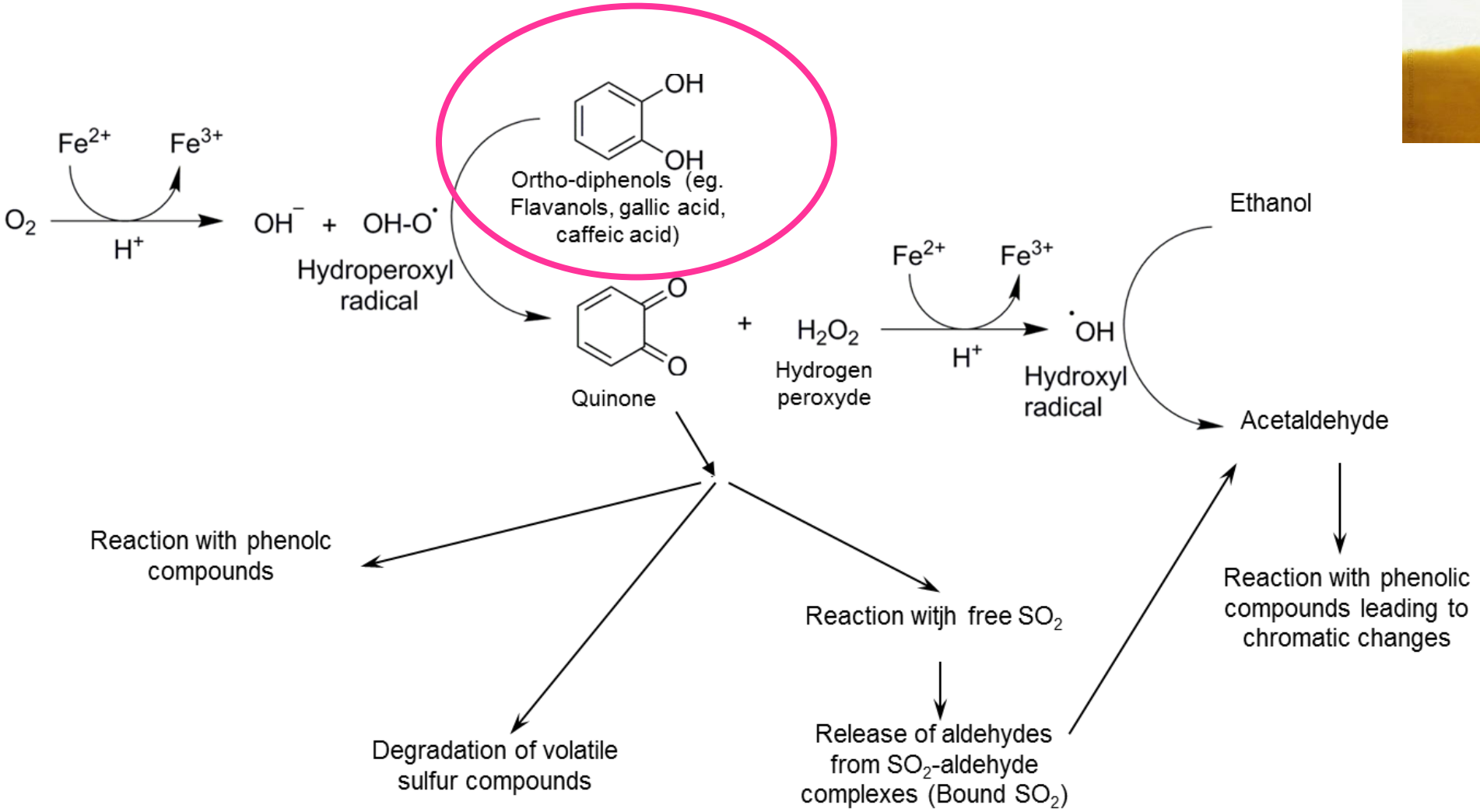
Phenolics =

Bitterness
Astringency
Pinking
Oxidation

**Correcting & Protecting – Juice Fining**

# Juice Preparation - Fining

## Oxidative Pathways in Juice/Wine




*Crisp Refreshing White & Rose Wines*

# Juice Preparation - Fining

## Fining Juice Verses Fining Wine

Wine 1 – Without fining
Wine 2 – Fining with Laffort **Polymust Press 300 ppm** **after fermentation**
Wine 3 – Fining with Laffort **Polylact 300 ppm** on press juice
Wine 4 – Fining with Laffort **Polymust Press 300 ppm** on press juice

*Aromatic White & Rosé Winemaking*

*Grape to Cellar*

# Juice Preparation - Fining

100% ROSÉ

## POLYMUST® ROSÉ

PVPP - Eliminates bitterness & pinking potential in wine

+

Potato - Eliminates oxidized and oxidizable phenolic compounds

*New Product*

**200-800 ppm**

*Aromatic*

*White*

*&*

*Rosé*

*Winemaking*

*Grape to Cellar*

# Juice Prep Summary

***Phenolic Management***

1) Longer time on skins = more phenolic extraction
2) Minimize press cycle rotations to lower phenolic extraction
3) Use pressing enzyme to shorten press cycles to reduce hard press fraction with higher phenolics
4) Use Polumust Rose to remove oxidized and bitter phenolics from juice

**Lower phenolic profile to prevent oxidation and preserve your aromatic profile**

*Aromatic White & Rosé Winemaking*

*Grape to Cellar*

# Fermentation Stage

Aromatic White & Rosé Winemaking

Grape to Cellar

*Aromatic White & Rosé Winemaking*

*Grape to Cellar*

# Juice Preparation

***Rack clean juice off lees***

Protect juice from Oxygen – gas tanks with CO2 or Argon


*Aromatic*
*White*
*&*
*Rosé*
*Winemaking*
*Grape to Cellar*

Target:
NTU 100 – 200
1% Solids

# Juice Preparation

## *Acid & Brix Adjustment*

Balance your juice before you start fermentation

1) Fermentation will integrate your additions/adjustments
2) Yeast can be shocked by a mid fermentation acid addition

Target TA – greater than 6g/L Tartaric Acid

*Aromatic White & Rosé Winemaking*

*Grape to Cellar*

# Juice Preparation

## *Acid & Brix Adjustment*

Average brix conversion to get potential alcohol

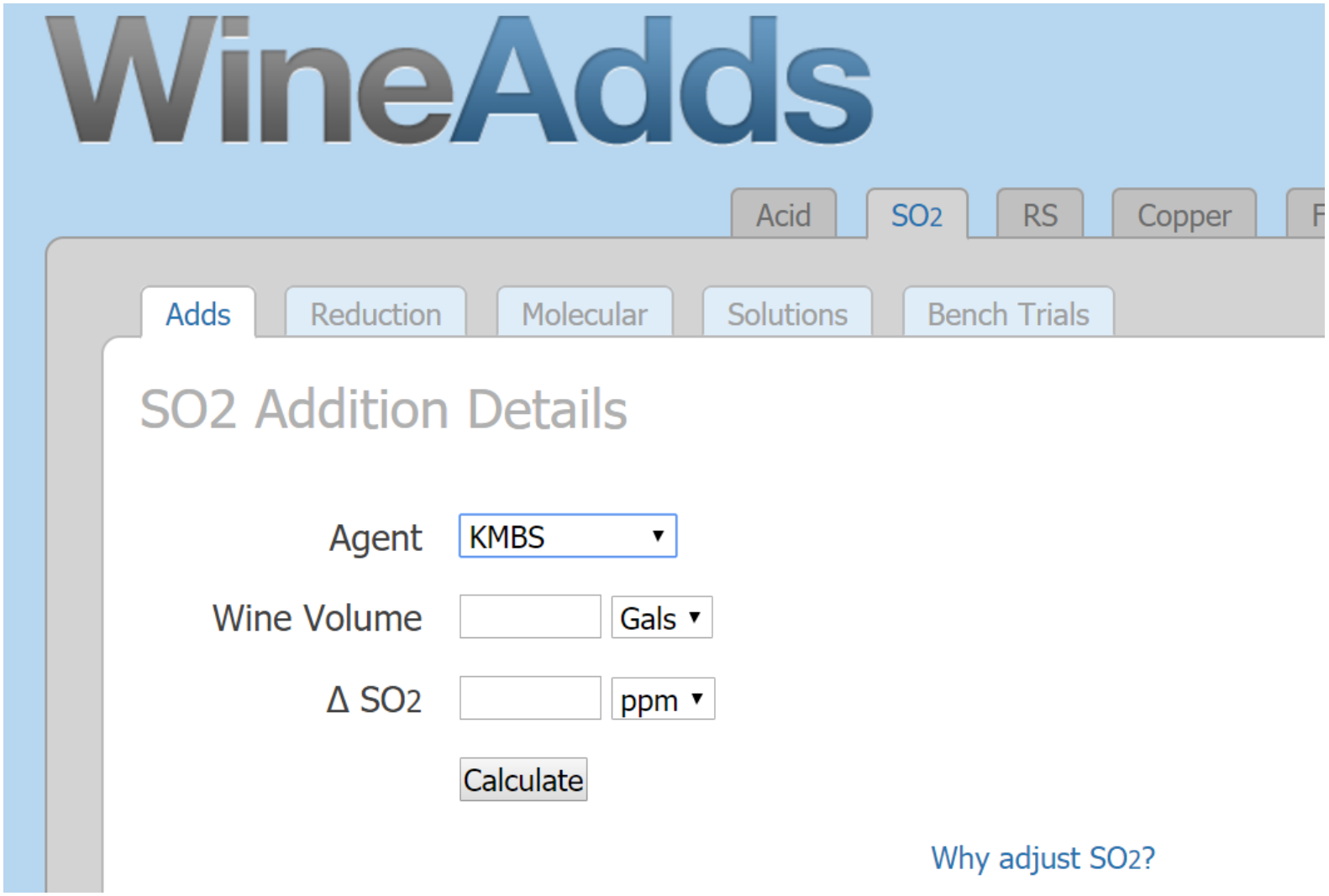
BRIX ✖ 0.605 = Potential Alcohol

Example:
22.5 Brix X 0.605 = 13.6% Alcohol

*Aromatic White & Rosé Winemaking*

*Grape to Cellar*

# Online Tool




*Crisp*
*Refreshing*
*White*
*&*
*Rose*
*Wines*

# Fermentation

***Yeast Selection***

#1 most important –

yeast alcohol tolerance ≥ potential alcohol

- Look at nutrient needs
- Look at temperature range

  The fun stuff:
  - Flavor
  - Mouthfeel

*Aromatic*

*White*

*&*

*Rosé*

*Winemaking*

*Grape to Cellar*

# Fermentation

## *Yeast Selection*


High expression of grapefruit & passion fruit. Preserves acidity, low temperature tolerance.

High expression of passion fruit & lychee. Produces Hsp 12, giving rich mouthfeel. Nutrient needs are high.



High expression of pineapple & pear. Preserves acidity. Low temp tolerance & nutrient needs.

*Aromatic*

*White*

*&*

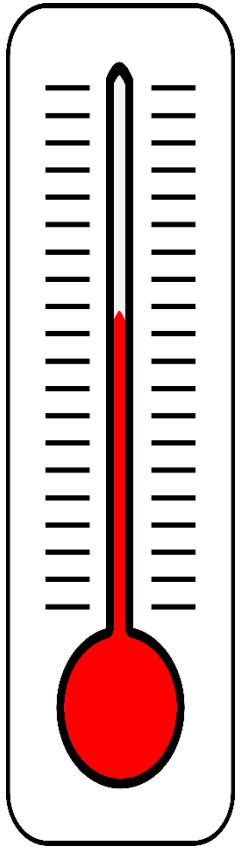
*Rosé*

*Winemaking*

*Grape to Cellar*

# Winemaking Idea

***Fermentation Temperature***



68°F Favors Thiol Production

55°F Favors Ester Production

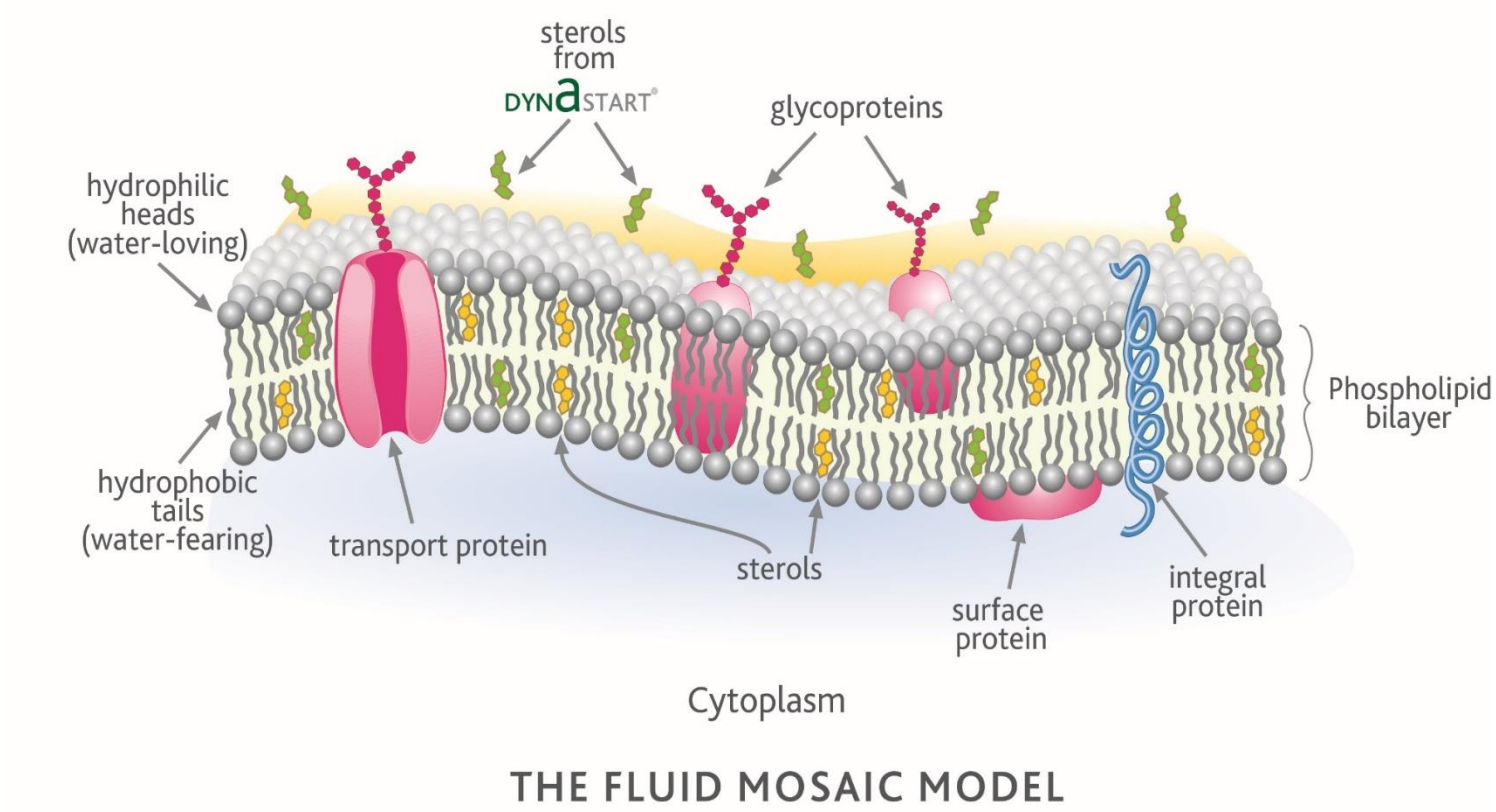
*Aromatic White & Rosé Winemaking*

*Grape to Cellar*

# Fermentation

***Yeast Re-Hydration***

Sterols – important for yeast membrane strength, keeping yeast healthy during fermentation




*Aromatic*

*White*

*&*

*Rosé*

*Winemaking*

*Grape to Cellar*

# Specific Fermentation

***Specialized Yeast Re-Hydration***

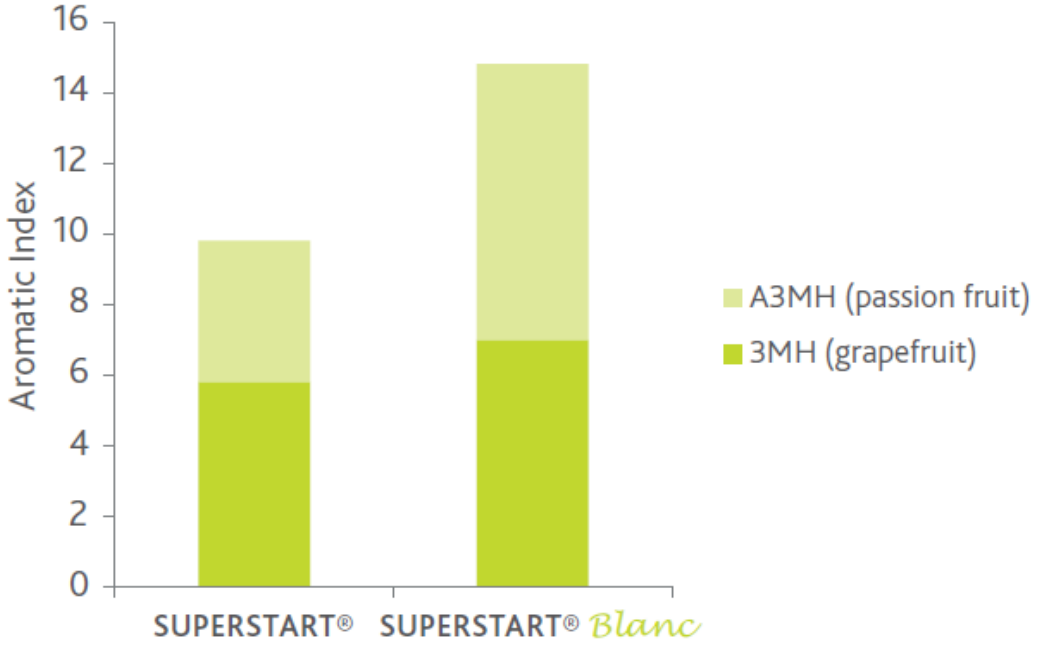
## SUPERSTART®BLANC

## AROMA OPTIMISATION

*With an optimal rehydration yeast*

Rich in vitamins & mineral salts

Yeast absorb into membrane as they hydrate – enhances **3 generations** of yeast!




*Aromatic White & Rosé Winemaking*

*Grape to Cellar*

# Specific Fermentation

***Specialized Yeast Re-Hydration***


## *Superstart Blanc*

- Dosage: 150-250ppm added to <u>total must volume</u>
- You need 20 times the weight of water for dissolving Superstart Blanc
- Measure out desired volume of water at 104°F
- Dissolve into water
- This will bring the water temp down to 100°F, perfect for the yeast

*Aromatic*

*White*

*&*

*Rosé*

*Winemaking*

*Grape to Cellar*

# Fermentation

***Mid Ferment Nutrition***

#1 – Proper nutrition will reduce the risk of H2S production

#2 – when yeast are happy, they will produce the aromatic profile advertised

*Aromatic White & Rosé Winemaking*

*Grape to Cellar*

# Fermentation

***Mid Ferment Nutrition***

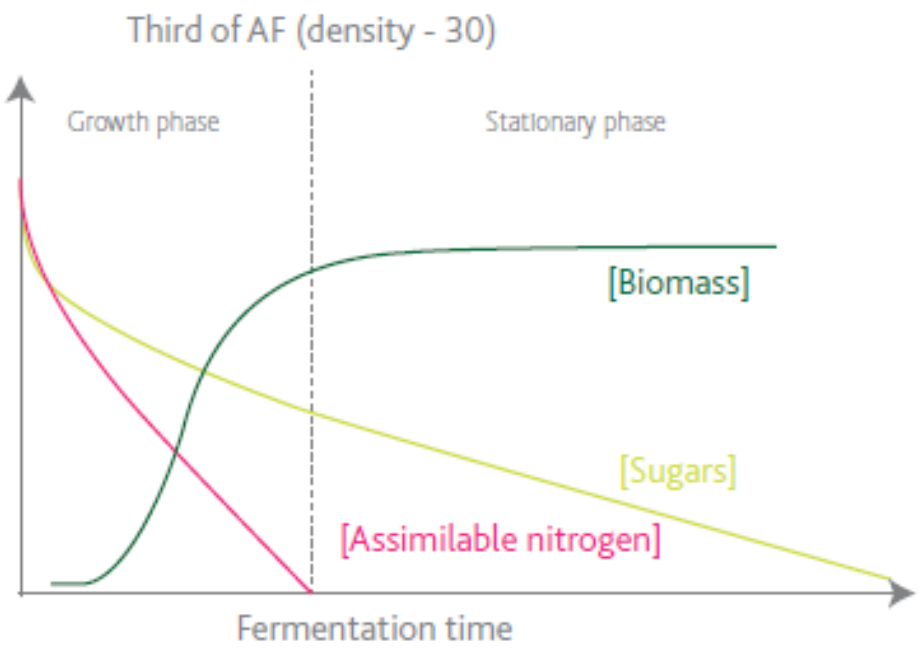



Figure 1: Assimilation of nitrogen and production of biomass during alcoholic fermentation.

**Nitrogen Sources:**
NH4+ ammonium ion & amino acids (organic)

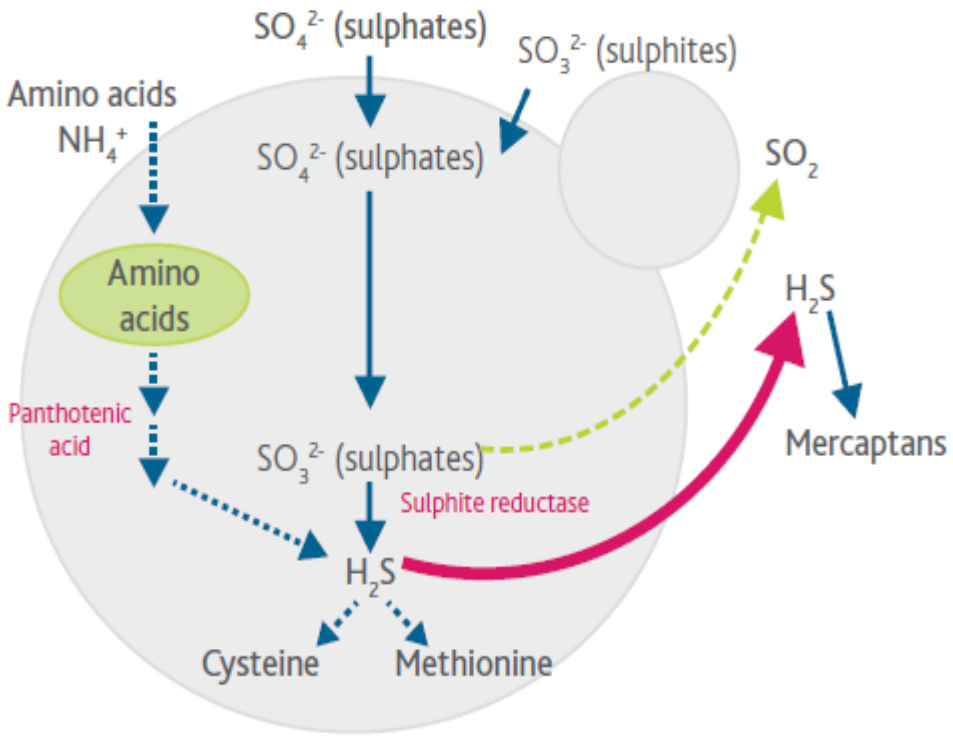
- Nitrogen initially present in must is depleted during first 1/3 of alcoholic fermentation.
- Need greater biomass for high potential alcohol
- Adding too much DAP during growth phase can create excessive biomass
- Need the right balance of amino Nitrogen and mineral Nitrogen
- Timing is important

*Aromatic White & Rosé Winemaking*

*Grape to Cellar*

# Fermentation

## *Mid Ferment Nutrition*




Key enzyme in H2S production is sulphite reductase

When there is amino acids available, sulphite reductase will produce Sulphur amino acids.

When there is a shortage of amino acids, sulphite reductase will produce H2S.

*Aromatic White & Rosé Winemaking*

*Grape to Cellar*

Amino Nitrogen is essential! – Not just DAP

# Fermentation

## *Mid Ferment Nutrition*

| PRODUCT | DESCRIPTION | DOSAGE |
|---|---|---|
| THIAZOTE® | Diammonium phosphate (DAP) and thiamine.<br>YAN brought by 100 ppm ≈ 21mg/L. | 100 - 500 ppm |
| NUTRISTART® | Complex yeast nutrient, combining organic nitrogen, DAP and thiamine.<br>YAN brought by 100 ppm ≈ 15 mg/L. | 200 - 300 ppm |
| NUTRISTART® ORG | 100% organic nitrogen from yeast origin.<br>YAN brought by 100 ppm ≈ 10 mg/L. | 200 - 600 ppm |

# Fermentation – New Product

***Mid Ferment Nutrition***


- Complex nutrient with organic and mineral (DAP) nitrogen sources.
- Formulated to develop the organoleptic complexity of white & rose wines.
- Glutathione rich to protect delicate fermentation aromas.

*Aromatic*

*White*

*&*

*Rosé*

*Winemaking*

*Grape to Cellar*

# Fermentation

## *Mid Ferment Nutrition*

| Potential Alcohol | Total YAN required* ppm | YAN added 1st addition ppm(YAN1) | YAN added 2nd addition ppm(YAN2) |
|---|---|---|---|
| 12 % vol | 180 | 150 - initial YAN | 30 |
| 13 % vol | 190 | 155 - initial YAN | 35 |
| 14 % vol | 200 | 160 - initial YAN | 40 |
| 15 % vol | 220 | 170 - initial YAN | 50 |
| 16 % vol | 240 | 180 - initial YAN | 60 |

*Chart for low Nitrogen demanding yeast strains

- +10ppm (YAN2) for moderate Nitrogen demanding strains
- +20ppm (YAN2) for high Nitrogen demanding strains

*Aromatic White & Rosé Winemaking*

*Grape to Cellar*

# Fermentation

## *Mid Ferment Nutrition*

### Laffort Nutrient Calculator

**Goal: produce sufficient yeast biomass, without excess, and preserve a good physiological state of the yeast for the duration of the alcoholic fermentation.**

| | Total YAN required* mg/L | YAN added 1st addition mg/L (YAN1) | YAN added 2sd addition mg/L (YAN2) |
|---|---|---|---|
| 12 % vol | 180 | 150 – Nass initial | 30 |
| 13 % vol | 190 | 155 – Nass initial | 35 |
| 14 % vol | 200 | 160 – Nass initial | 40 |
| 15 % vol | 220 | 170 – Nass initial | 50 |
| 16% vol | 240 | 180 – Nass initial | 60 |

* For low N demanding yeasts

⇒ add 10 mg/L (YAN2) for the average N demanding yeasts

⇒ add 20 mg/L (YAN2) for the high N demanding yeast

Maximum recommended doses

Nutristart® AROM ≤ 600 mg/L (300 mg/L max at the first add)
Nutristart® Org ≤ 450 mg/L (300 mg/L max at the first add)
Nutristart® ≤ 460 mg/L
Thiazote® PH ≤ 500 mg/L (if not Thiazote, then DAP)

YAN CONTRIBUTION at 100 PPM

Nutristart® adds 15 mg/L
Nutristart® Org adds 10 mg/L
Nutristart®AROM adds 14 mg/L
Thiazote® PH adds 21 mg/L

LAFFORT® NUTRIENTS

*Aromatic*

*White*

*&*

*Rosé*

*Winemaking*

*Grape to Cellar*

# Online Tools

***On-line Nutrition Tools***

***www.Laffort.com***

DECISION-MAKING TOOL

Nutrient Calculator – input your juice parameters

Yeast Rehydration video


*Aromatic*

*White*

*&*

*Rosé*

*Winemaking*

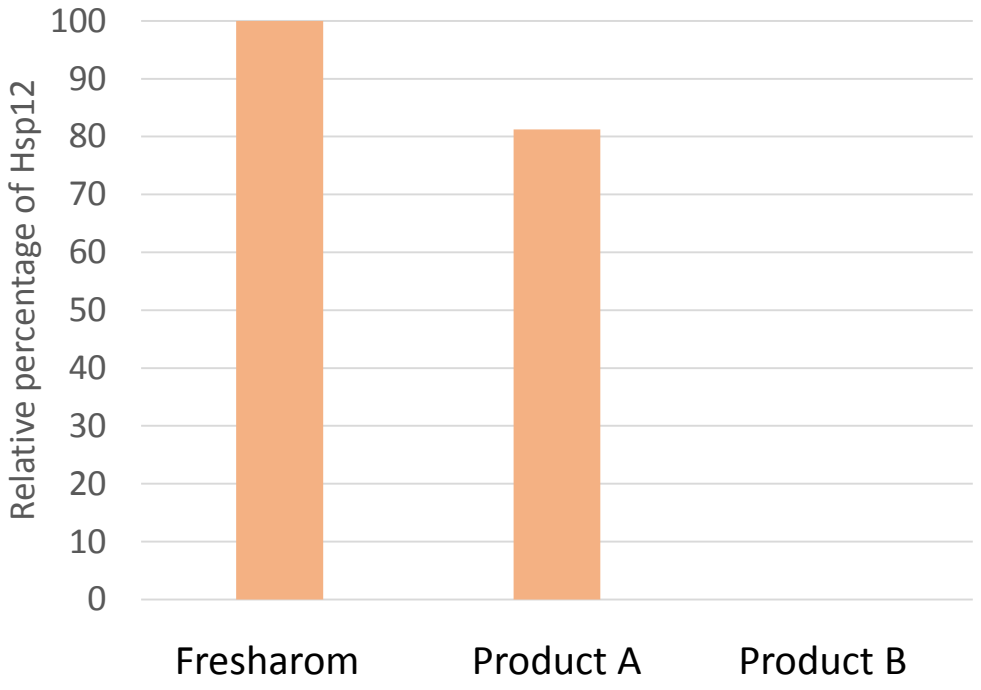
*Grape to Cellar*

# Fermentation

***Glutathione – Aroma Protection***

**FRESHAROM®**


- Rich in sulfur-containing amino acids (Glutathione precursors)
- Added during fermentation so yeast can assimilate glutathione precursors
- Dosage: 200-300ppm
- Add after last mid-fermentation nutrient addition (16 brix)
- *Increases mid-palate and sweetness with Hsp12 cell wall protein*




**Hsp12 Concentration competitive analysis**

# Fermentation - Summary

- Adjust Brix & Acid - before fermentation
- Yeast Strain Selection - for your juice & style
- Fermentation Temperature – favor esters or thiols
- Yeast Rehydration – Superstart Blanc for increased aromatics
- Yeast Nutrition – prevents H2S (reduction) problems
- Glutathione – FreshArom for aroma protection

*Aromatic White & Rosé Winemaking*

*Grape to Cellar*

# Post Fermentation Stage

Aromatic White & Rosé Winemaking

Grape to Cellar

*Aromatic*

*White*

*&*

*Rosé*

*Winemaking*

*Grape to Cellar*

# Post Fermentation

***Crisp & Refreshing Style***


- Keep wine protected from Oxygen
  - Topped tanks
  - Gas tanks & transfer lines with $CO_2$
- Keep $SO_2$ levels at 30ppm free during cellaring
- Bottle early (within 6 months)

*Aromatic White & Rosé Winemaking*

*Grape to Cellar*