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2. My testimonial on coinoculation yeast - bacteria

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- **Coinoculation is part of my consulting good practices since 2006**
- **3 of my consulting clients do coinoculation in all their reds**
 - **One of them since 2007**
 - **100% of the Pinot Noir tanks are co-inoculated. *Seven of my consulting clients are making Pinot Noir***

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The main arguments for coinoculation (the way my consulting clients perceive its advantages)

- 1. Sensory quality and consistency in style. The main and most original key point of coinoculation**
- 2. The shorter MLF duration in wines that combine**
 - * intense pH change (to reach pH 3.5 or lower)**
 - * high alcohol potential (> 14%vol)**
- 3. Microbial purity during and after the alcoholic fermentation, during and after the MLF**

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3.

**How to integrate a new technique into
a winemaking strategy?**

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A small, square portrait of Dominique Delteil, a man with dark hair and a beard, wearing a dark shirt. The background of the portrait is a warm, reddish-orange color with a subtle, circular pattern.

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A strategy approach

- 1 Define market and style goals**
- 2 Plan a winemaking and aging strategy**
- 3 Apply a very precise procedure through vinification and aging**
- 4 Monitor the conformity to defined goals with the right sensory and classical analysis**

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1. Define market and style goals

Which are the successful wines?

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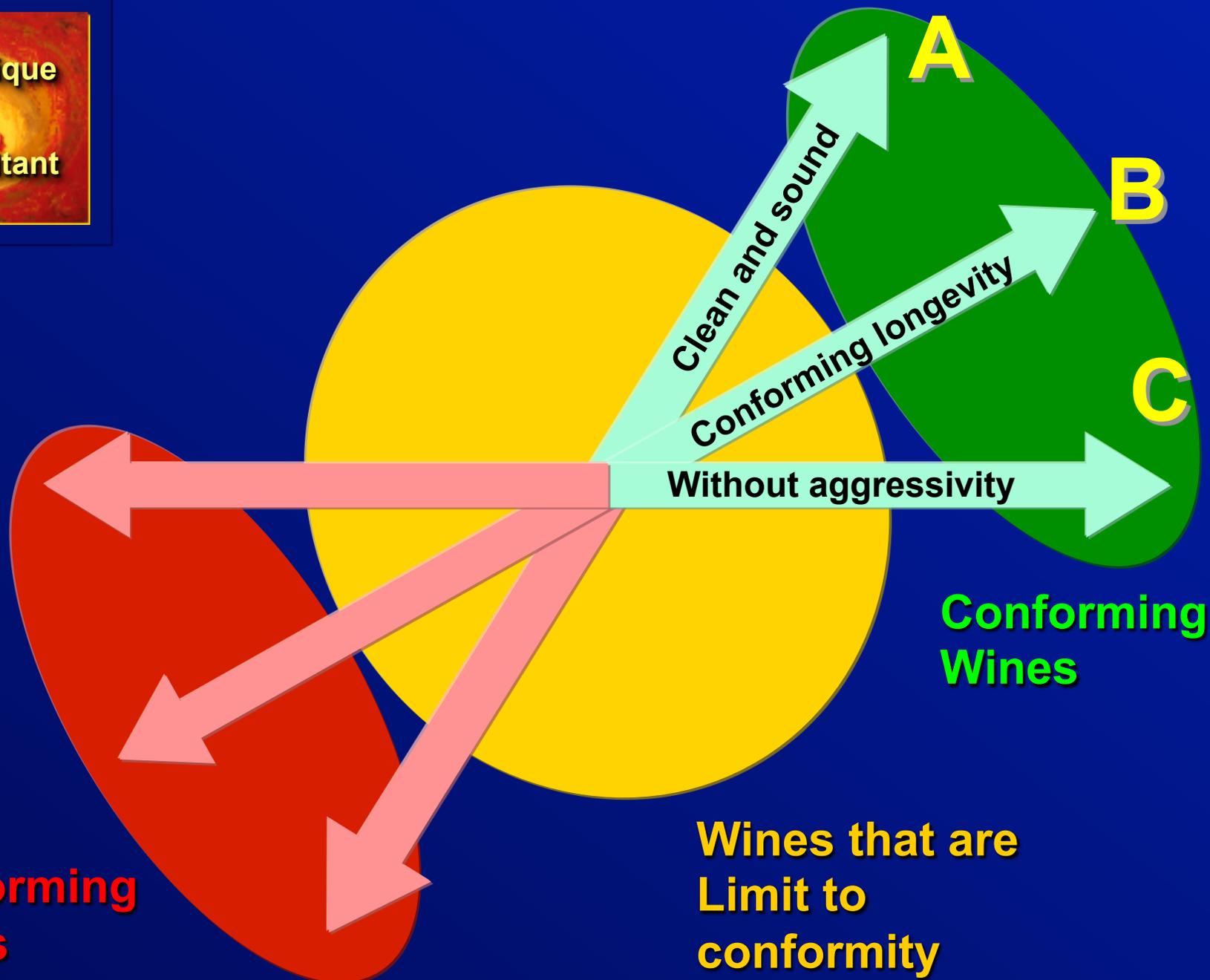
Wines that combine :

- clean and sound profile,**
- conforming longevity,**
- without perceived aggressivity**

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Number 1 Axis: To build the right longevity

**Note: in the next slides, the underlined
words are related to MLF and coinoculation**

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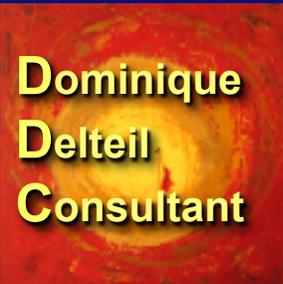
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With a colloidal matrix sufficiently concentrated, balanced and stabilized

- 1. The right pH in the juice and the wine: a very powerful motor for the colloidal balances, the most powerful**
- 2. Sufficient concentration with macromolecules from grape, yeast, bacteria, oak**
- 3. Right concentration with compounds that participate to different families of aromas and their right interactions with macromolecules. Often, interactions are more important for sensorial expression than the molecular concentration itself**

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Right concentration with compounds that participate to different families of aromas and their right interactions with macromolecules

- 1. Sulfur like aromas and tastes**
- 2. Chemical and solvent like aromas and tastes**
- 3. Herbaceous and vegetal like aromas and tastes**
- 4. Fruits and spices like aromas and tastes**
- 5. Burning, cooked and / or pharmaceutical like aromas and taste**



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Some important considerations

- **Fruity and spicy like aromas and taste, balanced acidity, roundness and length can express and last (longevity) only if :**
 - **The other 4 aromatic families (sulfur, chemical, herbaceous, pharmaceutical) are:**
 - **at enough low molecular concentration**
 - **in enough intense interaction with macromolecules**
 - **The compounds that may participate to fruit and spicy like aromas are in enough intense interaction with macromolecules**



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Manage pH

- **Tartaric acid immediately in the fresh grape**
- **Note: the most efficient and eliminate the potassium that is in excess**



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Take interesting macromolecules

- **Enough maturity of grapes cells (cell walls, aromas, pigments, tannins interacting with grape polysaccharides) and enough maceration**
- **Right yeast strain and right inactive yeast at the right moment, including after membrane treatments**
- **Right lactic bacteria strain**
- **Right oak, at the right dosage, at the right moments, starting with fresh grapes**

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Do not eliminate interesting macromolecules

- **Be careful with excessive maceration or oak for too much time : they destabilize interesting macromolecule complexes**
- **Be very careful with excessive finings**
- **DO NOT USE copper sulfate or copper citrate = fruit killers!**
- **Work with membrane as soon as possible: to early balance the wine and be able to start again aging with the right inactivate yeast and the right oak**

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2. Plan a winemaking and aging strategy to answer the style and market goals, including longevity

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Winemaking goals and main risks management to reach the main market goals : A, B and C

- Taking fruit aromas from pulp and skin, pigments, polysaccharides from pulp and skin, hydrosoluble tannins from the skin
- Stabilizing those elements that are key points of the colloidal matrix
- Not extracting herbaceous aromas and aggressive tannins in the inner layers of the skin
- Extracting as few as possible ethanol soluble tannins.



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Winemaking goals and main risks management to reach the main market goals : A, B and C (2)

- Avoiding sulfur like off odors: they amplify herbaceous and aggressive sensations on the nose and in mouth (metallic taste and bitterness).
 - The lowest efficient level of SO₂ before fermentation
 - The right yeast strain, the right protection and nutrition during fermentation
 - The right oxygenation program during maceration
 - The right bacteria strain and right timing of inoculation
 - The right program of racking, agitation during aging

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3. Apply a very precise procedure through vinification and aging

**Some practical examples of
consistency between market / style
goals and winemaking,
including coinoculation**

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**Full bodied Cabernet
with barrel aging
30 \$ retail
72 month longevity**

Note: this example is not the procedure used by Kellerei Bozen. It is a procedure to reach the target style with conforming grapes from Virginia

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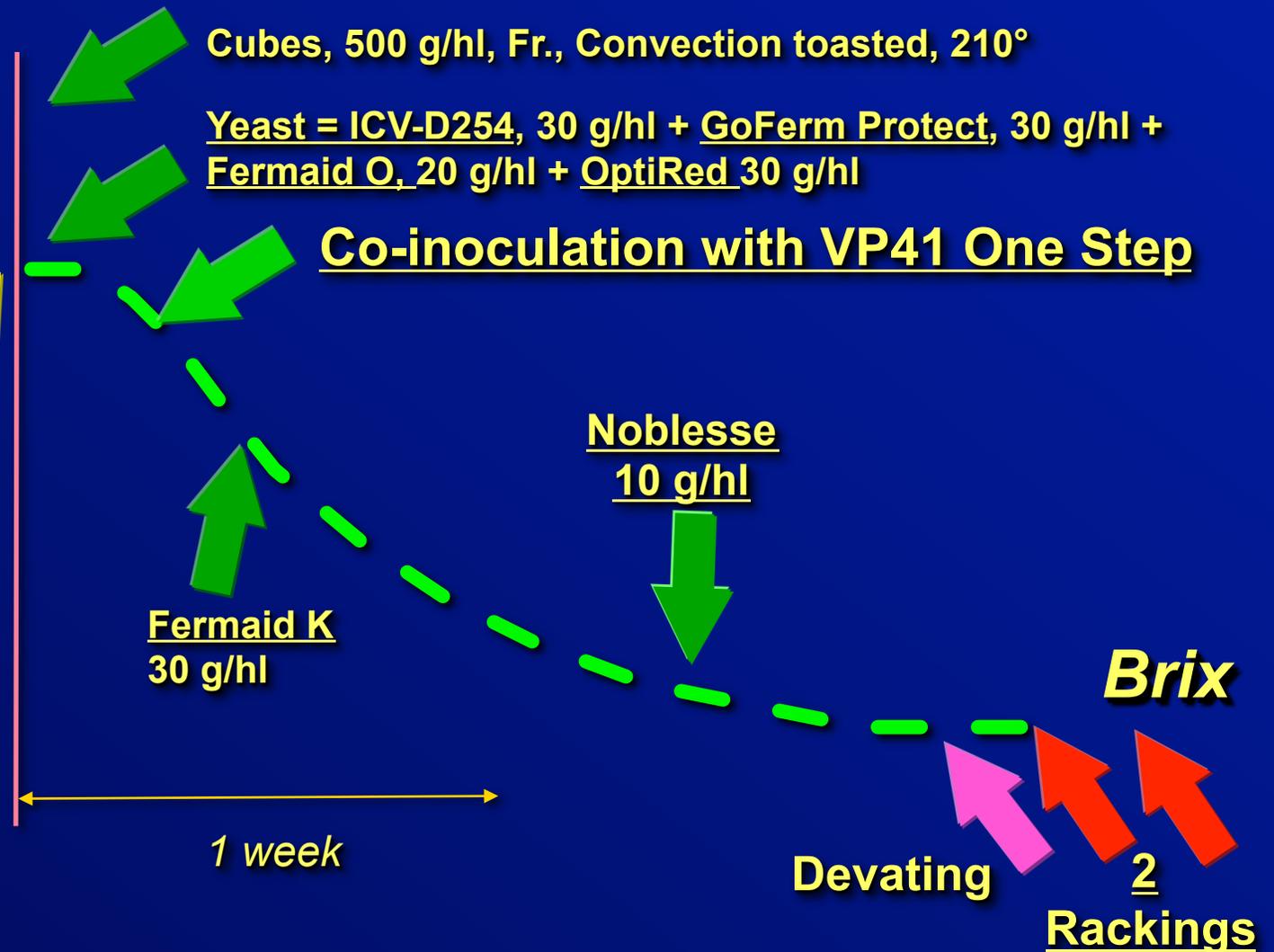
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Fermentation strategy



SO₂: 2-3 g/hl. No more, we are going to talk soon about pH adjustment !

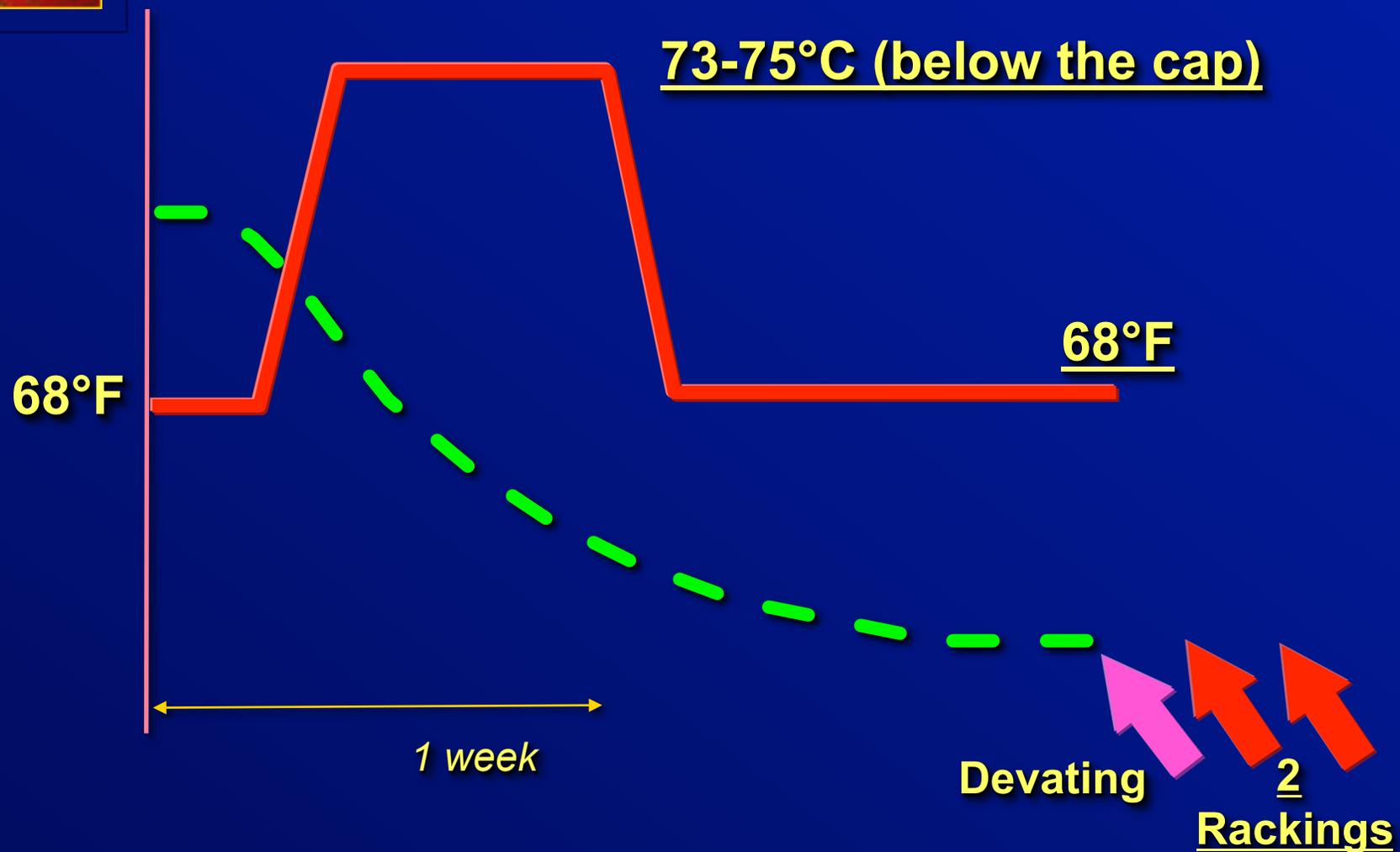


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Temperature strategy



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Strategy with agitations and rackings around malolactic

Keep 0.7 mg/L molecular SO₂

Staves, 300 g/
hl, Fr. M+

Tartaric
for pH 3.5
+ 50 ppm
SO₂

Noblesse
10 g/hl



Agitation

64°F

1 week

Back to staves

2 rackings

Rack to
barrels*

Noblesse
20 g/hl

Second
racking after
draining

End
of
malic



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Micro-oxygenation

Keep 0.7 mg/L molecular SO₂

Staves, 300 g/
hl, Fr. M+

Tartaric
for pH 3.5
+ 50 ppm
SO₂

Noblesse
10 g/hl



Agitation

10 mg/L/Month

2 mg/L/Month

64°F

1 week

Back to staves

2 rackings

Rack to
barrels*

Noblesse
20 g/hl

Second
racking after
draining

End
of
malic



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Monitoring spoilage population

Staves, 300 g/
hl, Fr. M+

Tartaric
for pH 3.5
+ 50 ppm
SO₂

Noblesse
10

Molecular SO₂



Agitation

64°F

1 week

Back to staves

2 rackings

Rack to
barrels*

Noblesse
20 g/hl

End
of
malic

Second
racking after
draining



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Long term advantages to manage spoilage level in your barrel cellar

- **Your barrels only touch a wine with very low spoilage level and high stable molecular SO₂**
 - **Lower level of spoilage bacteria and yeast**
 - **Lower spoilage population at the end of MLF when SO₂ is added, due to coinoculation**
 - **Better sanitation efficiency of SO₂ on a lower spoilage population**
 - **Better stability of the molecular SO₂:**
 - **adjusted pH before sulfiting,**
 - **right SO₂ addition in function of pH,**
 - **very few combining heavy lees (4 rackings)**

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Why MLF in barrel is not such a key technique for balanced wines and longevity? (1/2)

- **Higher spoilage risks than the proposed procedure**
- **Higher risks of sulfur like off flavors: more difficult to manage 100 barrels than just 1 or 2 tanks with the right staves, right active lees (Noblesse), right agitation, right temperature, right micro-oxygenation**
- **Not easy to adjust the level of heavy lees before MLF and during MLF if needed**



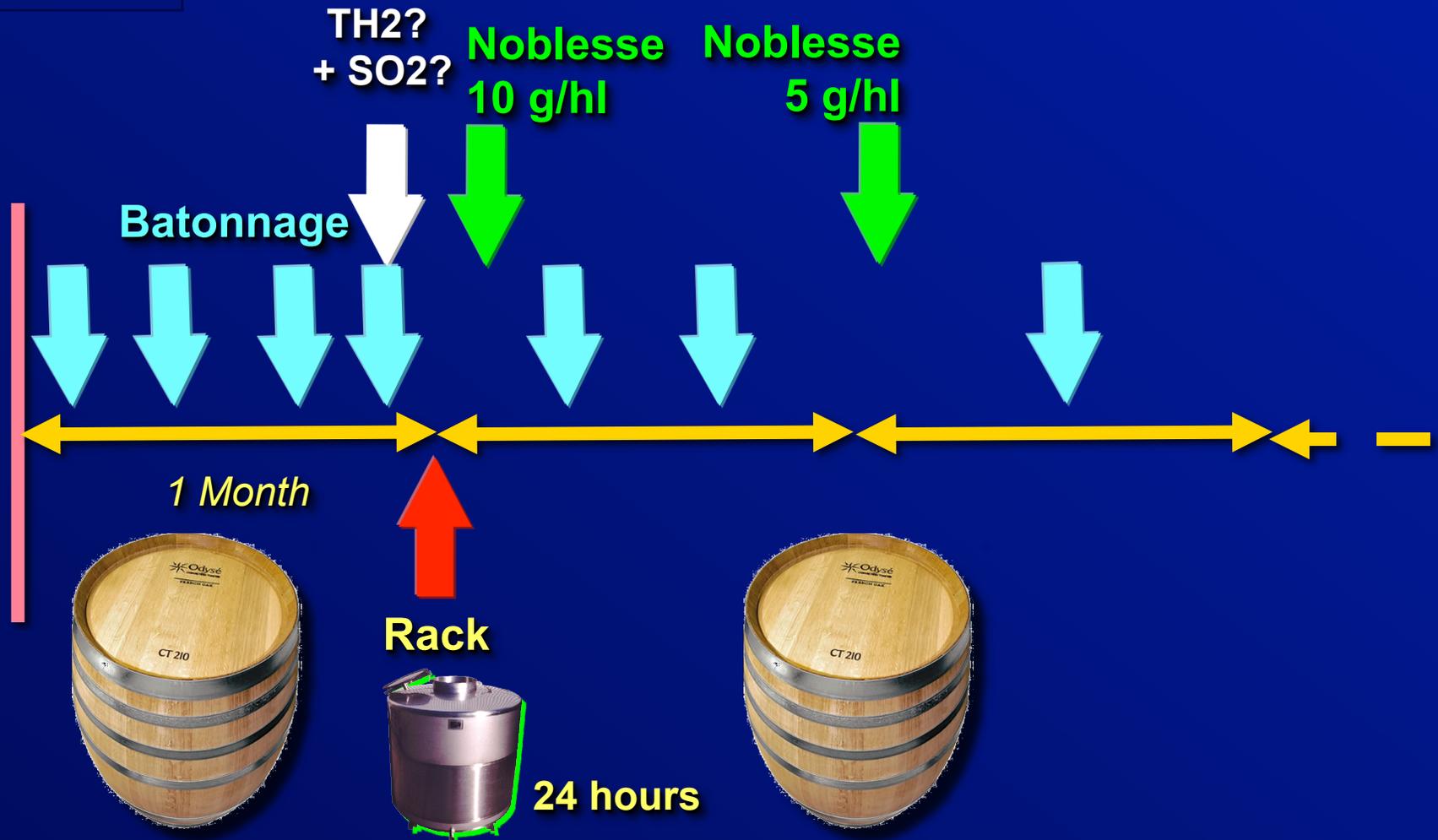
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Why MLF in barrel is not such a key technique for balanced wines and longevity? (2/2)

- **Not possible to make a precise micro-oxygenation before and during active MLF**
- **Obligation to add a high quantity of SO₂ into the barrels, in order to kill the selected LAB population with only one shot**
- **Wine-barrel balance is easy to reach quickly with the proposed program: the wine prepared with staves+Noblesse is not an aggressive extractor on the barrel oak**

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Continue to work building the colloidal matrix and the longevity

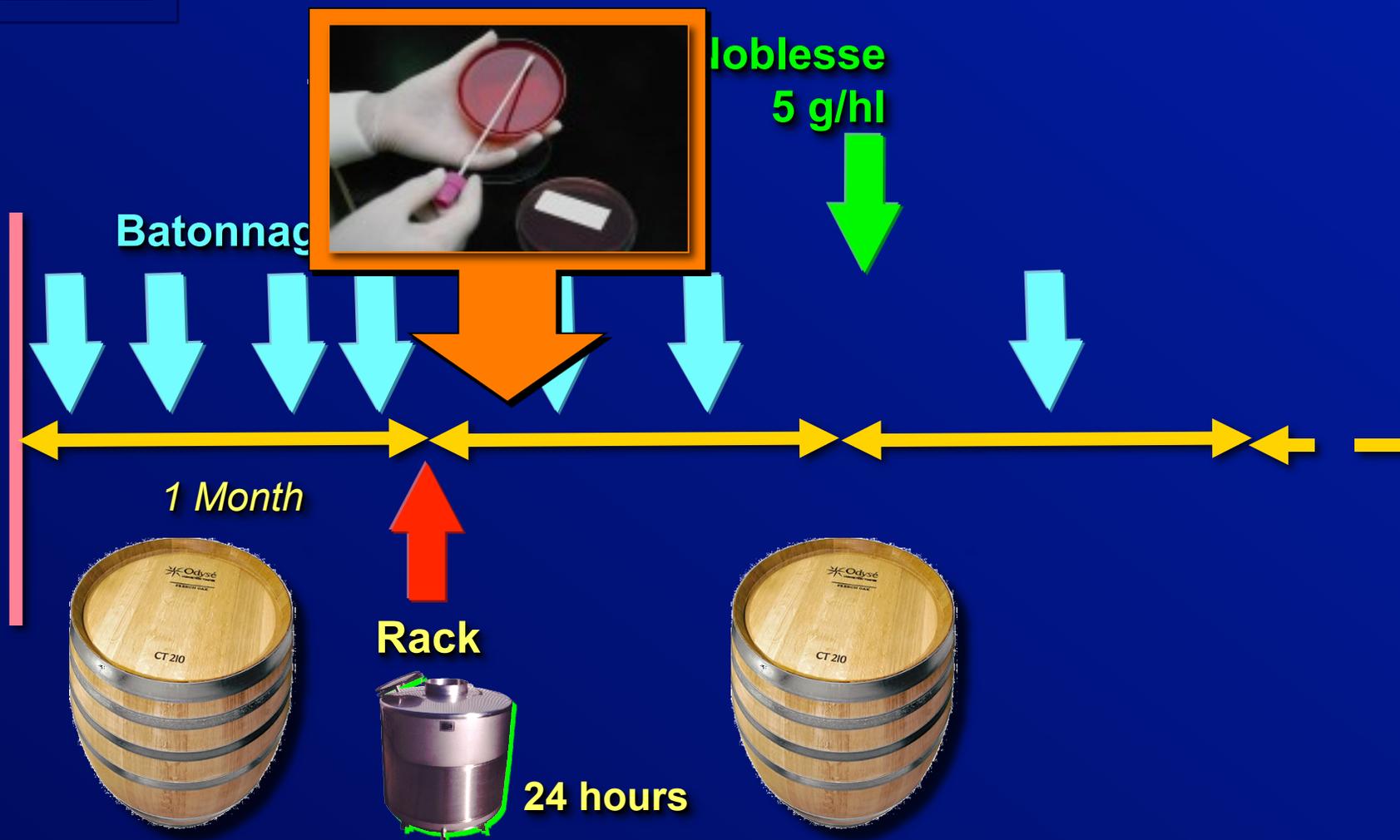


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Monitoring spoilage population



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WINERIES
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TRADE SHOW & CONFERENCE



Virginia is for Wine Lovers!



**Full bodied Pinot Noir
with barrel aging
35 \$ retail
72 month longevity**

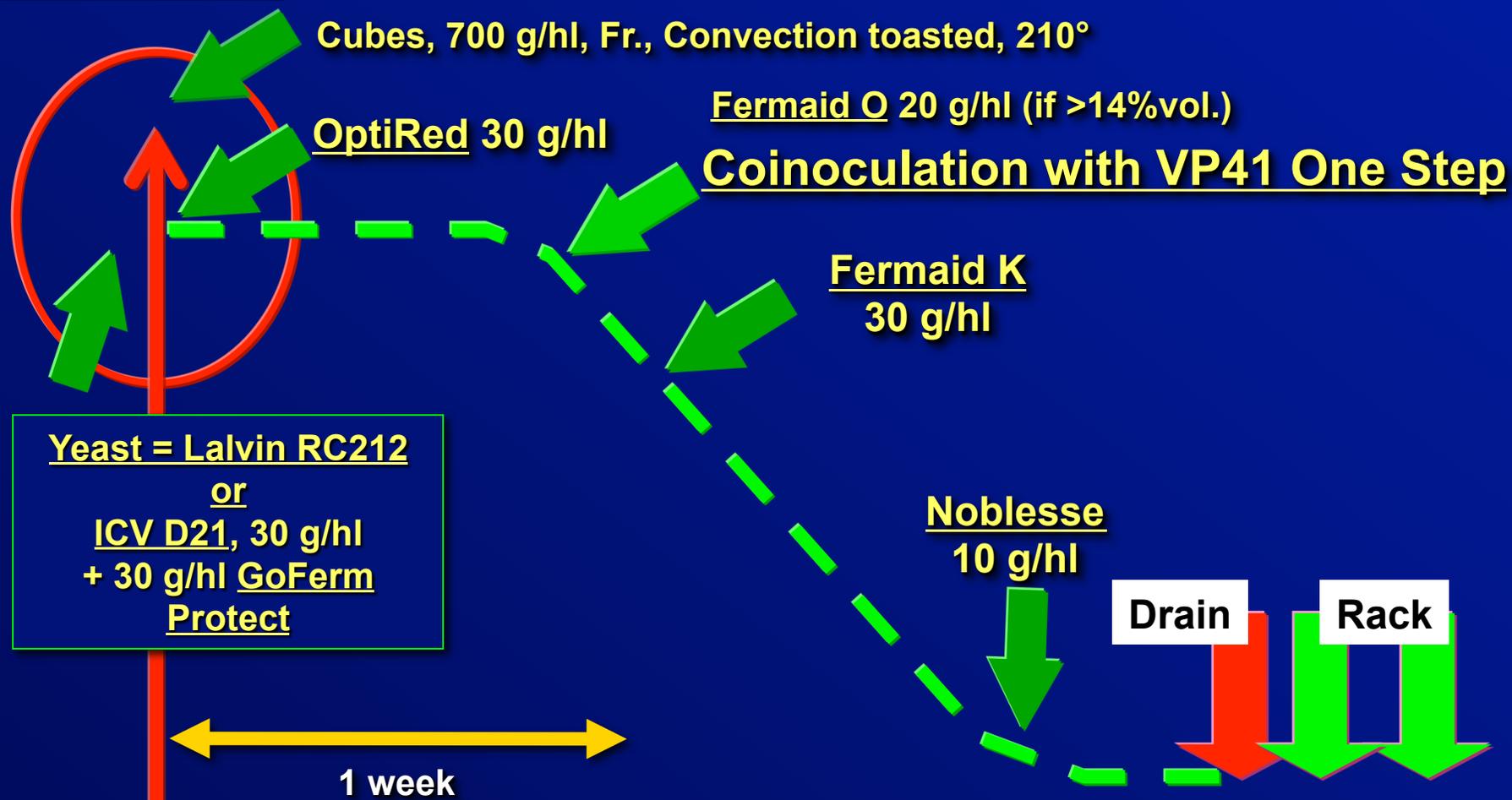
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Fermentation strategy for a Ultra Premium Pinot Noir



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Temperature management with Cold Prefermentative Maceration

SO₂: 2-3 g/hl. No more, we are going to talk soon about
pH adjustment !



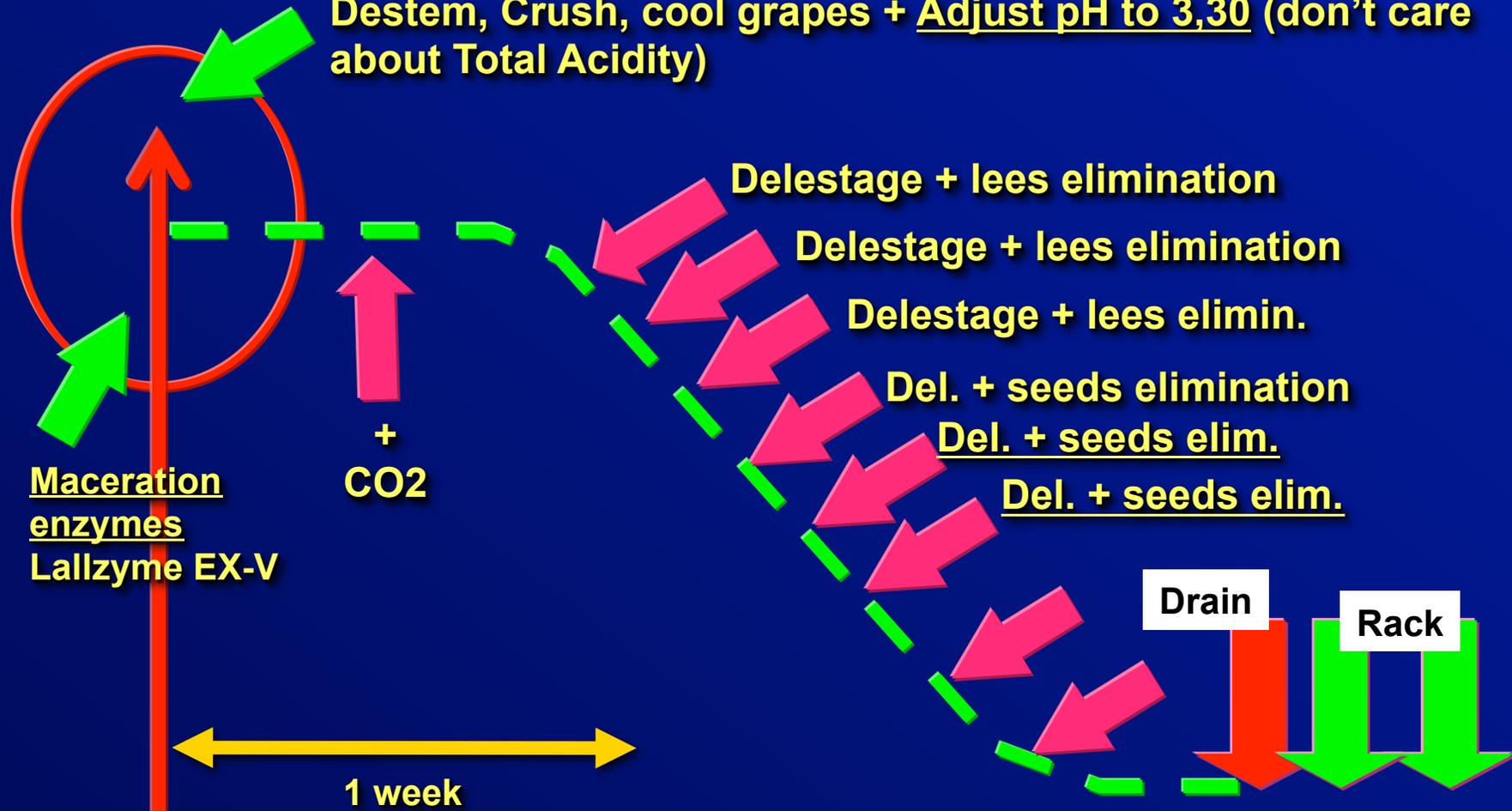
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Strategy of maceration

Destem, Crush, cool grapes + Adjust pH to 3,30 (don't care about Total Acidity)

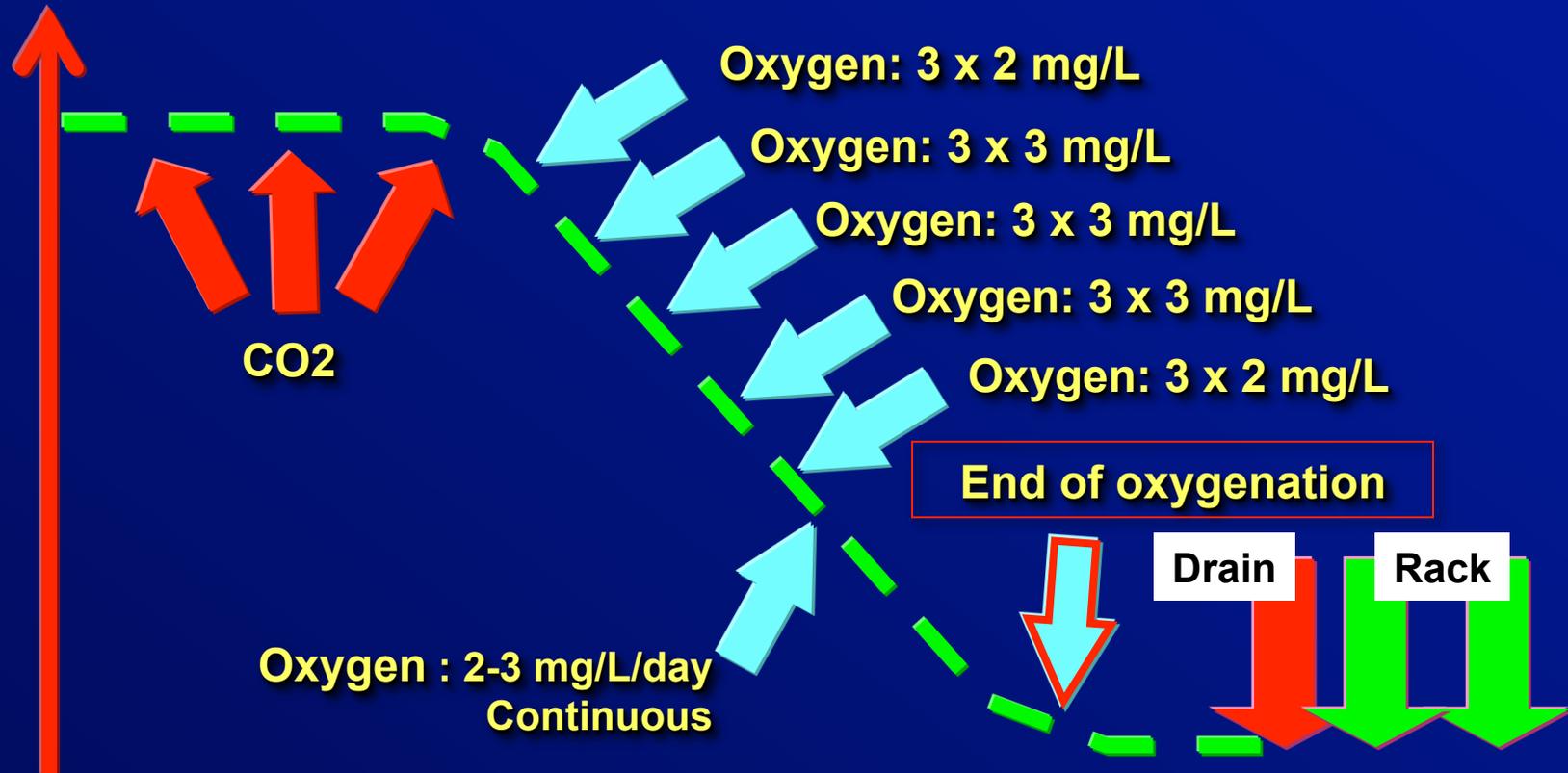


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Strategy of oxygenation



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Strategy with agitations and rackings around malolactic

Keep 0.7 mg/L molecular SO₂

Staves, 400 g/hl,
Fr. M+

Tartaric
for pH 3.3
+ 30 ppm
SO₂

Noblesse
10 g/hl



Agitation

64°F

1 week

Back to staves

2 rackings

Rack to
barrels

Noblesse
20 g/hl

Second
racking after
draining

End
of
malic



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Micro-oxygenation

Keep 0.7 mg/L molecular SO₂

Staves, 400 g/hl,
Fr. M+

Tartaric
for pH 3.3
+ 30 ppm
SO₂

Noblesse
10 g/hl



Agitation

0 mg/L/Month

0 mg/L/Month

0 mg/L/Month

64°F

1 week

Back to staves

2 rackings

Rack to
barrels

Second
racking after
draining

Noblesse
20 g/hl

End
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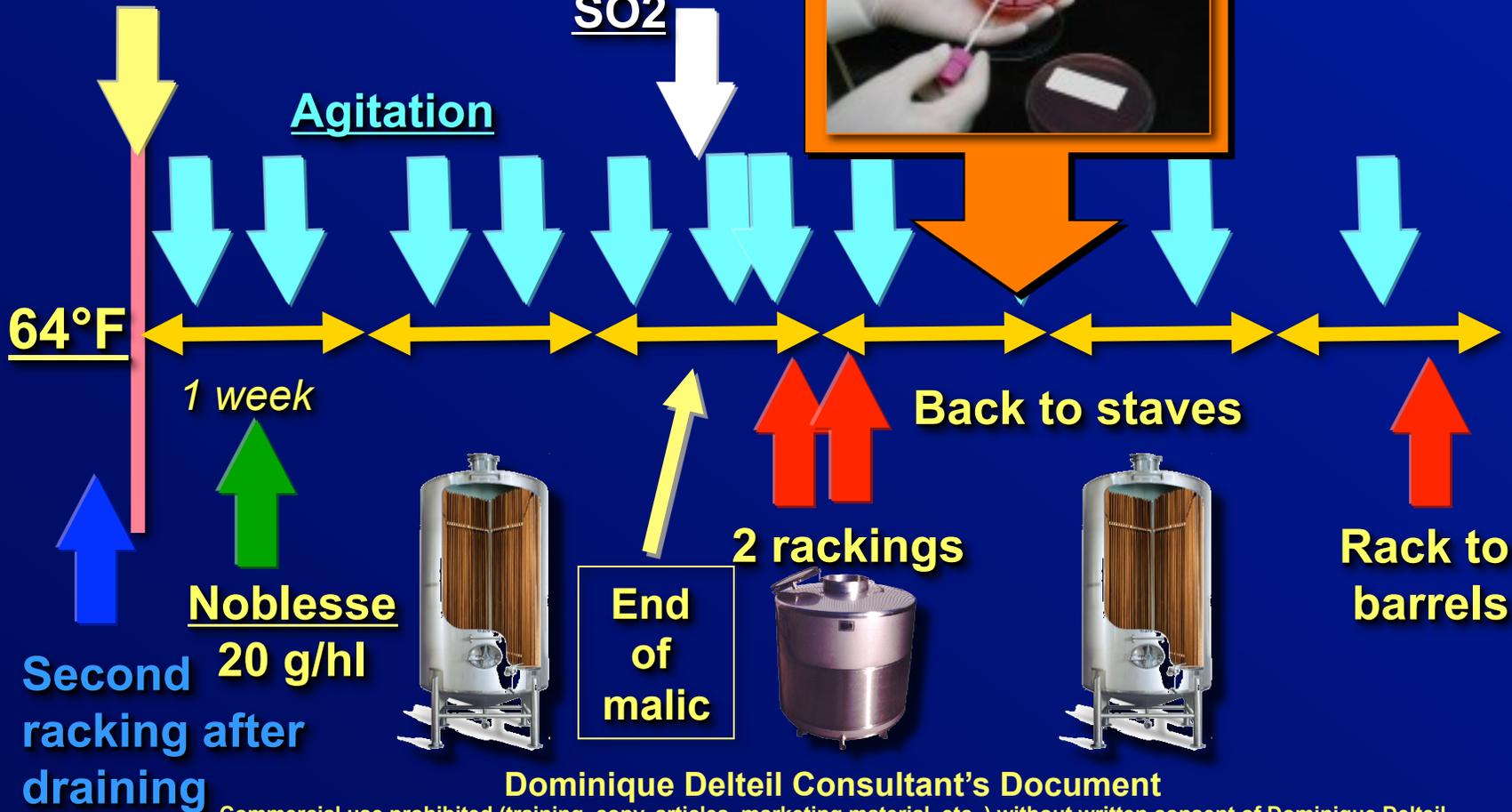
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Monitoring spoilage population

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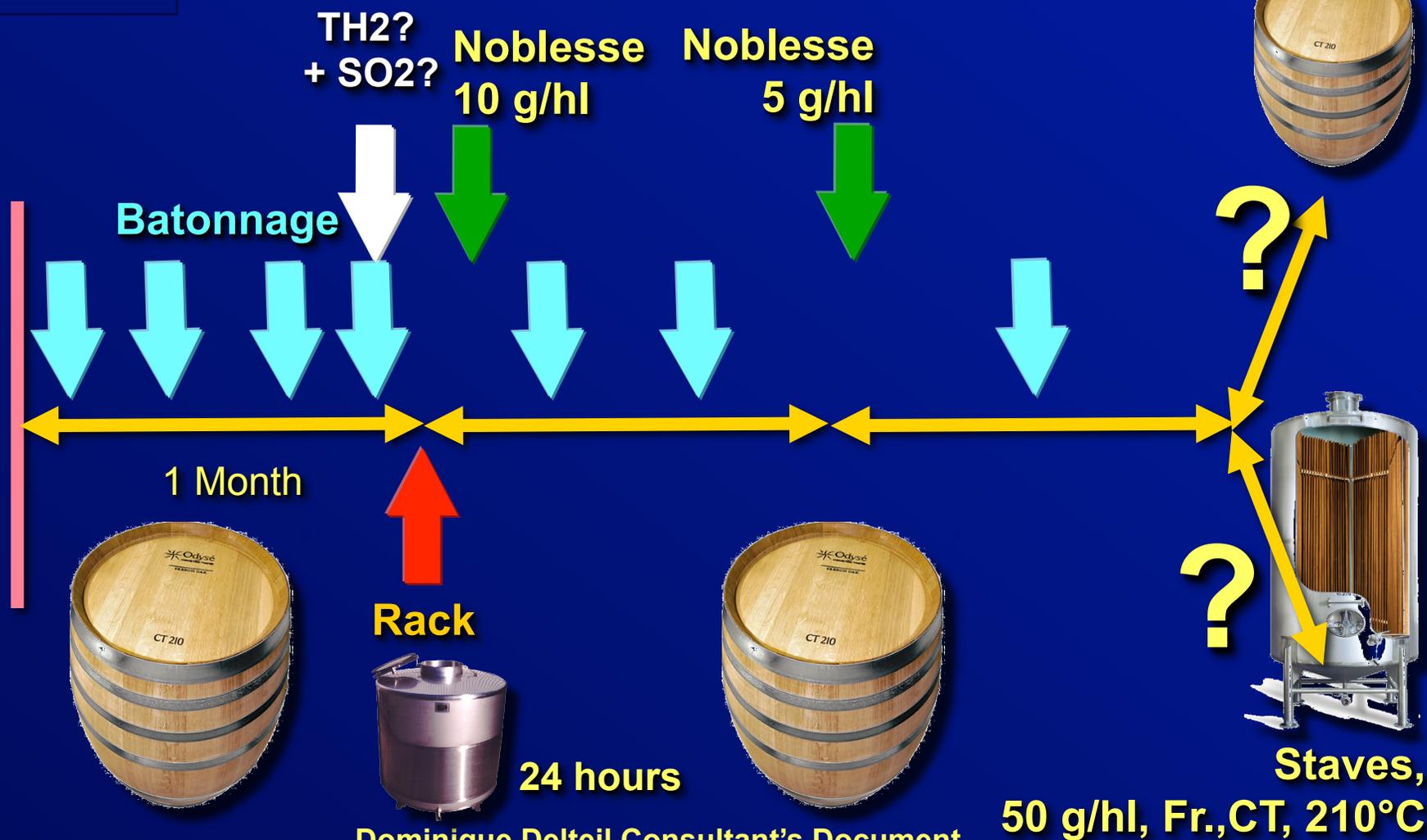


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Continue to work building the colloidal matrix and the longevity

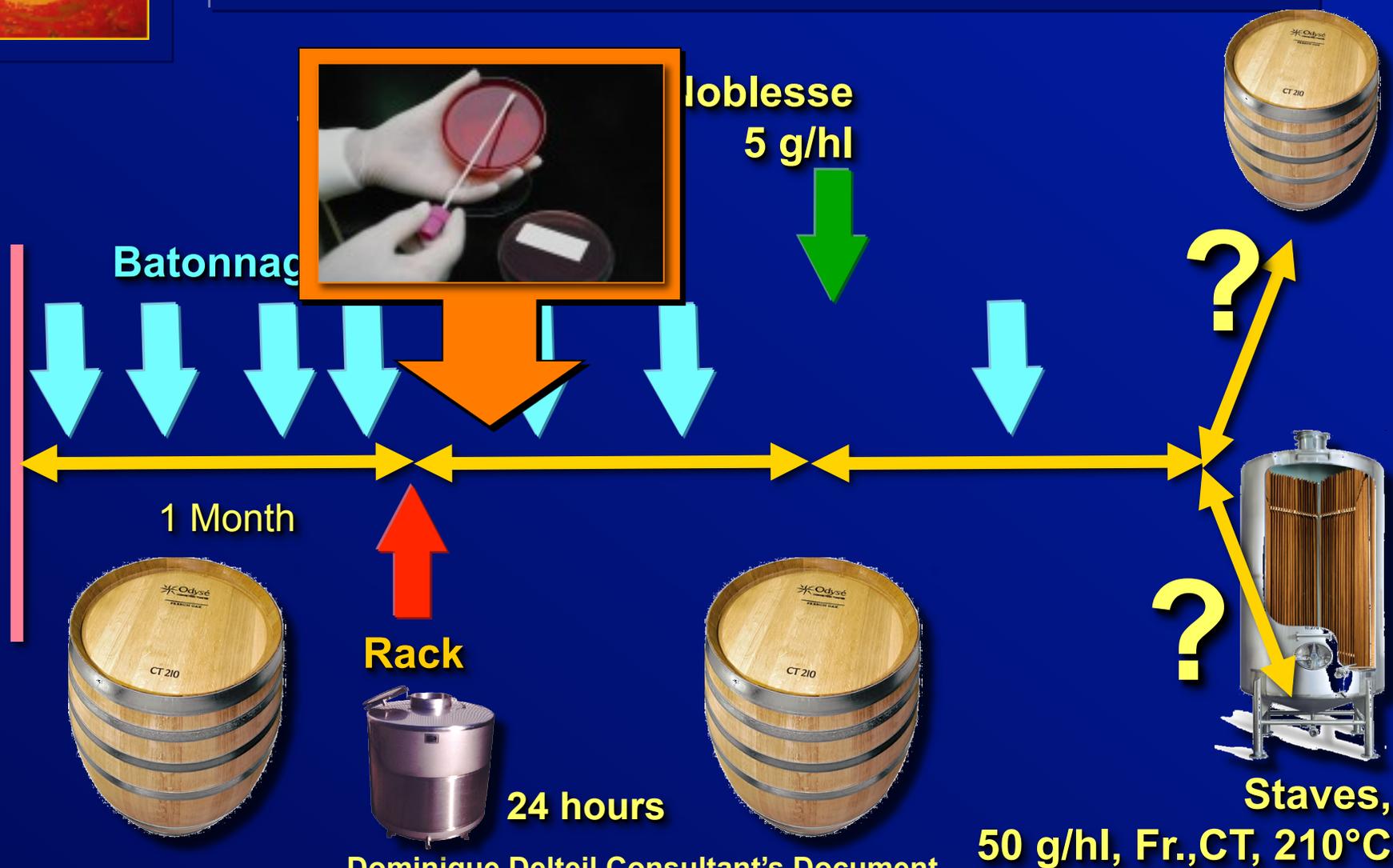


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Monitoring spoilage population



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