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Practical actions for aging wines

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Thirteen main key-points for wines aging (1)

- **Wine style and marketing position**
  - Defines the sensory goals and sensory indicators for aging monitoring
  - Defines the general aging agenda
  - Defines the possible aging tools: acceptable cost and style impact

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13 main key-points for wines aging (2)

- Wine pH and composition in: polyphenols, polysaccharides, aromas, alcohol and the way maceration and fermentation was managed.
  - It is the wine matrix that will react in function of the 11 other technical key points.
- Malolactic fermentation: pH, strain purity, temperature, stirring, oak, etc.

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13 main key-points for wines aging (3)

- **Lees* (particles) present in the wine : quantity, but most of all their composition**
  - **Yeast strain that made the fermentation**
  - **Nutrition and oxygen brought to the fermenting strain**
  - **Inactivated yeast added during fermentation**
  - **Bacteria strain that made MLF**
  - **Inactivated yeast added during aging, contact duration**

*http://www.delteil-consultant.com/pdf/revues/agwlees.pdf

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13 main key-points for wines aging (4)

- Aging vessel: size, height, material, location (e.g. sun exposure)
- Stirring : wine and lees
- Oxygen*: managed additions, contamination with oxygen, history of macro and micro during fermentation
- Sulfiting and SO2 balance in the wine, ascorbic acid management (white and rosé)

*http://www.delteil-consultant.com/pdf/RD/oxygen2.pdf

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13 main key-points for wines aging (5)

- Oak: origin, toasting, dimension, age, addition of new oak elements, impregnation with previous wine elements (SO2, sulfonyl-compounds, etc.)
- Temperatures
- Contaminating microflora
- Fining and stabilization actions
- Duration of aging program

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Some practical actions and their impact on the 12 technical key points of aging

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Sulfiting good practices (1)

- Add SO2 the very day sugar or malic are exhausted
- Adjust pH before sulfiting
- Adjust SO2 dosage according to pH (see next slide)
- Homogenization

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Sulfiting good practices (2)

- Oak vessels, tank with fixed staves, whites, rosés, Pinot Noir, reds with presence of laccase*: sulfite in the fermentation tank before racking
- Reds without laccase* and oak: rack and sulfite during racking

* Half glass of wine kept for 6 hours. Browning = active laccase

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Sulfiting good practices. Addition dosage after alcoholic (whites) or malo

pH	SO2 added
3.5 and higher	5 g/hl
3.4	4 g/hl
3.3	3 g/hl
3.2 and lower	2 g/hl

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Sulfiting good practices (3)

- During aging, once a week during first month, then at least once a month, measure:
  - Total SO2, Free SO2*, pH
- Calculate molecular SO2**
- Add SO2 when molecular SO2 non conforming (too low)

* When using ascorbic acid, distillation method is preferred

** http://www.delteil-consultant.com/en/tools_links.php

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Racking

Advantages

- Segmentation of lees*
- Agitation of light lees
- Homogeneity of additives addition

Risks

- Contamination with oxygen
- Contamination with microflora

*http://www.delteil-consultant.com/pdf/revues/agwlees.pdf

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Heavy lees definition

- Heavy lees are the particles that are deposited within 24 hours. A wine without pectin
- A wine without pectin (pectin of the cell walls completely hydrolysed) is obtained by the efficient addition of enzyme to the grapes or juice or to the wine when it's draining or during pressing.
- The size of heavy lees: from 100 microns to a couple of millimetres

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Note: heavy lees continually form in wine

- They are never really interesting.
- At each stage of aging, it's therefore important to evaluate their presence and to regularly eliminate them when needed.
- In view of their formation (see above), the frequency of their elimination diminishes with time
- It's rarely coherent to programme a systematic elimination every three months... as it is done traditionally in some areas.

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Light lees definition

- Light lees are particles which remain in suspension 24 hours after the wine has been moved
- Movements include: draining, racking, stirring, pumping, etc.
- The size of light lees: from a micron to a couple of dozen microns

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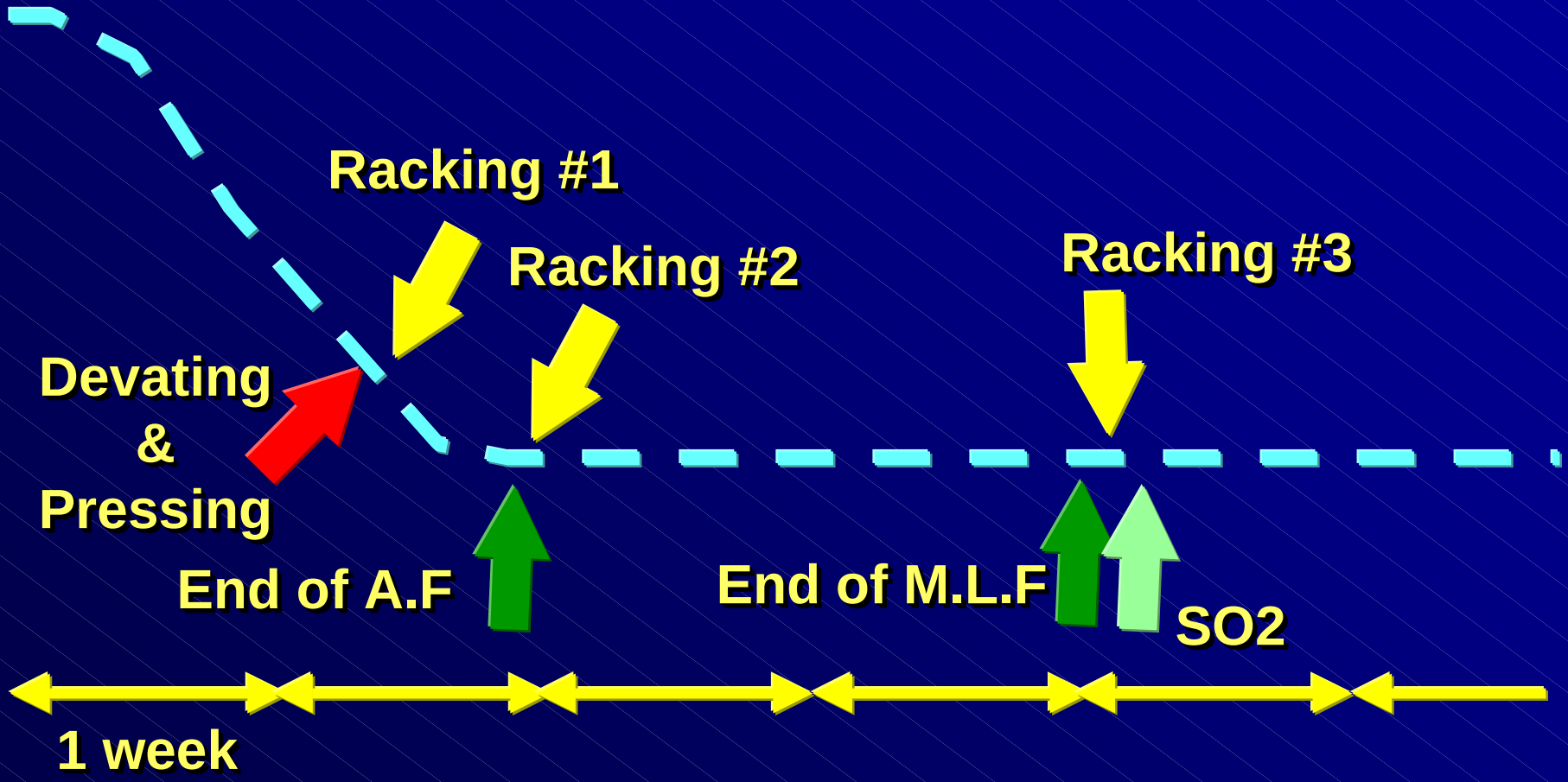
Racking strategy to prevent burnt rubber off-flavors in reds. Short maceration



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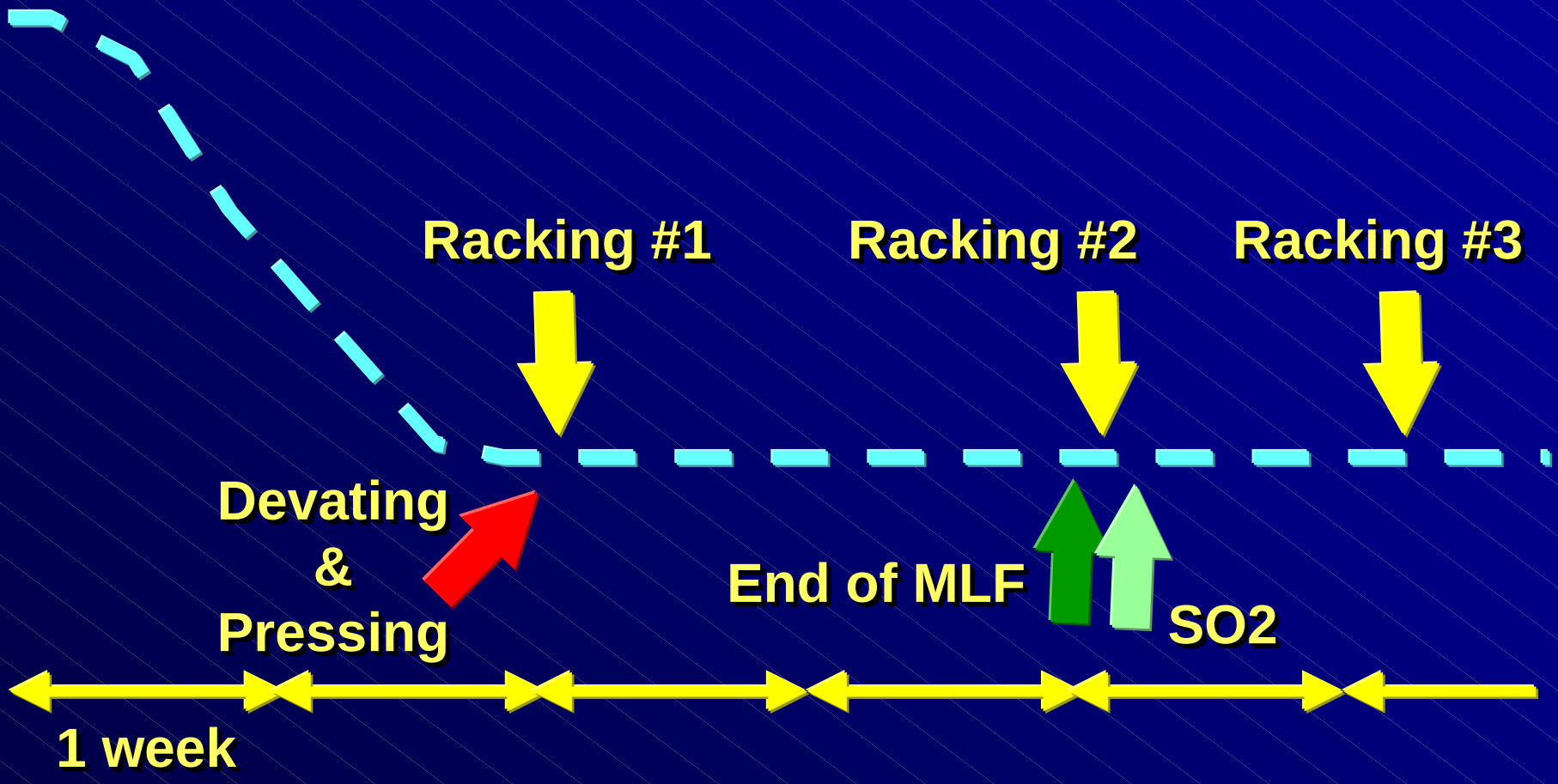
Racking strategy to prevent burnt rubber off-flavors in reds. Long maceration



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Racking: DDC's test, once the planned compulsory rackings have been made

- When? Once every 15 days until December 31th. Then, once a month
- How? Take a wine sample, if possible right after a stirring. One 750ml bottle
- Let it settle overnight at lab temperature
- Next day: decant all the wine
- Taste the decanted wine, including the "granularity" of light lees in suspension
- Taste the lees: aspect, aromas and flavors

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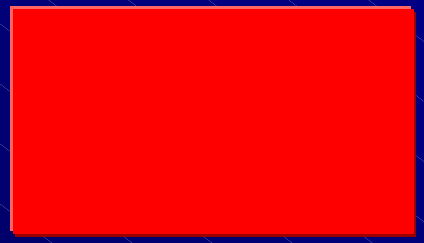
Racking: DDC's test (2)

Decanted wine

	Conforming	Non Conforming
Heavy lees		
Conforming		
Non Conforming		

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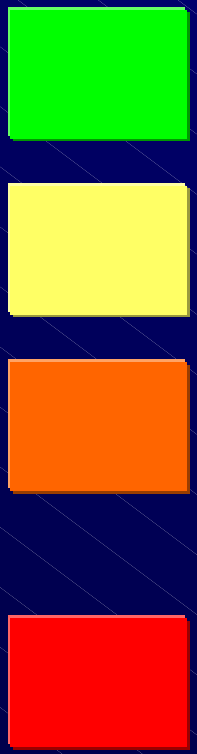
Racking: DDC's test (3)



- Go on following the planned agenda. Can think of slowing down stirring rhythm
- Rack. Urgently if heavy lees are really faulty
- Fix the wine problem*. More frequent lees stirring can be one of the tools… if Brett or oxidation like off flavors are not the problem
- Immediate "sponge effect" before racking. Special actions after racking. Frequent monitoring

* A Noblesse glass test will give some direction of action

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Agitation - Stirring

Advantages

- Avoiding lees compacting
- Put light lees in suspension
- Wine homogeneity
- Exposure of the whole microflora to molecular SO2 [= f(free SO2-pH-ethanol)]

Risks

- Fining of interesting elements with old heavy lees*
- Contamination with oxygen
- Spreading of microflora from vessel to vessel

*http://www.delteil-consultant.com/pdf/revues/agwlees.pdf

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Macro and Micro-ox*

- Oxygen added is always active, even at low level for a short time
- Oxygen addition program must start during fermentation
- Optimization is not maximization…
- A useful tool, but just a tool...

*http://www.delteil-consultant.com/pdf/RD/oxygen2.pdf

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Micro-ox. Mistakes to avoid

- Too much
- Too long
- Too late
- To contaminated (Brett & C°) before starting micro-ox

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Micro-ox and Malo

- Stop micro-ox when malic degradation starts
- Never keep micro-ox on after 50% of MH2 has been consumed
- When micro-ox is started again after malo and sulfiting, start again with 1/10th of the pre-malo dose

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Other important points (1)

- Be very careful with micro-ox on too much heavy lees: they are a strong “engine” in the production of sulfur like off-flavors. With micro-ox there is a high risk of developing “burnt rubber” characters
- Micro-ox is not a mixer: stir the light lees with a mixer during micro-ox, to avoid sulfur like off-flavors production in the compacted lees

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Other important points (2)

- Lees (including “young” specific inactivated yeast e.g. Noblesse) and oak are positively buffering the micro-ox effects.
- When oak and lees are present one can work with higher doses, if needed, without major risk

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Other important points (3)

- Never micro-ox a red wine that already expresses pharmaceutical, cooked or solvent-like aromas, even if it expresses harsh tannins
- First, rebalance such a wine with some specific inactivated yeast (e.g. Noblesse) before any possible micro-ox.

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Other important points (4)

- When a red wine is more than 6 months old and is not balanced, a specific inactivated yeast (e.g. Noblesse) treatment is preferred over micro-ox

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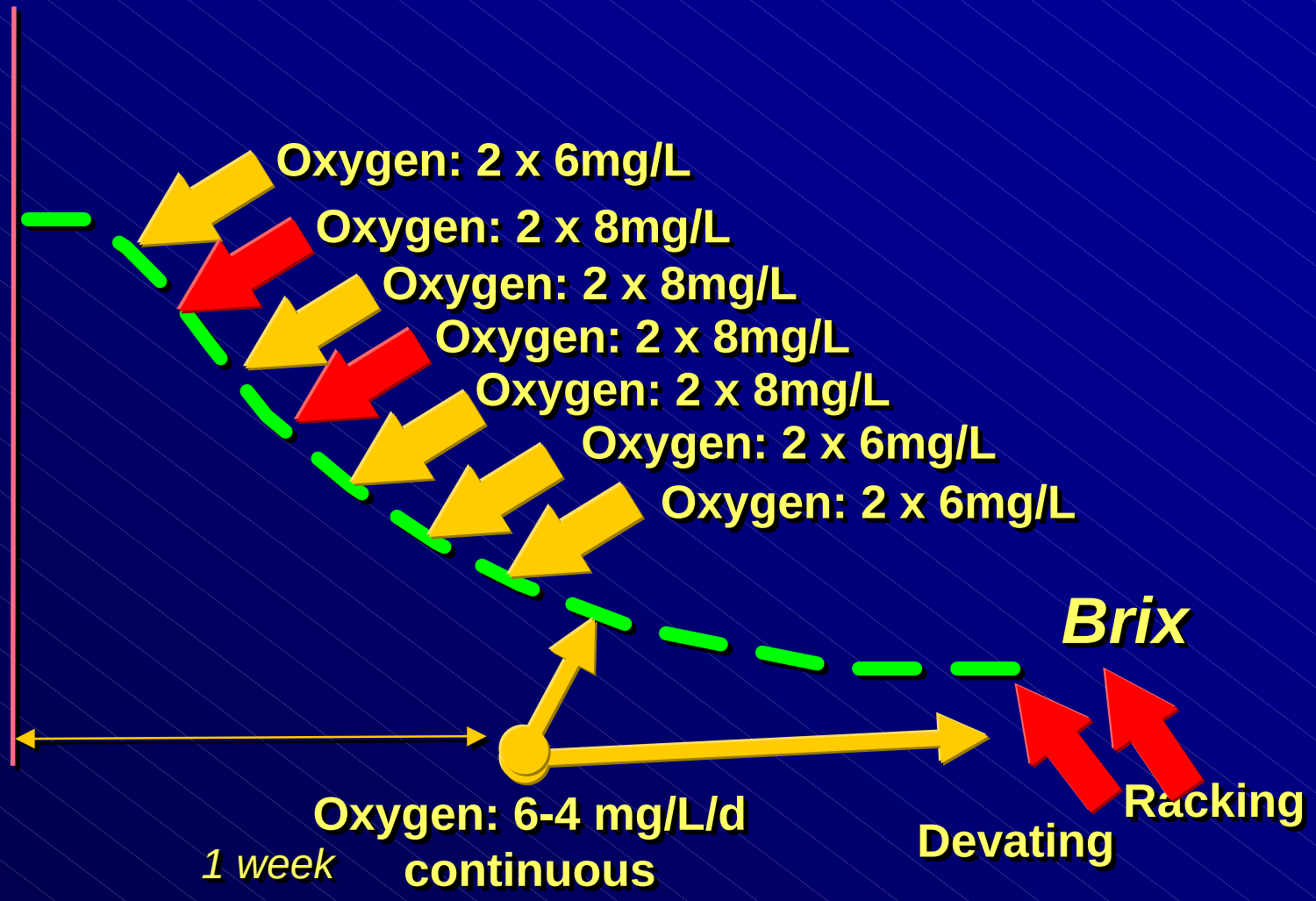
Oxygenation strategy during maceration: best way to start a conforming aging



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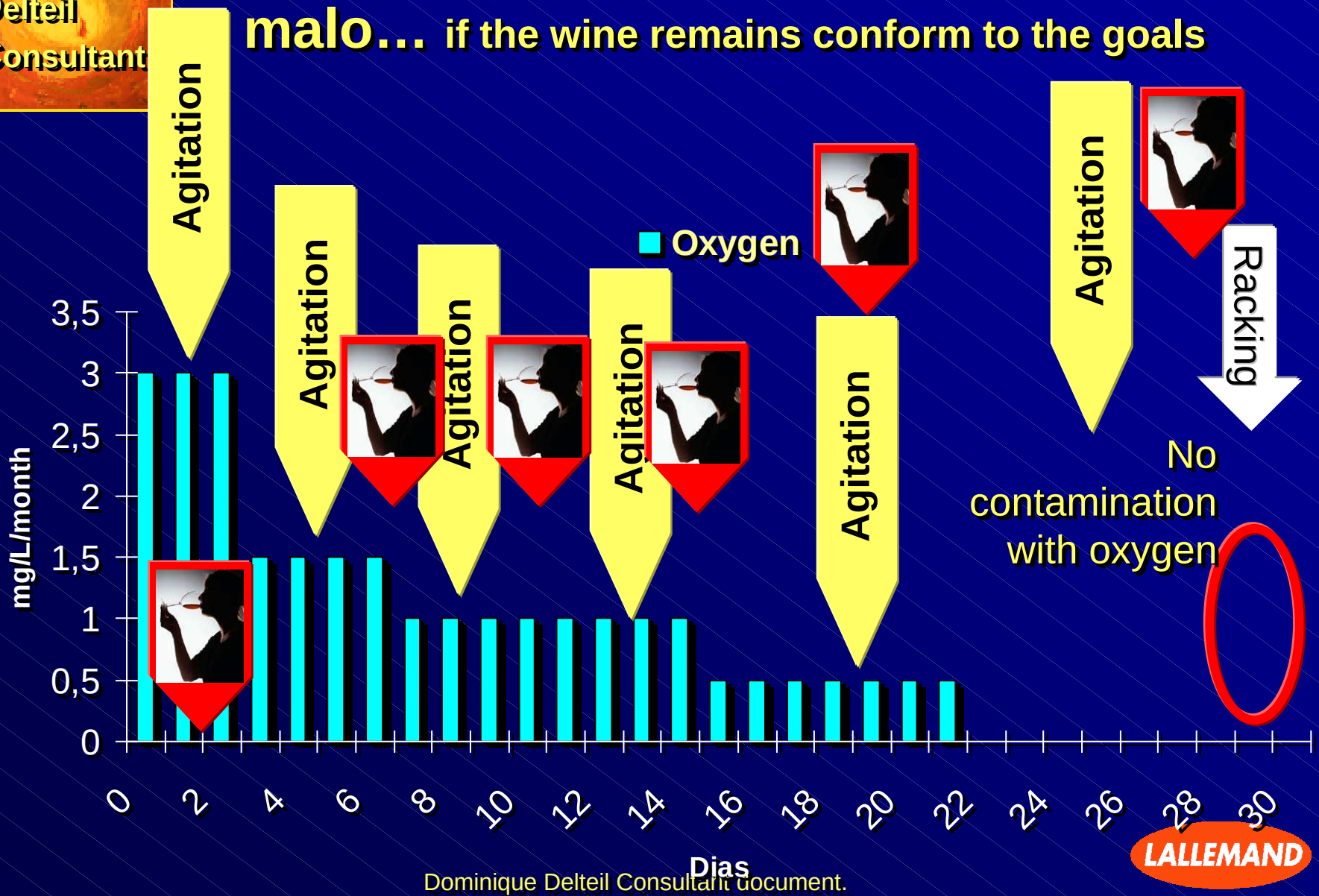
Oxygenation and agitation rhythm post malo… if the wine remains conform to the goals



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Microbial monitoring (1)

- **Measure living organisms**
- **All living microbes evaluation is important**
  - ***Brettanomyces, Pichia, Saccharomyces, Oenococcus, Lactobacillus, Pediococcus, Acetobacter***
- **Home made wine: no need to measure ethyl-4-phenol. You are not a wine coroner!**
- **Bought bulk wine: measure also ethyl-4-phenol.** ***Maybe the seller knows some DD's technique to hide some Brett sensory impact!***

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Microbial monitoring (2)

- First analysis: 7-10 days after first sulfiting
- Once a month or once every quarter according to the winery history with “Brett and C°”
- After every blending
- “Brett and C°”: Never say never!

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