

HIGH ON INFORMATION:

Dear Winemakers,
Greetings from Zytex!!!

Harvest 2017-2018 is about to finish; we believe all of you had great harvest this year. I am delighted to share "Circle of wine" Volume 3 with you. We trust first 2 editions last year has helped to brought exciting information. Now it's time to move ahead with next edition Volume 3 - first of 2018.

Lallemand is highly dedicated and very well-known worldwide for R & D - Malolactic Bacteria and producing very high standard ML Bacteria cultures. Lallemand contributing globally by educating winemakers for malolactic fermentation through "ML School" which happens once in every 2 years at Toulouse France.

This edition of Circle of wine will help you to recognize "Sensory impact of selected ML Bacteria on wine". Zytex has a prime focus of bringing value added information towards winemakers. We trust "Circle of wine" can benefit you to add precious contributions in wine making.

All the best

Cheers!

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Manager – Wine Division
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WHAT IS MALOLACTIC FERMENTATION?

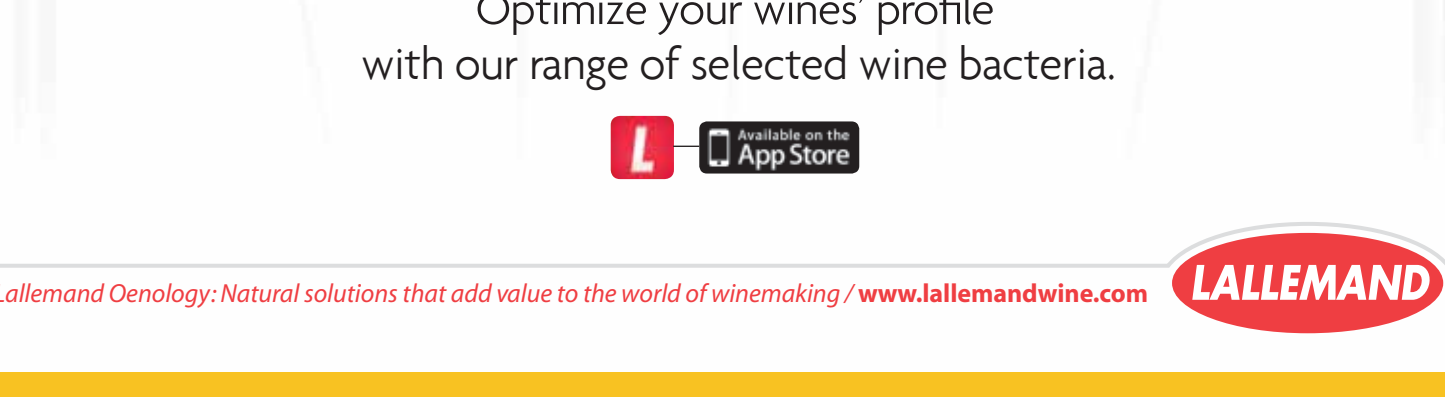
Malolactic fermentation not only converts malic acid to lactic acid, but also has a direct impact on wine quality. Uncontrolled spontaneous malolactic fermentations or wild lactic acid bacteria can result in diminished varietal and fruit flavors, reduced esters, masked aromas and off-characters.

The importance of choosing a selected strain has increased due to evolving winemaking preferences (e.g. higher pH levels, lower SO₂, higher alcohol, etc.), as well as concerns such as biogenic amines.

The use of selected malolactic strains can contribute positively to wines while minimizing risks. Malolactic cultures can be added in a co-inoculation (24 hours after adding the yeast) or toward the end of the primary fermentation.

The sensory impact of our selected wine bacteria

You doubted, we proved it!



During the vinification process, the role of wine bacteria in the sensory profile of wines is vital. Optimize your wines' profile with our range of selected wine bacteria.



Lallemand Oenology: Natural solutions that add value to the world of winemaking / www.lallemandwine.com **LALLEMAND**

WHITE WINES

Impact the aromatic profile of white wines with our wine bacteria.

One of the main compounds that can influence aromatic expression in white wines is diacetyl. In small concentrations, it has a positive influence on white wines aroma. However, high concentrations (from 5 mg/L) are associated with the appearance of buttery and lactic notes that are considered unpleasant.

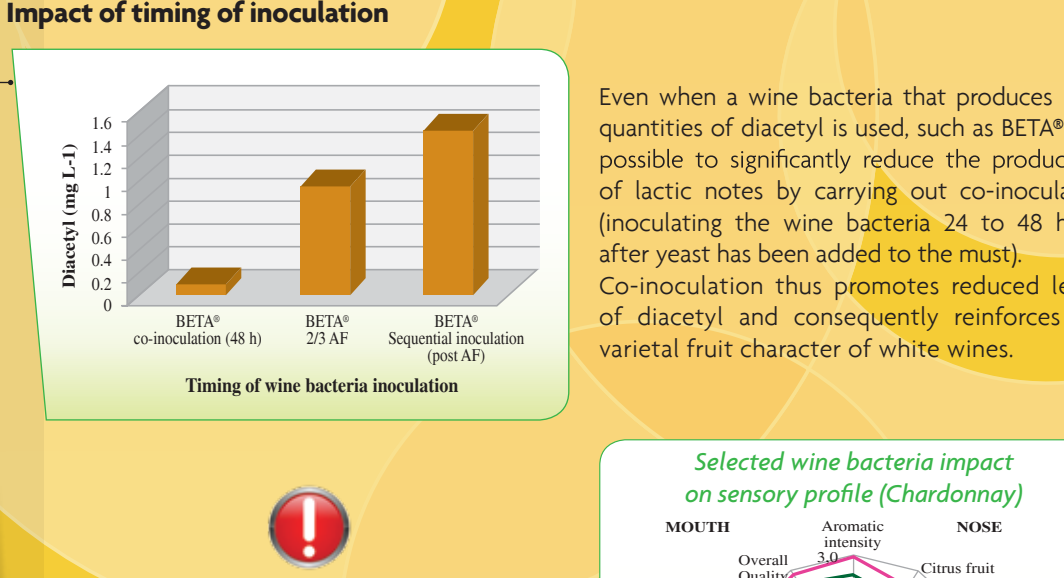
Where does diacetyl come from?

It is principally produced during malolactic fermentation (MLF) and comes principally from the degradation of citric acid in the must or wine into diacetyl. The timing of this transformation strongly influences its final content in finished wines. Analysis of our bacteria and the numerous studies we have carried out on the subject confirm that the appearance of lactic/buttery notes is closely linked to the selected wine bacteria that carries out MLF and on the timing of inoculation.

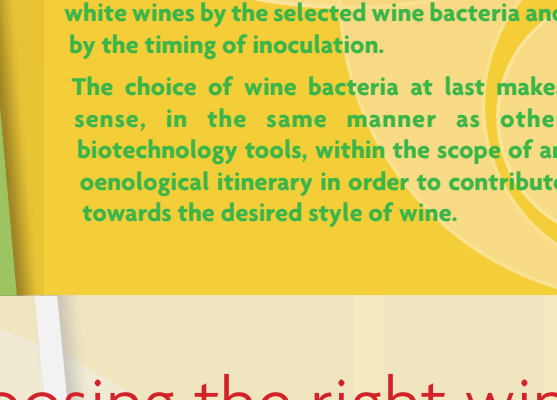


Impact of the bacteria strain

Each strain behaves differently in relation to the moment and the speed that citric acid is degraded into diacetyl in wines. This variation is particularly pronounced when the wine bacteria is inoculated at the end of alcoholic fermentation (post AF).

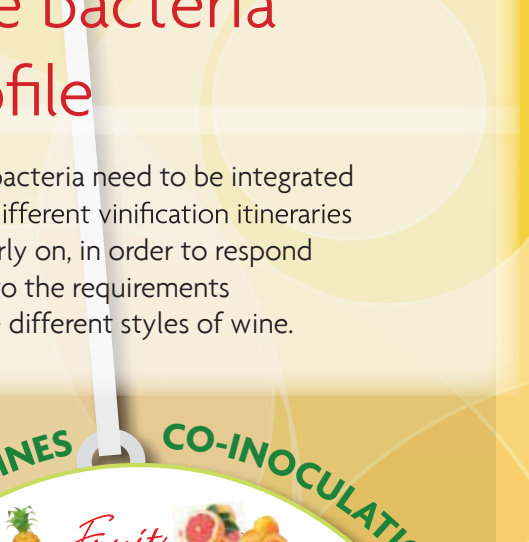


Impact of timing of inoculation



Even when a wine bacteria that produces large quantities of diacetyl is used, such as BETA®, it is possible to significantly reduce the production of lactic notes by carrying out co-inoculation (inoculating the wine bacteria 24 to 48 hours after yeast has been added to the must). Co-inoculation thus promotes reduced levels of diacetyl and consequently reinforces the varietal fruit character of white wines.

It is possible to control aromatic profiles in white wines by the selected wine bacteria and by the timing of inoculation. The choice of wine bacteria at last makes sense, in the same manner as other biotechnology tools, within the scope of an oenological itinerary in order to contribute towards the desired style of wine.



Impact of diacetyl concentration in a 2010 chardonnay (Clare Valley & Adelaide Hills [Australia]) with different selected wine bacteria in sequential inoculation (post AF)

Impact of diacetyl concentration in a 2010 chardonnay (Val de Loire) with different timing of BETA inoculation

Influence of selected wine bacteria on aromatic esters production. Cabernet sauvignon, 2008 (Adelaide Hills, Australia)

Influence of selected wine bacteria on sensory impact. Cabernet sauvignon, Bordeaux 2011, 30 tasters.

Our selected wine bacteria influence the sensory profile of red wines.

Aromatic expression, physical-chemical conditions of the must... as well as the metabolism of the micro-organisms responsible for vinification. While the role of yeasts has been recognized, the role of wine bacteria has now been proven. Aside from carrying out malolactic fermentation, selected wine bacteria have a significant influence on the final sensory quality of a red wine.

Reinforce fruit character in your red wines with our wine bacteria

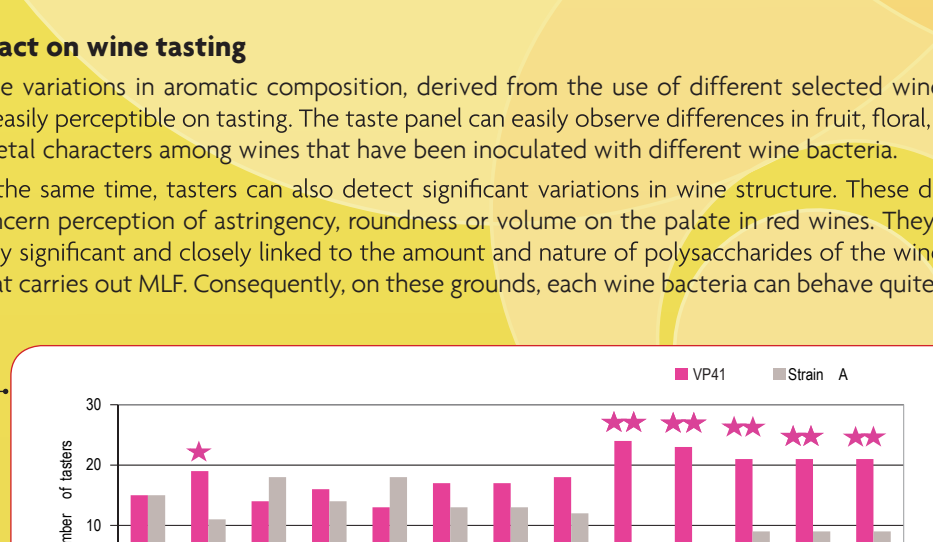
Five years of studies carried out in several countries and in Australia with the AVRRI (Australian Wine Research Institute) show that concentrations of aromatic esters vary depending on the selected wine bacteria that is implemented. This modulation of fruit notes is dependent on the enzymatic activities of the wine bacteria used during MLF (particularly esterase and B-glucosidase activity). Each wine bacteria has its own enzymatic identity and generates its own aromatic expression.



Impact on wine tasting

These variations in aromatic composition, derived from the use of different selected wine bacteria, are easily perceptible on tasting. The taste panel can easily observe differences in fruit, floral, spice and vegetal characters among wines that have been inoculated with different wine bacteria.

At the same time, tasters can also detect significant variations in wine structure. These differences concern perception of astringency, roundness or volume on the palate in red wines. They are often very significant and closely linked to the amount and nature of polysaccharides of the wine bacteria that carries out MLF. Consequently, on these grounds, each wine bacteria can behave quite distinctly.



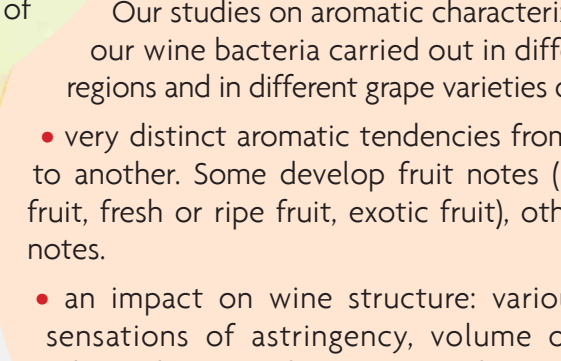
The selected wine bacteria timing of inoculation, interaction with yeast, the presence of the substrates that promote the production of aromatic molecules, pH and temperature conditions are all criteria that impact a wine sensory profile.

Choosing the right wine bacteria for your wine profile

Our wine bacteria need to be integrated into your different vinification itineraries very early on, in order to respond to the requirements of the different styles of wine.



To help manage the sensory profile of your wines, use our on-line decision-making tool to help you choose the right wine bacteria (available at www.lallemandwine.com)



SELECT AND TASTE THE DIFFERENCE

RED WINES

Impact of our wine bacteria on the sensory profile of your wines: no more doubts!

The role of wine bacteria metabolism in the production of positive aromas

The specific metabolisms of our wine bacteria actively participate in the production of a number of fermentation compounds that are derived from grape substrates (ethyl esters, higher alcohol acetate). Some of these compounds are volatile molecules that promote and positively reinforce olfactory profiles of white, rose and red wines.

The differentiated genomes and the enzymatic composition of our wine bacteria allow them to take different metabolic pathways conducive to producing esters that provide numerous aromas in different wine types.

Depending on the strain that is selected and promotes to a greater or lesser extent the production of diacetyl that creates the perception of the lactic taste in white wines.

Anticipating and choosing the wine bacteria required to carry out MLF according to wine style is now possible!

Your wish is to preserve your wine's aromas, produce quality wines according to a specific sensory profile. Leave nothing to chance and maintain control over every phase of fermentation in the cellar.

Anticipated usage of our selected wine bacteria should be considered prior to vinification in order to support your overall winemaking approach.

According to the desired wine profile and the oenological conditions, we can help you decide which wine bacteria will work best with your winemaking.

Our range of inoculation

Our studies on aromatic characterization of our wine bacteria carried out in different wine regions and in different grape varieties demonstrate:

- very distinct aromatic tendencies from one bacteria to another. Some develop fruit notes (red fruit, black fruit, fresh or ripe fruit, exotic fruit), others more spice notes.

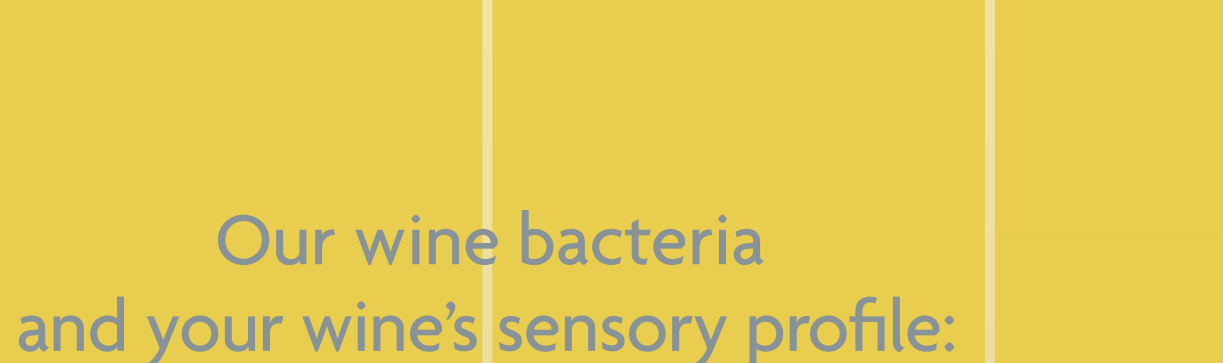
- an impact on wine structure: various degrees of sensations of astringency, volume or roundness, depending on the strain, make it possible to anticipate the desired result.

- the ability to produce lactic notes depending on the selected wine bacteria.

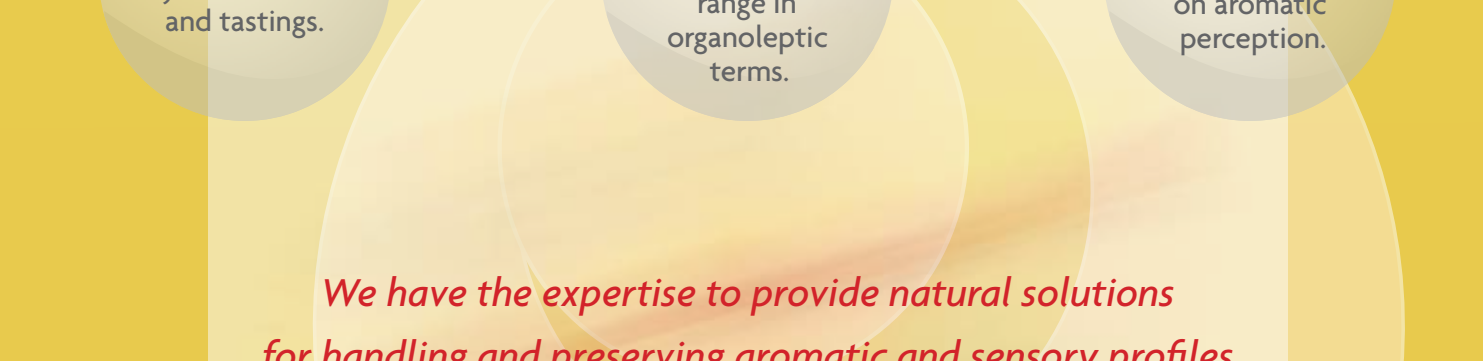
Our wine bacteria and your wine's sensory profile: don't miss out this winemaking technique!

Tested and approved by R&D studies and tastings. A complete characterized and differentiated range in organoleptic terms. Management of inoculation timing and impact on aromatic perception.

We have the expertise to provide natural solutions for handling and preserving aromatic and sensory profiles to add value to your wines.



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