

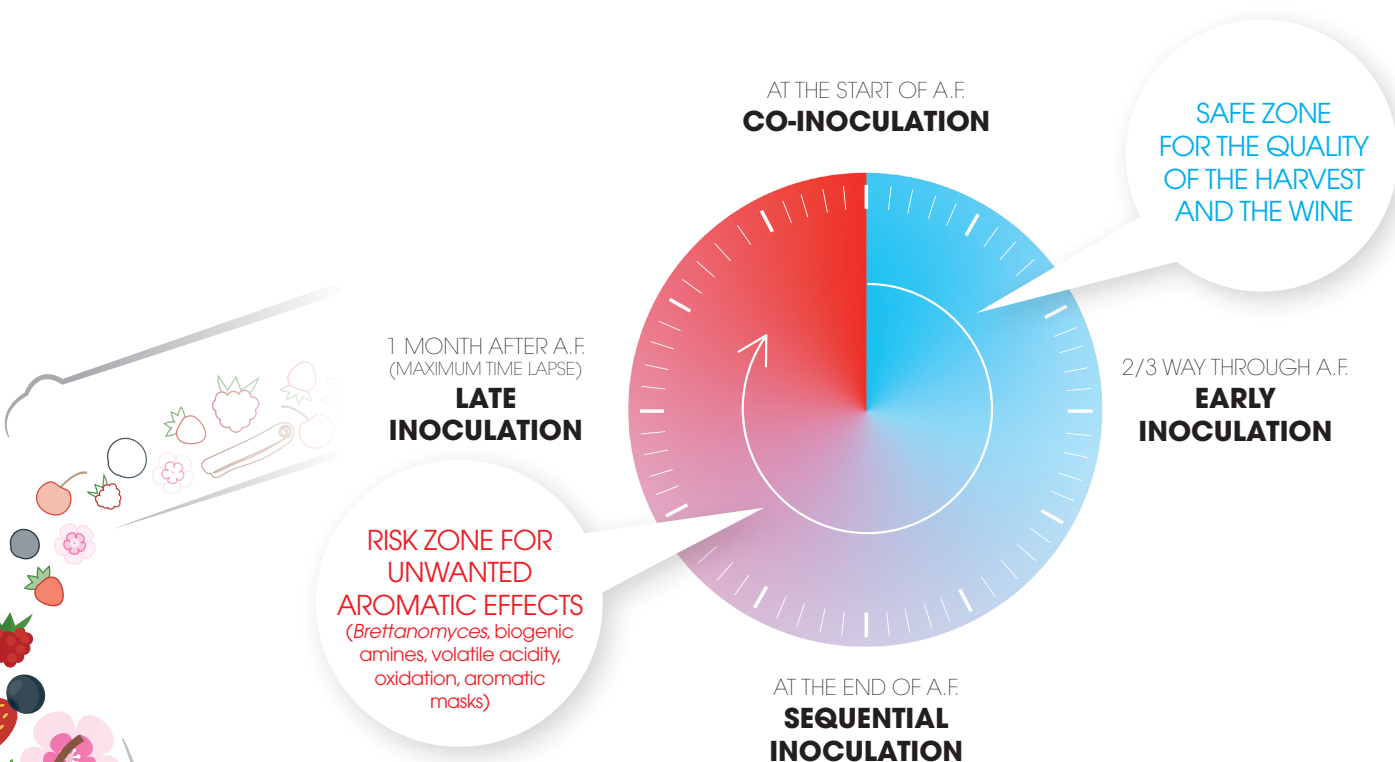
**SELECTED
OENOLOGICAL
BACTERIA**



Decision-making criteria and sensory enhancements

Timing of bacterial inoculation

Generally, the selected oenological bacteria are inoculated right after AF or several weeks later. Current scientific knowledge about the microorganisms naturally found in grapes and in wine enables us to make more interesting choices during AF.



Which inoculation time should I choose?



Objective:

- Fruity wines
- Swift readiness for release on market
- Prevent *Brettanomyces*

What you need:

- Good temperature control
- Potential alcohol concentration < 14,5%
- A yeast compatible with co-inoculation



Objective:

- Fat, intense wines
- Swift readiness for release on market
- Prevent *Brettanomyces*

What you need:

- Good temperature control
- A yeast compatible with the bacteria



Objective:

- Complex, structured wines
- Preservation of aromas

What you need:

- A yeast compatible with MLF



Objective:

- Maturation and oxygenation of the wines
- Colour stabilization

What you need:

- Monitoring of bacterial flora and subsequent microbiological stabilization
- The possibility to heat the wines



For successful malolactic fermentation (MLF), follow these steps:

- **Don't over-sulphite:**

free SO₂ < 10mg/l

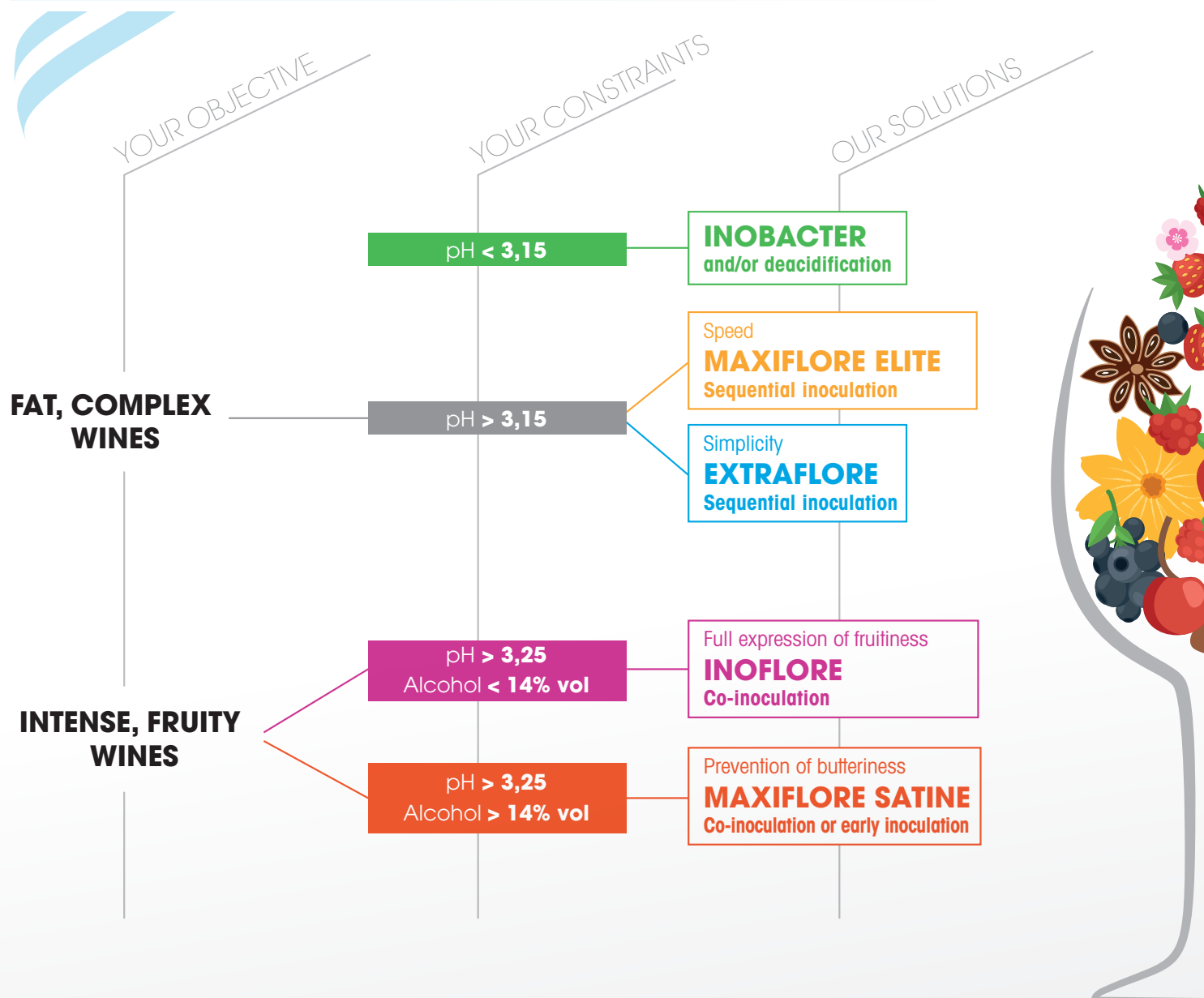
total SO₂ < 50-60mg/l

- **Keep the temperature for managing MLF (sequentially) functional to the alcohol level of the wine.** For wines with < 14.5% vol., the maximum temperature allowed is 26°C. For wines with > 14.5% vol., the maximum temperature allowed is 21°C.

- **Choose a yeast compatible with the selected oenological bacteria**, in particular when using co-inoculation or early inoculation (2/3 way through AF).

- **Organic/mixed nutrition during alcoholic fermentation when using co-inoculation** (the selected bacteria are not able to assimilate ammoniacal nitrogen).

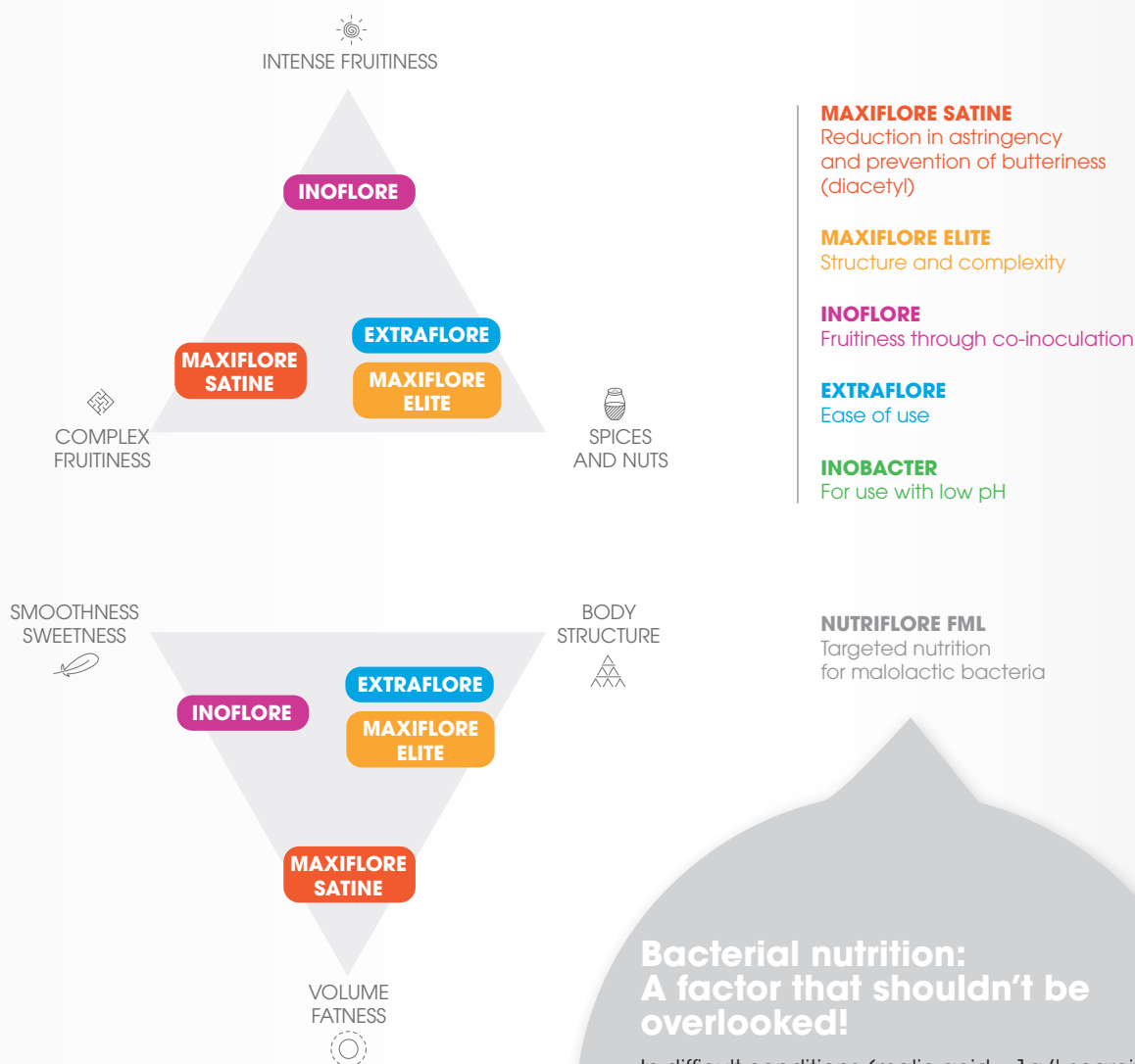
White and/or rosé wines: how to decide



Oenological bacteria for all styles of wine



MLF is not simply a process to deacidify the wine – with selected bacteria it can become your chance to implement your ideas about the sensory expression of the wine.



Bacterial nutrition: A factor that shouldn't be overlooked!

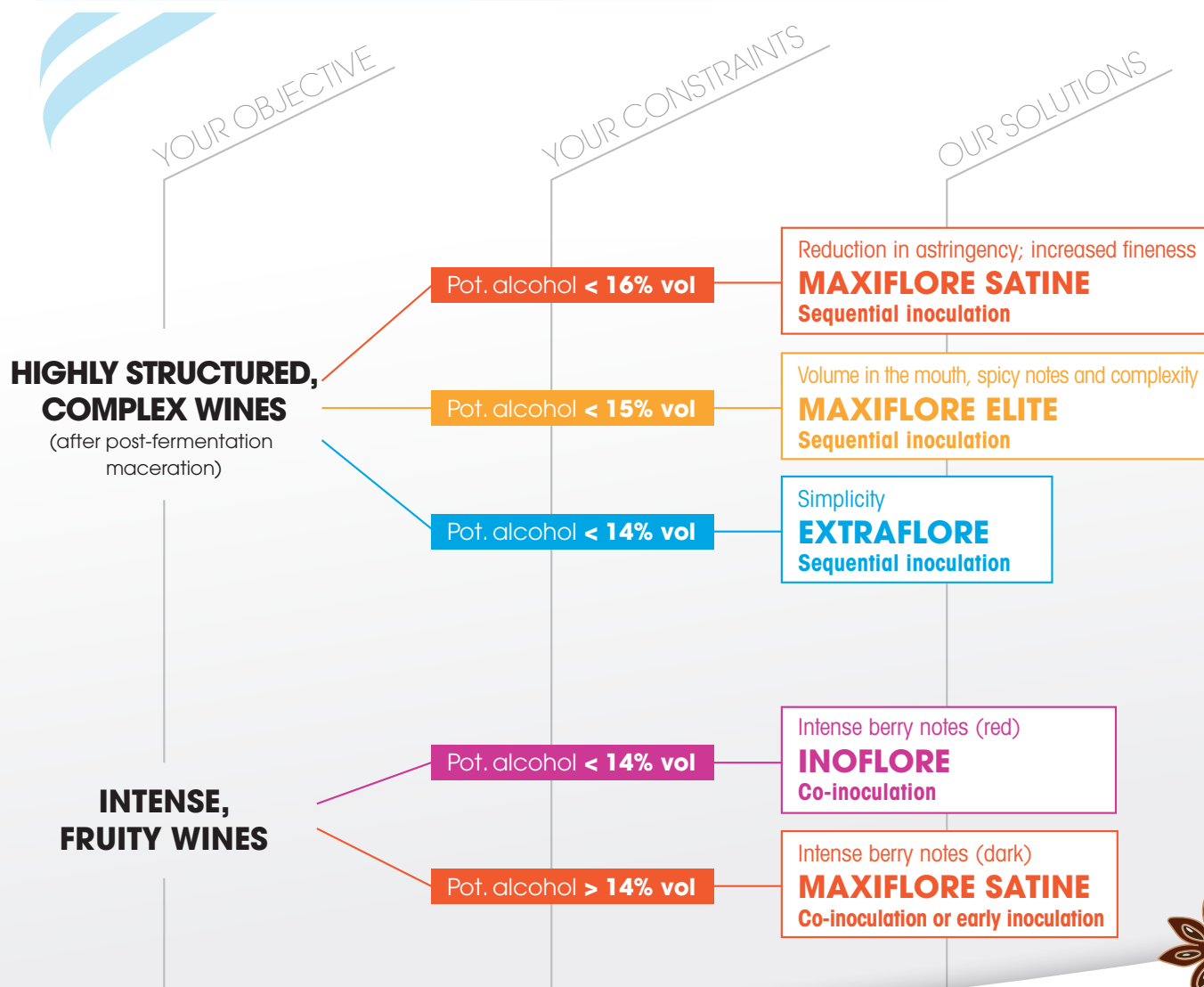
In difficult conditions (malic acid < 1g/l, scarcity of nutrients, high concentration of polyphenols, peptides and inhibitory fatty acids, high SO₂ content) it's often necessary to make use of a targeted nutrient, Nutriflore FML, as well as implementing suitable acclimatization protocols. These bacteria are not able to assimilate nitrogen in ammoniacal form, therefore Nutriflore FML is the perfect solution for their nutritional demands.



The yeasts that simplify MLF

Type of wine	Recommended yeast	Sensory characteristics of the yeast
White wines	IOC 18-2007	Freshness, clean aromas
	IOC B 2000	Intense, fresh and fruity bouquet
Rosé wines	IOC Fresh Rosé	Intense fruitiness
	IOC Primouge	Red berries (strawberry and raspberry). Clean aromas and roundedness.
	IOC R 9008	Mature, complex fruity aromas. High polysaccharide production. Longevity, minerality and salinity.
Red wines	La Claire C58	Notes of forest fruits and red berries. Structure and softness.
	La Claire T73	Young, fragrant wines. Fruity notes.
	Blastosel Grand Cru	Acetates/esters (fruity notes) and higher alcohols.

Vini rossi: criteri decisionali



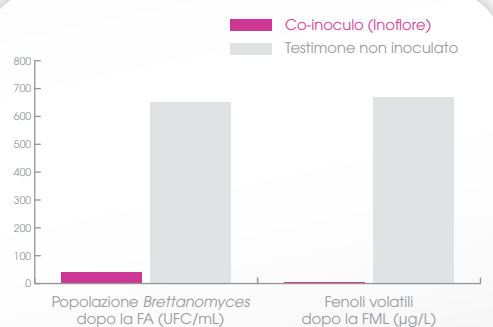
FAQ

Why should I use selected oenological bacteria if MLF starts off spontaneously, then develops and finishes without any hitches?

The indigenous flora of the wine is made up of bacteria which produce biogenic amines, volatile phenols and sulphur compounds; sometimes spontaneously fermented wines display excessive levels of volatile acidity and strong diacetyl notes. These defects are not always perceived, but they form an aromatic mask. This is why it's a good idea to use selected oenological bacteria: you respect the natural sensory profile of the wine while avoiding defects.

The co-inoculation and early inoculation (2/3 way through AF) techniques are effective tools enabling winemakers to avoid excessive proliferation of indigenous bacteria and to monitor the vinification process more effectively. Moreover, they avoid the risk of microbiological contamination and enhance the sensory profile of each and every wine.

Prevention of *Brettanomyces* by means of co-inoculation of yeasts & bacteria (merlot 2006)



When should I add NUTRIFLORE FML?

When the parameters for analysis are unfavourable or when there's difficulty starting off or managing the MLF, but also in the event of the yeasts having consumed a large quantity of nutrients during AF (which happens rather often!).

At the end of AF, there is residual sugar in the wine. Can I still inoculate lactic bacteria?

When faced with slow AF or a total halt to fermentation, it's not advisable to proceed with inoculating the lactic bacteria as they and the yeasts would enter into competition for nutrients.

If, on the other hand, you wish to preserve the residual sugars, inoculating the lactic bacteria won't lead to problems since they won't provoke any lactic sourness as long as there is malic acid for them to consume in the wine.

Once MLF is complete, it's important to stabilize the wine, perhaps through a sulphite treatment.

Why can MLF lead to a halt in AF? Why is it so difficult to restart?

This is a situation which usually arises in the event of spontaneous MLF. What happens is that the indigenous bacteria can consume a large amount of nutrients, thus depriving the yeasts of the same substances. The best way to avoid this happening is to practise co-inoculation with targeted bacteria and making sure that both yeasts and bacteria receive sufficient nourishment.

If I heat the wine to 25°C, will MLF reach completion more quickly?

Not necessarily. When the temperature is higher, the toxic effects of the ethanol on the selected bacteria increase, as does the percentage of active SO₂. Excessively high temperatures are often the reason why MLF fails.

How can I be sure of the results after inoculating the targeted bacteria?

Perdomini-IOC is able to assess the feasibility of MLF by calculating the analytical parameters of a wine through special laboratory tests.

Some parameters (polyphenols, metals, oxygen, dregs, etc.) have lesser-known effects and can interfere with the success of the fermentation. In many cases, detoxifying the wine (CELLCLEAN), deacidifying the wine and/or adding targeted bacterial nutrients (NUTRIFLORE FML) can lead to successful MLF.

Do these selected bacteria respect the wine's natural aromatic profile? Can they bring about greater sensory enhancement than spontaneous MLF?

Recent studies have shown that, like yeasts, lactic bacteria can play an important sensory role, enhancing certain aromas (fruity, floral, spicy or buttery) and modulating sensations in the mouth. Nevertheless, selected oenological bacteria allow greater respect for the natural characteristics of the wine.

Therefore, it's very important to choose the right oenological bacteria for the type and style of wine being made, so that your winemaking goals can be reached more effectively.