LalVigne™

Grow your wine

Improve ripening from veraison

With the guarantee of:

LALLEMAND

LALLEMAND OENOLOGY

*Original **by culture***

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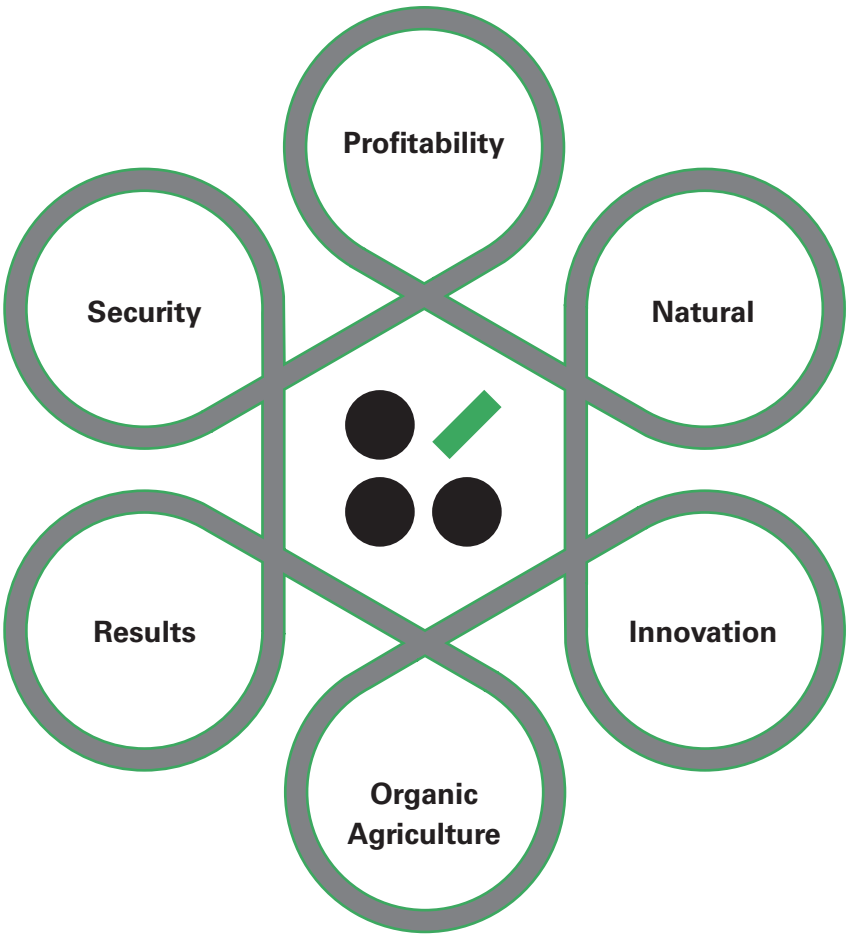

For vinegrowers and winemakers

Uniform veraison

Homogeneous maturation

Improve your grapes

Reduce risks

Improve your wines

About us

Experience

Lallemand was founded at the end of the nineteenth cetury.
More than 100 years dedicated to provide natural solutions.

Research and development

In Lallemand we develop biotechnological tools for the viticulture and wine sector.
Our R&D department collaborates with Universities and international Research Institutes.

Quality

We offer traceability and quality assurance. We apply a strict quality policy. All products are subjected to at least 20 rigorous quality tests.

©LaVigne

Specialization in microbiology

Development of natural applications based on microorganisms for viticulture and enology.

Global knowledge

Our team is present in all grape and wine producing regions.

Production

100% own production.

We produce **LalVigne MATURE** and **LalVigne AROMA** in our own production plants.

Production centers in *Grenaa (Denmark),* Montreal *(Canada),* Vienna *(Austria),* Salutaguse *(Estonia),* Verona *(Italy)...*

Key dates

Late XIX century

Lallemand´s foundation
www.lallemand.com

1970´s

Solutions for oenology
www.lallemandwine.com

2006

First research directed towards viticulture

2014

Solutions for the viticulture
Launch in North Hemisphere

2016

Launch in Southern Hemisphere

2017 - current

Contributing to knowledge

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2007 - 2010

In vitro assays

First field trials
Spain

2011

International trials

2012

2013

Patent request (PCT)
in USA

Facts and figures

+ 25 countries

Different weather, soils, varieties, yield,...

Germany, Australia, Austria, Bulgaria, Chile, Croatia, Slovenia, Spain, France, Greece, Hungary, India, Israel, Italy, Japan, Macedonia, Mexico, New Zealand, Peru, Portugal, Czech Republic, Romania, Russia, Serbia, South Africa, Switzerland, Turkey, Ukraine, United States, Uruguay

+ 70 varieties

Albariño, Sauvignon Blanc, Chardonnay, Riesling, Airén, Verdejo, Godello, Treixadura, Glera, Macabeo, Grüner Veltliner, Viognier, Pinot Gris, Sylvaner, Tempranillo, Cabernet Sauvignon, Merlot, Syrah, Pinot Noir, Cabernet Franc, Carmenere, Petit Verdot, Grenache, Bobal, Monastrell, Pinotage...

PATENT-PENDING TECHNOLOGY

GMO

100% NATURAL

No residual limits. No safety time limit

©Lallvigne

+ 25 scientific papers

LalVigne™
Grow your wine

Improve ripening from veraison

Foliar application

100% specific fractions of selected inactivated yeast *Saccharomyces cerevisiae*, non GMO.

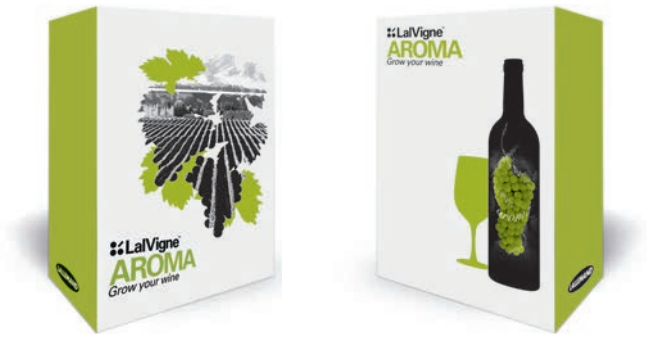
LalVigne™ AROMA
Grow your wine

American Society of Enology and Viticulture (ASEV, USA), International Organization of Vine and Wine (OIV), Macrowine...

LalVigne™ MATURE
Grow your wine

South African Journal of Enology and Viticulture (SAJEV, South Africa), Food & Chemistry, International Organization of Vine and Wine (OIV)...

LalVigne AROMA



Increased and **advanced accumulation** of **aroma precursors**

SKIN THICKNESS

Increased berry skin thickness
Giacosa et al. 2016

AROMA PRECURSORS

Increased varietal aroma compounds
Tomasi el al. 2017

RESPECT

Without impact of berry weight, Brix, pH, or TA
Téllez et al. 2015

GLUTATHIONE

Increased concentration of **GSH**
Šuklje et al. 2016

LalVigne™ AROMA
Grow your wine

THIOLS

In thiolic varieties: increased 3MH and **3MHA** in **wines**
Suklje et al. 2016

BALANCE

Reduction of herbaceous / aggressive character
Tomasi et al. 2017

STABILITY

Higher stability of **aroma compounds**
Suklje et al. 2016

©LalVigne

Characteristics

Composition

100% specific fractions of selected inactivated yeast.

Saccharomyces cerevisiae.

Non GMO.

Packaging

1 hectare (2.5 acres) carton

Each box contains 2x3 kg bags for two applications.

Total weight: 6 kg.

Storage

Non-flammable product.

Store in sealed original packaging.

Avoid extreme storage conditions.

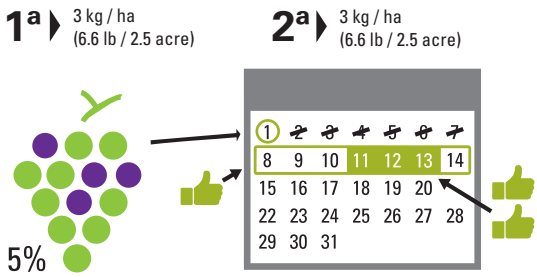
Organic Agriculture

Product suitable in organic farming according to EU 2018/848 and 2021/1165 regulation.

Dose

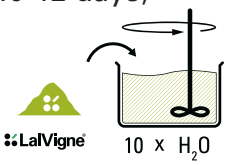
1 treatment = 2 applications Recommended dose by application on vines 3 kg / ha (6.6 lb / 2.5 acre)

Foliar application

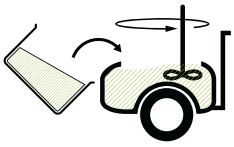


1st Application = beginning of veraison

2nd Application = 7 - 14 days after 1st application (best 10-12 days)



Suspend **LalVigne AROMA** in approximately 10 times its weight in water in order to get a perfect dissolution.



Dilute in water for its application

Keep the agitator running during the application

Avoid leakage losses

LalVigne Preparation & Application

LalVigne MATURE

Increased and
advanced
phenolic maturity

SKIN THICKNESS

Increased berry skin thickness with higher extractability of anthocyanins
Río Segade et al. 2016

ANTHOCYANINS

Increases concentration of extractable anthocyanins
Villangó et al. 2015

LalVigne™
MATURE
Grow your wine

RESPECT

Without impact on berry weight, Brix, pH, TA
González et al. 2016

TANNIN

Increases skin tannins
Lissarrague et al. 2014

BALANCE

Reduction of herbaceous / aggressive character
Tomasi et al. 2017

QUALITY

Increased degree of polymerization
Villangó et al. 2015

Characteristics

Composition

100% specific fractions of selected inactivated yeast.
Saccharomyces cerevisiae.
Non GMO.

Packaging

3 hectares (7.5 acres) carton: contains 3 separate boxes.
Each box contains 2x1 kg bags for 1 ha (2.5 acres) Total weight: 6 kg.
1 hectare (2.5 acres) carton: contains 2x1 kg (2.2lb) bags for two applications.
Total weight: 2 kg.

Storage

Non-flammable product.
Store in sealed original packaging.
Avoid extreme storage conditions.

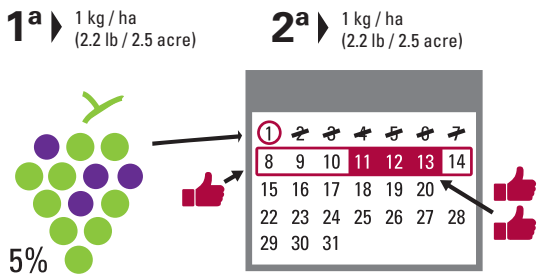
Organic Agriculture

Product suitable in organic farming according to EU 2018/848 and 2021/1165 regulation.

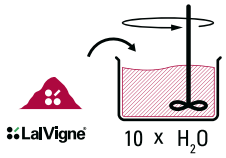
Dose

1 treatment = 2 applications Recommended dose by application on vines 1 kg / ha (2.2 lb / 2.5 acre).

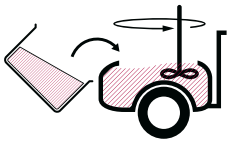
Foliar application



1st Application = beginning of veraison
2nd Application = 7 - 14 days after 1st application (best 10-12 days).



Suspend **LalVigne MATURE** in approximately 10 times its weight in water and stir/agitate to mix.



Dilute in water for its application
Keep the agitator running during the application.

Avoid leakage losses.

LalVigne Preparation & Application

Uniform veraison

LalVigne MATURE Time Lapse (English).

Visit the explanatory Time Lapse video of the veraison on the Lallemand Oenology Channel on YouTube

《Improve ripening from veraison. Uniform veraison. Homogeneous maturation》

LalVigne™ MATURE
Grow your wine

CONTROL

Cabernet Sauvignon, Ribera del Duero, Spain. 2016

Vines treated with **LalVigne MATURE**
reached 100% veraison 7 days before the control vines.

Mode of action

LalVigne™
Grow your wine

RECOGNITION
Treatment recognition by plant receptors

RESPONSE
Plant responds with key enzymes

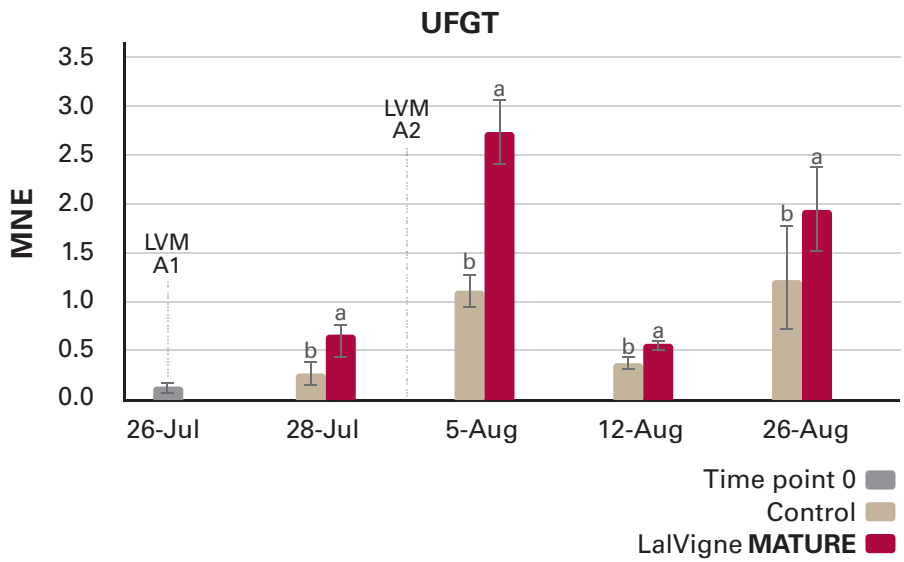
SECONDARY METABOLISM
Plant synthesis of secondary metabolites

GRAPE IMPROVEMENT
Improved extractability of compounds most desired by winemakers

WINE IMPROVEMENT
More balanced wines

©LalVigne

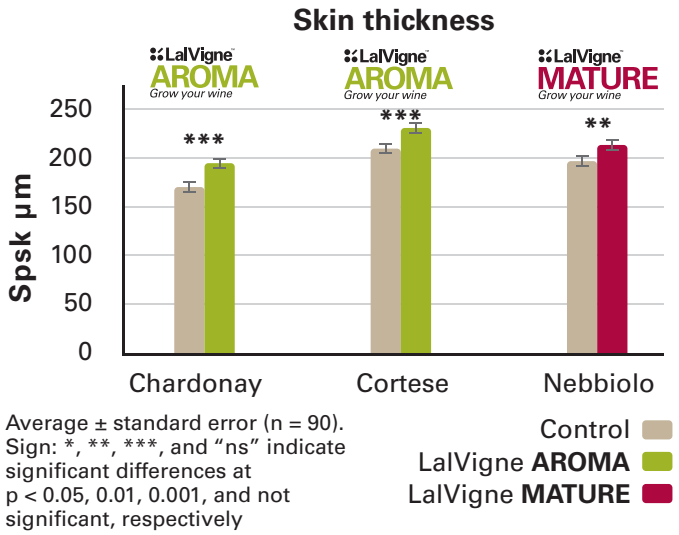
Impact of LalVigne MATURE on the expression of genes directly involved with the synthesis of anthocyanins



Impact of a specific yeast derived foliar spray on gene expression and accumulation of anthocyanin in Sangiovese. ***Filipetti et al. 2017.***

This graph shows the expression of the UFGT gene (flavonoid 3 O-glucosyltransferase) during the grape's maturation phase, comparing an untreated control versus the treatment with **LalVigne MATURE** in two moments of application (LVM A1 and LVM A2). This gene is directly related to the synthesis of phenolic compounds such as anthocyanins

Increased skin thickness



It can be observed in the graph the significant increase achieved with the application of **LalVigne AROMA** and **LalVigne MATURE** on the berry skin thickness.

In this study carried out at the University of Turin, the improvement obtained in different varieties with the different treatments is shown.

Foliar spray application of specific inactive dry yeast at veraison: effect on berry skin thickness, aroma and phenolic quality. ***Giacosa et al. 2016***

Advantages for the viticulture

PROTECTION

Increase berry skin thickness

Lower berry break in the case of mechanical harvesting

SAFETY

Advanced phenolic maturity and aroma precursors

Possibility of advancing harvest

Reduce risks associated with late harvests (rainfall, frost)

HOMOGENEITY

Facilitates the decision of the optimal moment of harvest

Reduces heterogeneity after weather incidents (frost, hail…)

ECOLOGIC

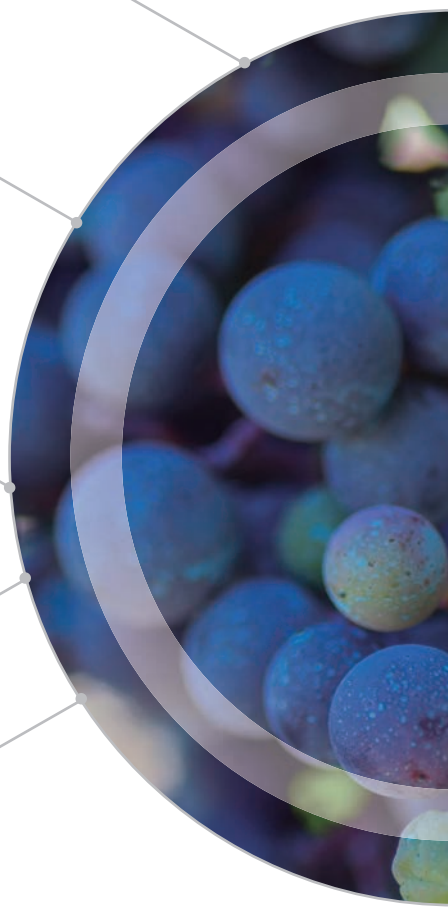
Authorized in organic viticulture

PROFITABILITY

Complementary or alternative to cluster thinning and other canopy management practices

More balance grapes

It allows to advance harvest and also reducing the loss of yield due to dehydration



Advantages for the oenology

INCREASE

Grapes balance

Skin compounds (anthocyanins, skin tannins…)

Aroma precursors

Glutathione (GSH)

REDUCE

Less herbaceous / vegetable character of the grapes and wine

Reduces wine aggressiveness in mouthfeel

SAVING

Less need for oenological inputs (example, addition of skin tannin)

EASINESS

Optimize maceration

Fast release of compounds

Reduces fermentation risks associated with excessively mature grapes

WINE IMPROVEMENT

More balanced wine, concentrated and complex

Allows the production of lower alcohol wines

RESPECT

Wines that convey the differentiation provided for each plot, for each origin

LONGEVITY

Higher wine aromas stability

LalVigne experiences

Christian Roguenant.
Enólogo. Baileyana Winery,
Paso Robles, California, USA:

"After hearing about LalVigne in 2014, we decided (with the cooperation of Scott Williams of Pacific Vineyard Co.) to test the products in two blocks. We use **LalVigne AROMA** *on White Grenache and* **LalVigne MATURE** *on Syrah.*
We observed an earlier maturity in the treated area compared to the control and a higher level of polyphenols in the finished wines.

The chemical analysis was very similar, however, ***the wines showed great differences in the sensory analysis.***
Both on White Grenache and on Syrah, ***we prefered treated wines that presented more concentration and better maturity. Improved fruity taste and mouthfeel****. In the treated Syrah block we noticed a greater complexity and a better balance acidity / tannin. In the 2015 vintage we saw similar results in other treated blocks and* ***we decided to extend the treatments to other varieties".***

Jordan Harris.
Tarara Vineyards, Leesbur
Virginia, USA:

"In our experience, ***we have repeatedly seen a great increase in quality through sensory analysis with*** **LalVigne***"*

Joe Wright.
Winemaker. Left Coast Cellars,
Oregon, USA:

"We observed the effectiveness of **LalVigne MATURE** ***in our experimental plot from the week after the first application. At harvest the lignification of the bunch stem increased, advanced the maturity of the seed, the grape had more color and was more ripen.*** *I preferred the treated blocks over the controls in cold years as well as in warmer years"*

Todd Webster.
Brennan Vineyards,
Comanche. Texas, USA:

"keeping the natural acidity in the vineyard can be a challenge In Texas and other hot climate winemaking regions around the US Our most challenging grape to ripen is Mourvedre. It is a late bud breaking grape which is great to avoid the spring freezes that hit Texas regularly.

The downside with Mourvedre is our hot climate during the growing season. We tend to have high pH wines with low Brix grapes at harvest.

Our vineyard site is not conducive to making a red wine from our Mourvedre grapes. Years ago, I decided to make dry rosé from this block. We were still getting high pH and low Brix fruit.

In 2016, I sprayed with **LalVigne MATURE**.

The results were amazing.We harvested the treated block 20 days earlier than the control block.

They both had the same Brix when each block was harvested, but the pH was so much lower from the grapes treated with **LalVigne MATURE**. ***We will spray both blocks of Mourvedre this year (2017) with*** **LalVigne MATURE** ***and in the future."***

Norrel Robertson
Master of Wine

"During the very dry and early harvest of 2016 it became evident that many of the more aromatic cultivars such as Sauvignon Blanc would struggle to produce wines with true varietal character in South Africa

In the Daschbosch cellar of Uniwines in the Breedekloof Valley we decided to apply **LalVigne AROMA** *at veraison on a large block with a control to attempt to achieve Sauvignon Blanc with more aromatic intensity in these hard conditions*

In the blending sessions that followed the treated wine stood out with more aromatic intensity and varietal character in a tasting session of over 30 Sauvignon Blancs"

Frequently asked questions (I)

What differentiates LalVigne MATURE from LalVigne AROMA ?

	LalVigne AROMA Grow your wine	LalVigne MATURE Grow your wine
Increased and advanced accumulation of aroma precursors	++++++	++
Increased and advanced of phenolic maturity	++	++++++
Vine recognition	**LalVigne AROMA**	**LalVigne MATURE**
Skin thickness	Increases	Increases
Specific inactivated yeast	100%	100%
Natural	100%	100%
Non GMO	NO GMO	NO GMO
Composition	A	B
Dose	2 x 3 Kg/ha	2 x 1 Kg/ha
Timing of application	Start veraison and 7-14 days later	Start veraison and 7-14 days later

Could you make a double dose application instead of two with the recommended dose?

Our recommendation is based on the results of scientific and technical trials made. To get the best effectiveness, follow the recommendations.

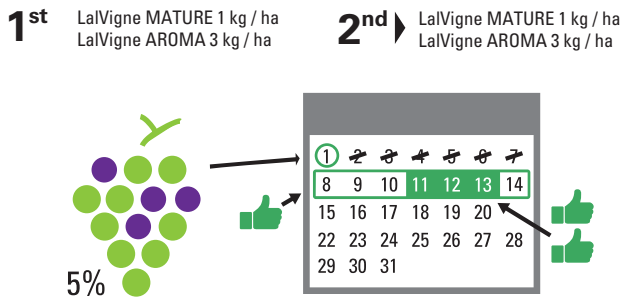
How much water should I use to make the application of LalVigne products?

Dilute the product in about 10 times its weight in water to put in suspension.

Add to the tank of the spray machine with the minimum amount of water that allows to perform a homogeneous spray, avoiding excess of water that can cause loss of product by dripping.

Water acts as the treatment vehicle, what is important is the dose of the product used.

At what point should I do the treatment? And in my case...?



Can I mix LalVigne with other products?

You can mix **LalVigne AROMA** and **LalVigne MATURE**.

Avoid mixing when possible

Do not mix with oils, alkaline products and lime sulfur solutions.

No incompatibilities with other products were found. In case of mix, check the recommendations of the other product used and perform phytotoxicity test.

Real cases

% veraison	1st application	2nd application
< 5%	< 5%	+12/14 days after first application
5-30%	5-30%	Recommendation 7-14 days after the 1st. Optimum 10-12 days
30-50%	30-50%	+7 Days after the 1st
50-70%	50-70%	+7 days after the 1st if 100% veraison is not reached
70%	Make only first application	Do not make 2nd application

In case of not mixing, but the treatment with another product is going to be done right away, what recommendation should I follow?

Apply first **LalVigne AROMA** and/or **LalVigne MATURE**.

Wait 48 H.

Apply the other product.

Frequently asked questions (II)

- **Should I take into account possible rainfall before applying the LalVigne products?**

  Yes, the effectiveness of the product is higher if after each application there is at least a 48h free period of rain.

- **What if it rains before 48 hours have passed since the application?**

SITUATION	ACTION
Rain before 48 hours after the 1st application of **LalVigne**	Make the 2nd application 7 days after the 1st
Rain before 48 hours after the 2nd application of **LalVigne**	Repeat the 2nd application

- **Do the LalVigne products have Maximum Residual Limits? (MRL).**

  LalVigne products do not have MRL.

  LalVigne products are food quality.

  Although it is not usual, grapes could be harvested just after the application.

  Attention: If it is mixed with another product, the MRL will be marked by this specific product.

- **How many days can I advance harvest if I apply LalVigne MATURE or LalVigne AROMA?**

  There is no exact value. Multiple factors should be taken into account: grape variety, temperature during ripening, etc.

  To give some reference examples, we have clients who have advanced 5 days in warm regions and short cycle varieties and 14 days in cold regions and long cycle varieties. In some cases even more.

©LaVigne

I make UREA foliar applications in some white varieties. Can I also use LalVigne AROMA?

Yes, **LalVigne AROMA** has a complementary effect. Increases skin thickness and compounds present in it. It will improve wine sensory characteristics and provide greater longevity and complexity. Both products can be mixed.

Can I apply LalVigne AROMA on red varieties and LalVigne MATURE on whites?

Yes, if you wish. In these cases it is a matter of wine style. We have clients doing it.

They use **LalVigne AROMA** in red varieties to increase the aroma. Some use **LalVigne MATURE** in white varieties seeking the improvement of mouthfeel.

What is usual is apply **LalVigne AROMA** on white varieties and **LalVigne MATURE** on red varieties.

What product do you recommend for grapes intended to make rosé wine?

In general, **LalVigne AROMA** if the vineyard management and wine objective is to make rosé.

If you make rosé to concentrate the red wines, **LalVigne MATURE** will give you better results.

In any case you will get good results.

Committed to wine from the vineyard

Wine is influenced by factors linked to viticulture, winemaking and consumer tastes. Wineries that are able to manage these factors achieve a competitive advantage in the market.

The **LalVigne** project grows thanks to our collaboration with universities, institutes, wineries, grape growers and winemakers from different countries.

LalVigne MATURE and LalVigne AROMA have been tested through scientific, monitored and observational studies, which have shown the effect of their application in the vineyard, in the grape and in the wine

Bibliography

Elicitors and water stress. Effect on Syrah grapes & wine quality cultivated in Gruissan, France.
Duo *et al*
2014 OIV Congress. Mendoza

Impact on agronomic parameters in Vines and wine quality of foliar treatments with specific fractions of yeast derivatives.
J. R. Lissarrague, J. Téllez, E. García, E. Peiro
2014 ASEV US. Texas

PhD Doctoral Thesis: Examination phenolic maturity of syrah grape variety.
Villangó Szabolcs.
2015 Hungary

Enhancing phenolic maturity of syrah with the application of a new foliar spray.
Sz. Villangó, Gy. Pásti, M. Kállay, A. Leskó, I. Balga, A. Donkó, M. Ladányi, Z. Pálf, Zs. Zsóf
2015 S. Afr. J. Enol. Vitic., Vol. 36, No. 3, 2015

Foliar application of yeast derivatives on grape quality and resulting wines
J. Téllez, V. González, E. García, E. Peiro, J.R. Lissarrague
2015 ASEV US

Application of wine-yeast derivates in viticulture, new ways of creating wine stiles
H. Redl, M. Redl, C. Redl et al.
BOKU University of Natural Resources and Life Sciences, Vienna, Austria
2015, Der Winzer 07.08.2015

Inactive dry yeast application on grapes modify Sauvignon Blanc winearoma
K. Šuklje, G. Antalick, A. Buica, Z.A.Coetzee, J. Brand, L. M. Schmidtke, M. A. Vivier
2016 Food Chemistry 197 (2016)

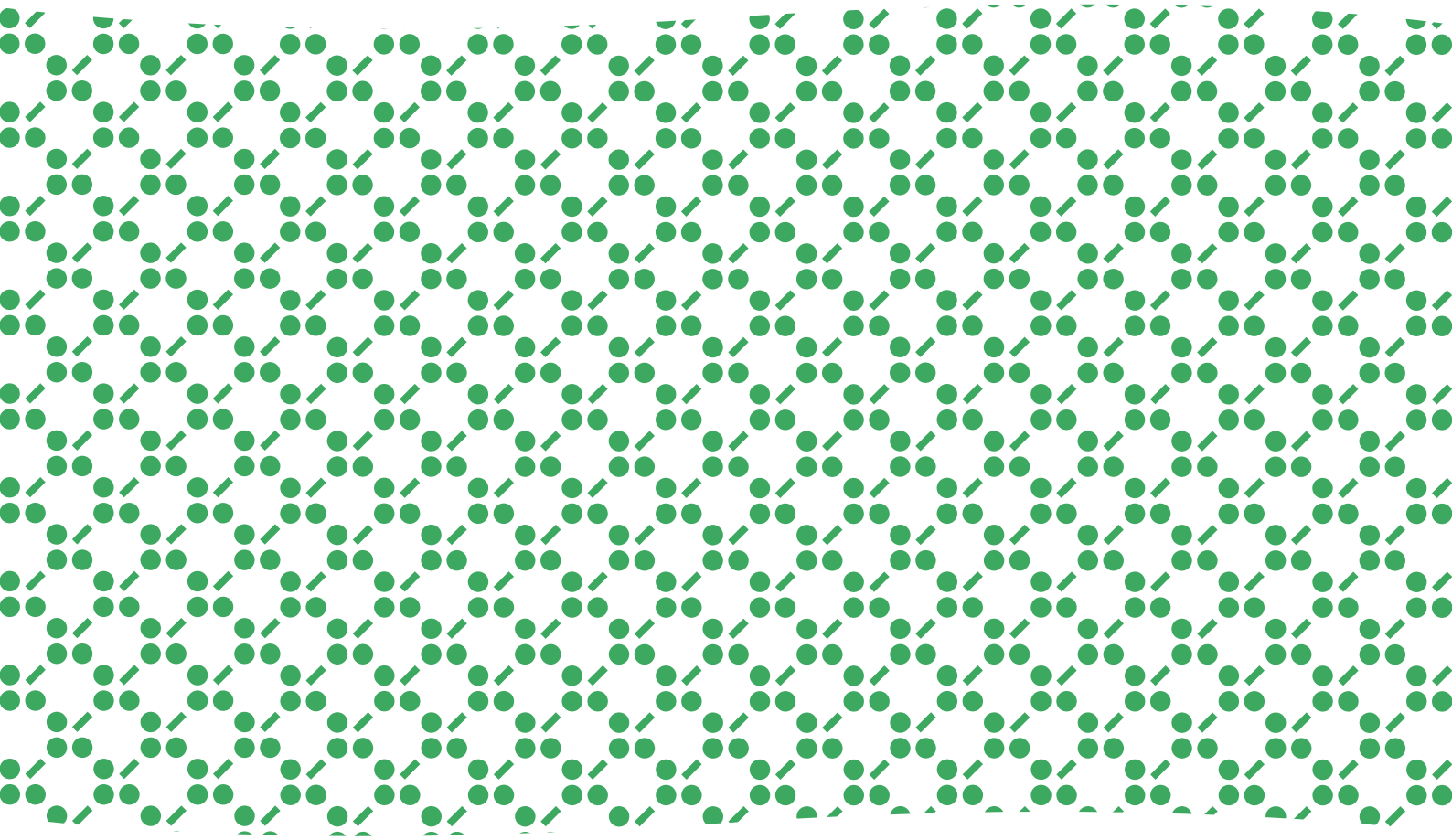
Influence of specific inactive dry yeast treatmentsduring grape ripening on postharvest berry skin texture parameters and phenolic compounds extractability
S. Río Segade, S. Giacosa, M. A. Paissoni, C. Ossola, V. Gerbi, C. Suárez Martínez, F. Battista, J.Téllez Quemada, P. Vagnoli, L. Rolle
2016 Macrowine

Effect on berry skin thickness and anthocyanins of muscat bailey A grape with the foliar spray application of specific inactive dry yeast.
Institute of enology and viticulture, Univ. of Yamanashi
Masashi HISAMOTO
2017 ASEV JAPAN

Foliar application of specific inactivated yeast with action on phenolic and aromatic metabolism of grapes.
D. Tomasi, A. Panighel, R. Flamini, L. Lovat ,F. Battista
2017 OIV congress

Impact of a specific yeast derived foliar sprayon gene expression and accumulation of anthocyanin in sangiovese.
I. Filippetti, C. Pastore, G. Allegro, E. Colucci, G. Valentini
2017 ASEV US

Vine performance and wine quality of muscat hamburg cultivar after a specific inactivated dry yeast application as adaptation strategy to climate change
D. Petoumenou, E. Xyrafis, C. Vassileioy, I. Dimakis and F. Battista
2017 Ampelos 2017. 4th International Symposium. Mediterranean Vineyards and Climate Change.



WINE YEASTS
WINE BACTERIA
NUTRIENTS /PROTECTORS
SPECIFIC INACTIVATED YEASTS
ENZYMES
CHITOSAN
VINEYARD SOLUTIONS

LALLEMAND
LALLEMAND OENOLOGY
Original by culture

Visionary biological solutions - Being original is key to your success. At Lallemand Oenology, we apply our passion for innovation, maximize our skill in production and share our expertise, to select and develop natural microbiological solutions. Dedicated to the individuality of your wine, we support your originality, we cultivate our own.

www.lallemandwine.com