Anchor OENOLOGY

HARVEST GUIDE

2022 EDITION

Producing wines as unique and innovative as our yeast, bacteria and nutrients

WINEQUIP | PROUD DISTRIBUTOR

Dedicated to fermentation excellence

CONTENTS

01 | ABOUT US

“We are proud of 99 years of dedication to fermentation excellence and providing products as unique as our country, South Africa.

South Africa is unique, so are our products

For many years, Anchor has been at the forefront of evolution, adapting and changing to fulfil the needs and requirements of winemakers across the world. From creating the world’s first hybrid wine yeast in the form of VIN 13, to expanding our portfolio to include more than just yeast, resulting in changing from Anchor Yeast to Anchor Oenology. With Anchor Oenology we pride ourselves on bringing you a portfolio of fermentation solutions, including yeast, nutrients and bacteria.

Within our yeast portfolio we strive to have a real focused number of products, answering the need for not just robustness, but also yeast strains that can assist winemakers in creating a specific sensory profile in the finished wine. From classical and hybrid strains, to yeast blends and the world’s first commercial interspecies hybrid, we have something for every winemaker.

2022 is Anchor Yeast’s 99th year of existence. As a supporter of Anchor and our products, this means you have been with us on a journey where together we have achieved many important milestones:

- The first company in the Southern Hemisphere to produce yeast.
- 47 years since the South African wine industry used the first commercially produced Anchor wine yeast.
- 18 years since the Anchor yeast became available in the inter- national wine industry.
- VIN 13, the first hybrid wine yeast, turns 31 years old this year.
- The first ever interspecies hybrid, Exotics Mosaic, celebrates 12 years of iconic wine production.
- The first company in the world to introduce blends of both yeast and bacteria.
- As Anchor Yeast celebrates its 99th birthday, our products are available on 5 different continents and in 30 different countries.

Anchor OENOLOGY

PORTFOLIO

BACTERIA

for quality malolactic fermentation

YEAST

for quality alcoholic fermentation

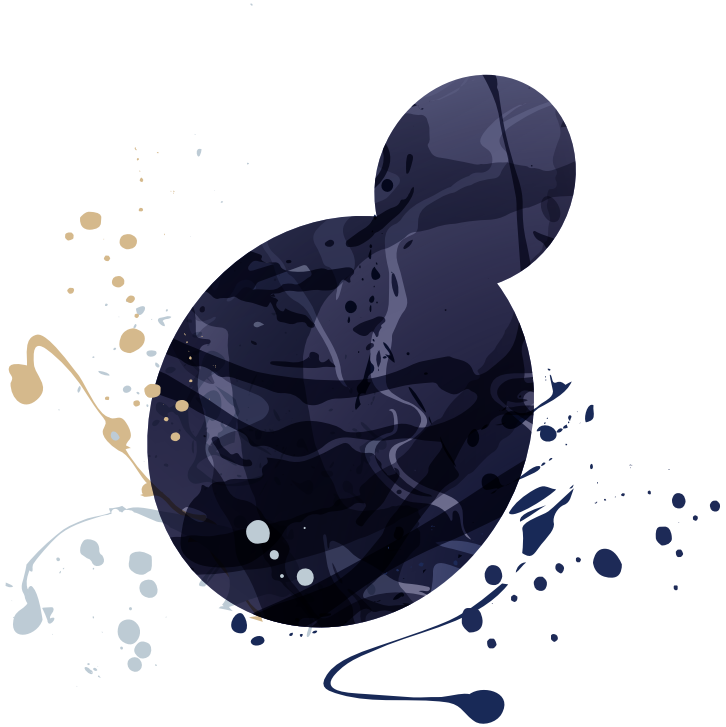
NUTRIENTS

for secure fermentation

Winemaking solutions for white, rosé and red wine

02 | YEAST

Groundbreaking innovation for quality alcoholic fermentations



"We create groundbreaking and unique yeasts. Let us do the same for your wine.

EXOTICS RANGE

First ever interspecies hybrid wine yeast strain.

The name Exotics now refer to a range of products, representing unique interspecies yeast hybrids for the creation of iconic wines. The Exotics range is responsible for creating complex, beautiful, soft and elegant wines of the highest quality. These hybrids were created to enhance the sensory complexity, similar to the impact of non-*Saccharomyces*, but with the robustness to complete the fermentation.

ALCHEMY RANGE

First ever scientifically formulated yeast blend.

In order to increase wine complexity, the Alchemy range has been created based on the synergistic interaction between different yeast strains. The portfolio caters for the production of white, rosé and red wines, delivering enhanced sophistication and complexity, adding mouthfeel and palate weight, in addition to aroma intensity.

LEGACY RANGE

First ever hybrid wine yeast strain.

The yeast strains in the Legacy range include the most well-known isolates and hybrids. They are all robust strains that can tolerate a wide range of temperature and alcohol variables in order to ensure complete, reliable fermentations. In addition, these strains produce highly aromatic white, rosé and red wines.

> All of the benefits of a spontaneous fermentation, none of the risks.

EXOTICS RANGE

Original & exciting

The concept behind these unique hybrids is to provide you with all the benefits and complexity of a spontaneous fermentation, without the associated risks. Now Exotics will be known as a range of yeast strains, consisting of the world's first interspecies hybrid, Exotics Mosaic, and more recently, the addition of Exotics Novello.

EXOTICS MOSAIC

A unique hybrid of *S. cerevisiae* and *S. paradoxus*, created in South Africa. Exotics Mosaic provides a steady fermentation rate in barrels and prefers at least 18 °C fermentation temperature.

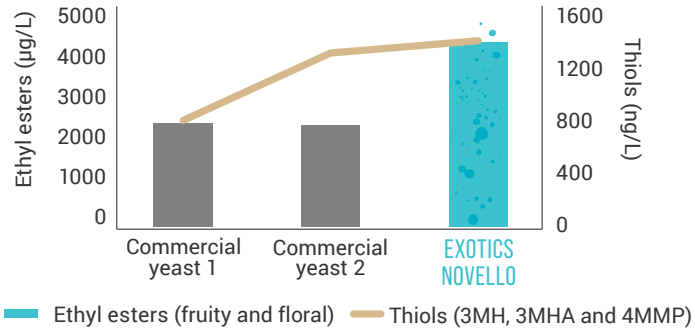
- **White wine:** Guava, granadilla, grapefruit, tropical fruit salad and stone fruit aromas.
- **Rosé wine:** Tropical fruit profile with intense mouthfeel.
- **Red wine:** Fruity, violet and cocoa aroma and flavours.

EXOTICS NOVELLO

A unique hybrid of *S. cerevisiae* and *S. cariocanus*, created in Australia. Exotics Novello provides a steady fermentation rate even at lower fermentation temperatures of 15 °C.

- **White wine:** Fresh and fruity, with enhanced softness and high ester and thiol production.
- **Rosé wine:** Increased thiols with enhanced mouthfeel.
- **Red wine:** Full-bodied and aromatic, with red and black fruit and spicy aromas, as well as decreased green characters.

Aroma impact of EXOTICS NOVELLO in Sauvignon blanc.



"Creating synergy ... You blend your wine and create art. We blend our yeast strains and create the exceptional.

ALCHEMY RANGE

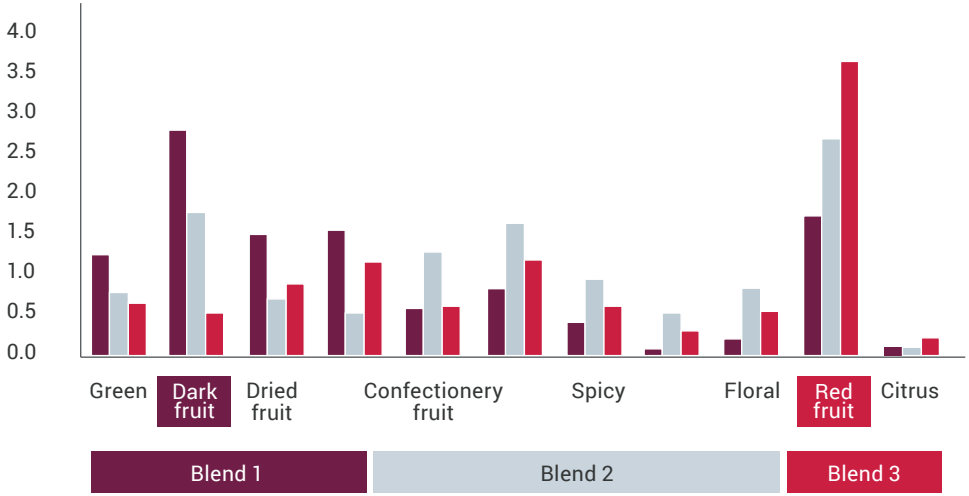
Magical process of transforming

ALCHEMY I • ALCHEMY II • ALCHEMY III • ALCHEMY IV

Anchor Yeast is the first wine yeast brand in the world to launch commercial yeast blends to enhance wine aroma based on the metabolic interaction between specific yeast strains present in the blend, rather than the cumulative effect of the individual strains. Based on this research, in collaboration with the Australian Wine Research Institute (AWRI), Anchor has developed four yeast blends for the increased aromatic intensity, flavour and complexity of white and red wines.

The Alchemy I, II, III and IV yeast blends are highly robust strains that can withstand the rigours and challenges of modern winemaking, including temperature, alcohol and sugar tolerance.

Blend 1, 2 and 3 contain the exact same three yeast strains, with only the ratio of individual strains in the blend being different.



The development of the Alchemy range was based on the following steps:

- Select and analyse the individual strains for their impact on the ethyl and acetate ester, thiol and monoterpene concentrations.
- Analyse a variety of blends for their impact on the wine profile.
- Perfect the ratio of the individual strains in the blend.

WHITE WINE YEAST BLENDS

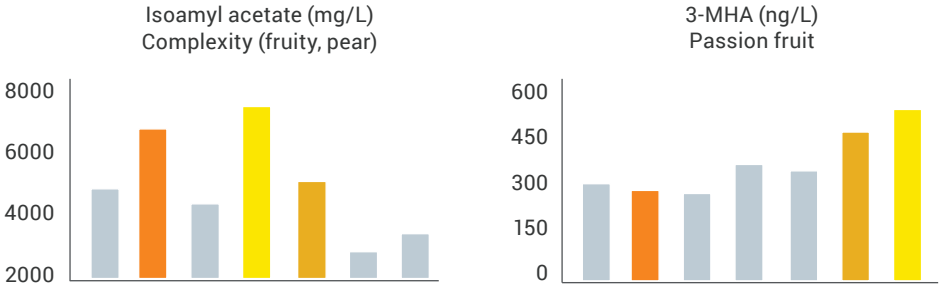
ALCHEMY I

- Fruity and floral esters.
- Tropical fruit aromas.
- Some volatile thiols.
- Cold fermentation.
- Very high alcohol tolerance.

ALCHEMY II

- Volatile thiols.
- 3-MH, 3-MHA and 4-MMP.
- Boxwood, passion fruit, grapefruit, gooseberry and guava aromas.
- Cold fermentation.
- Very high alcohol tolerance.

Identifying individual strains capable of enhancing the ester and thiol concentration:



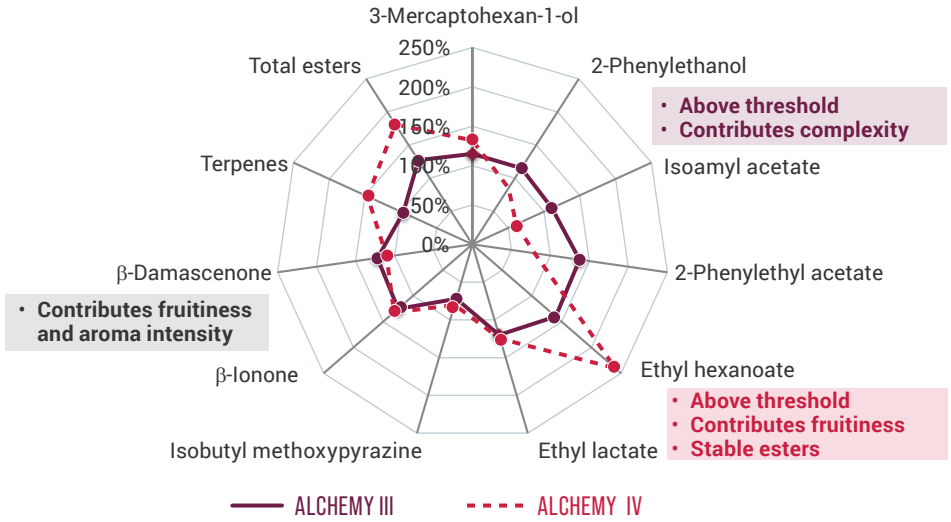
RED WINE YEAST BLENDS

ALCHEMY III

- Rose, floral and fruity.
- Raspberry.
- Decreased green methoxypyrazines.
- Structure and body.

ALCHEMY IV

- Significant production of esters and terpenes.
- Strawberry, cherry, raspberry, red-currant and pomegranate.
- Longevity/stability of fruit aromas.
- Decreased green methoxypyrazines.
- Round and smooth.



> “Our yeast strains that help you to create your legacy - always dependable and reliable, like family.

LEGACY RANGE

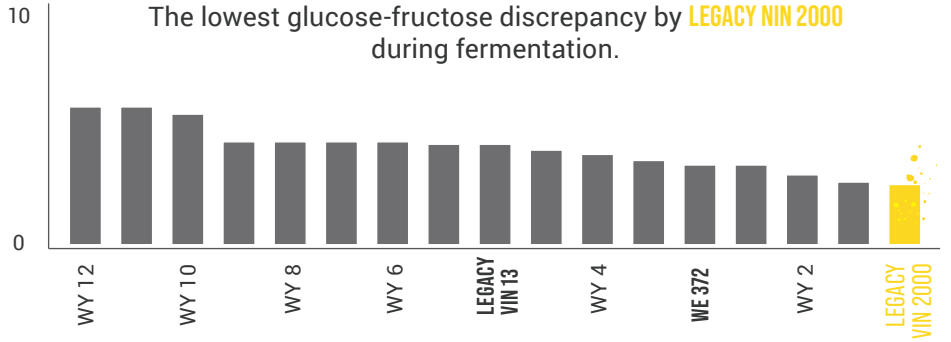
Handed down from generation to generation

The Legacy range is hybrid yeast strains that are the backbone of the Anchor yeast family and is known for their quality and robustness: Legacy VIN 2000, VIN 13, VIN 7 and NT 116 for white wines, and for red wines also NT 116, as well as NT 112, NT 202, NT 50 and WE 372.

WHITE WINE YEAST

LEGACY VIN 2000

- Barrel and tank fermented Chardonnay, Chenin blanc and Viognier.
- High quality, full bodied wines with good mouthfeel.
- Enhances fresh pineapple, papaya, grapefruit and citrus aromas.
- Low temperature tolerance: tank and barrel suitability (12 °C).
- Tropical citrus aromas.
- High alcohol tolerance and extremely fructophilic.



LEGACY VIN 13

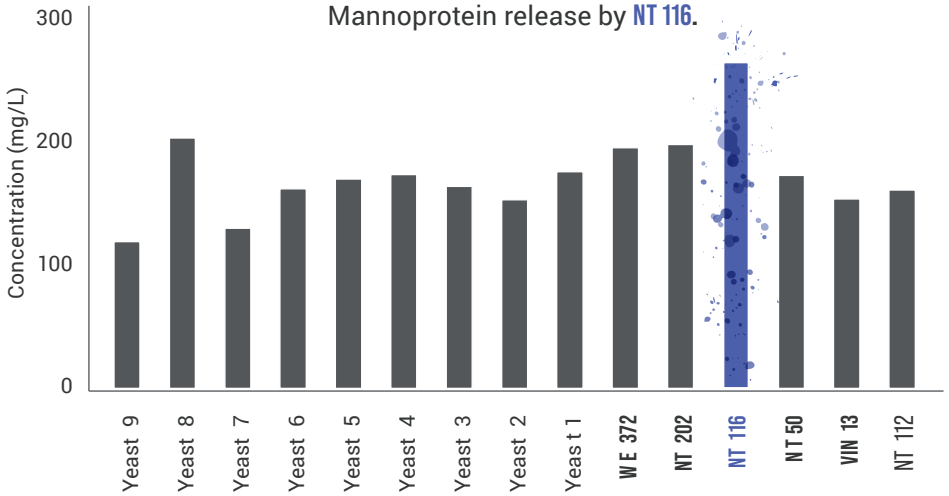
- Cold fermentation of aromatic white wines.
- Robust and aromatic: fresh and fruity.
- Strong and fast fermentation.
- Cold tolerant (10 °C).
- Extremely alcohol tolerant (17%).
- Red wine fermentations (sugar exceeding 26 °B) .
- Restarting stuck fermentations.
- Extremely sugar tolerant (27 °B).

LEGACY VIN 7

- Natural triploid hybrid.
- Cold fermentation of thiol white wines: Sauvignon blanc, Chenin blanc and Colombard.
- Enhances 4-MMP thiol aromas, mainly guava and granadilla.
- Thiol liberation and intense aromatics.
- Cold tolerant.
- Grapefruit, guava, passion fruit and gooseberry.

LEGACY NT 116

- Production of aromatic, crisp white wines.
- Production of full-bodied red wines destined for barrel maturation.
- High sugar and alcohol tolerance.
- Cold tolerance: suitable for cold maceration in red wines.
- Strong fermenter, even at very low temperatures in white wines.
- High ester production, intense tropical aromas.
- Highest glycerol and mannoprotein production.



RED WINE YEAST

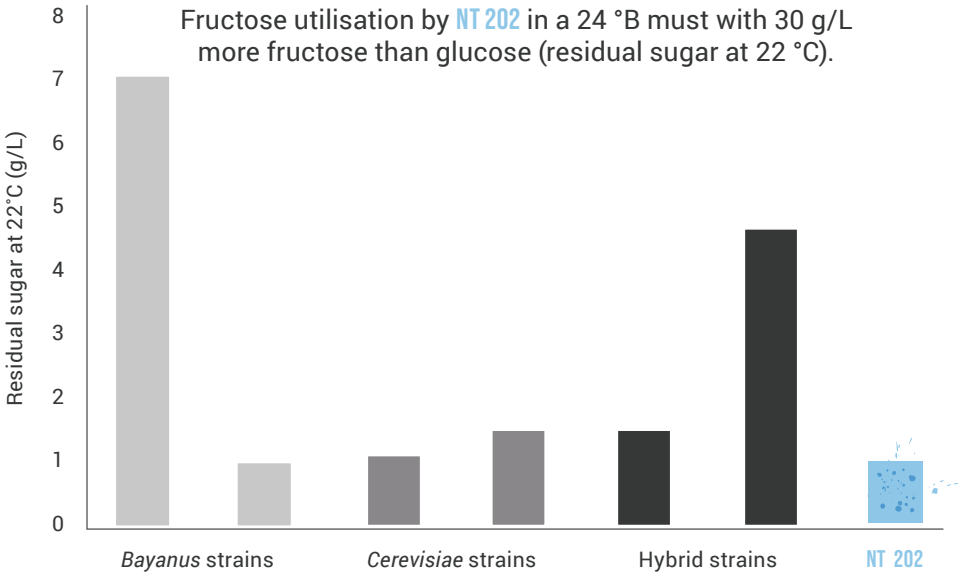
LEGACY NT 112

- Production of red wines with a firm tannin structure.
- Traditional style red wines to be aged.
- Blackberry and blackcurrant aromas in Cabernet Sauvignon and Shiraz.
- High alcohol tolerance.
- Very good fructose utilisation.
- Can produce SO_2 under stress conditions (sufficient nutrition).
- Suitable for micro-oxygenation and thermovinification.

LEGACY NT 202

- Production of structured red wines to be aged, more intense and complex.
- Red and black fruits (blackberry and blackcurrant), tobacco, fresh prune/ plum aromas.
- High alcohol tolerance (26 °B).
- Very good fructose utilisation.
- Very stimulatory for MLF.

Fructose utilisation by NT 202 in a 24 °B must with 30 g/L more fructose than glucose (residual sugar at 22 °C).

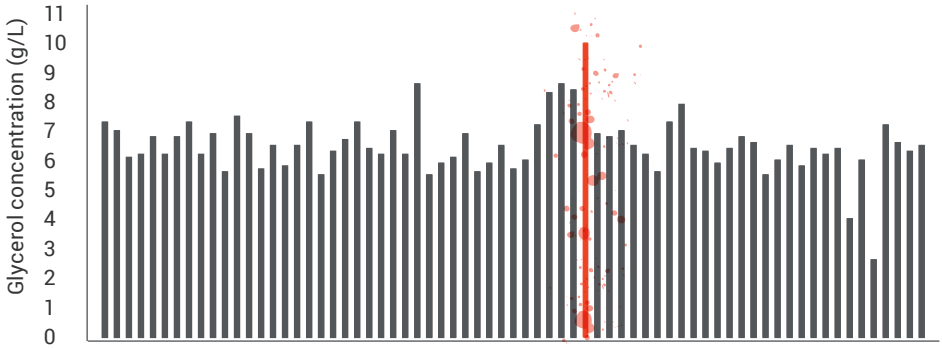


> **You don't settle for one cultivar or one style of wine. Why settle for one yeast strain? With Anchor, the choice is yours.**

LEGACY NT 50

- Production of fruity, rounded, easy drinking, early release wines.
- Enhances strawberry, raspberry, cherry, black berries, blackcurrant and spicy aromas.
- Suitable for wines with or without wood maturation.
- Extremely sugar and cold tolerant (good for cold soaking, pre-fermentation maceration; 13 °C).
- Masks green characters.
- Produces high glycerol concentrations that soften the mouthfeel.

Glycerol production of LEGACY NT 50 in comparison with 68 other commercial wine yeast strains.



LEGACY WE 372

- Enhances red berry, fruity and floral aromas.
- Suitable for most red grape varieties: Cabernet Sauvignon, Cabernet franc, Merlot, Shiraz, Pinotage and Pinot noir.
- Natural isolate.
- Softer, 'feminine' style wines.
- Cold sensitive: suitable for the production of semi-sweet wines.

WHITE WINES | Yeast technical characteristics

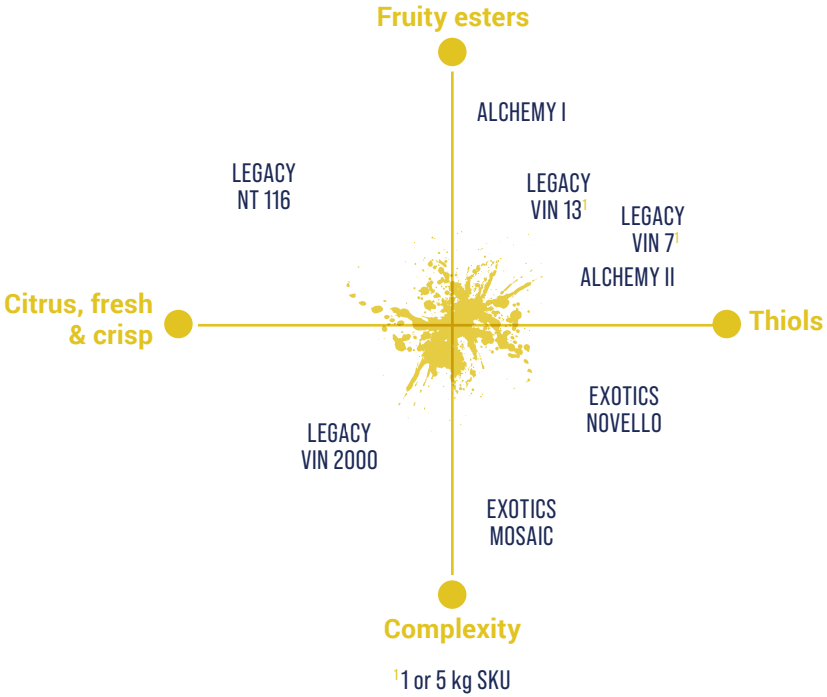
	EXOTICS		ALCHEMY		LEGACY			
	MOSAIC	NOVELLO	ALCHEMY I	ALCHEMY II	VIN 2000	VIN 13	VIN 7	NT 116
Application	Iconic wines	Iconic wines	Ester production	Thiol production	Complex wines	Fruity wines	Thiol production	Crisp wines
Also suitable for rosé	■	■				■	■	■
Blend			■	■				
Hybrid	■	■			■	■		■
Natural isolate							■	
Restart stuck fermentation						■		
Fructophilic	■				■	■		
Cold tolerance	18 °C	15 °C	12 °C	12 °C	12 °C	10 °C	13 °C	11 °C
Alcohol tolerance	15.5%	15.5%	15.5%	15.5%	15.5%	17%	14.5%	16%
Osmotolerance (g sugar/L)	250	250	250	250	250	270	240	260
Nitrogen demand	Average	Average	Average	Average	Low	Low	High	Low
Sensory descriptors	Exotic fruits Stone fruits Floral Mouthfeel	Grapefruit Guava Passion fruit Gooseberry Fresh and fruity	Fruity Floral	Passion fruit Guava	Floral Citrus Tropical Pineapple Papaya	Fruity Floral Terpenes Muscat	Grapefruit Guava Passion fruit Gooseberry	Tropical fruits Citrus Thiols

RED WINES | Yeast technical characteristics

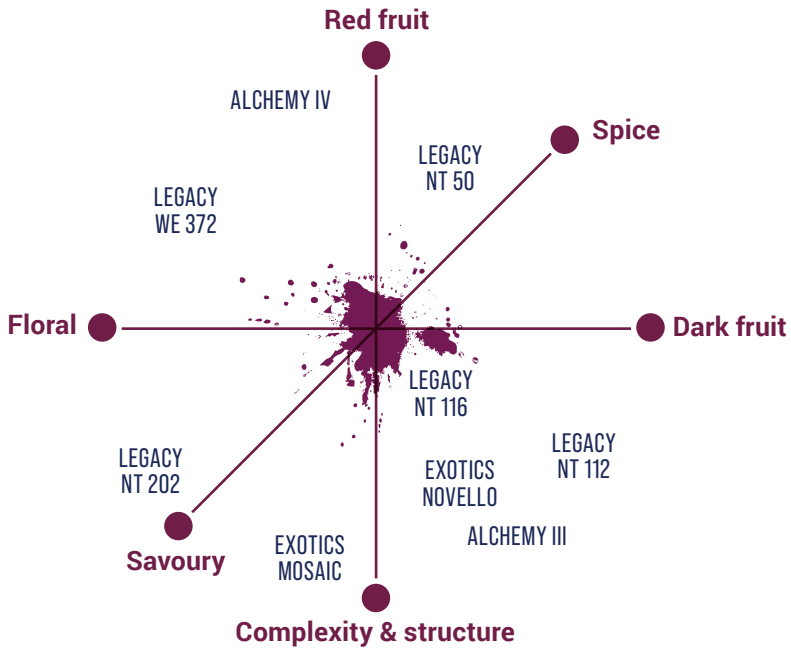
	EXOTICS		ALCHEMY		LEGACY				
	MOSAIC	NOVELLO	ALCHEMY III	ALCHEMY IV	NT 202	NT 50	NT 116	NT 112	WE 372
Application	Iconic wines	Iconic wines	Complex wines	Intense red fruit	Structured wines	Fruity wines	Full-bodied wines	Firm tannin structure	Floral & fruit aromas
Also suitable for rosé	■	■		■			■		
Blend			■	■					
Hybrid	■	■			■	■	■	■	
Natural isolate									■
Fructophilic	■				■			■	
Cold tolerance	18 °C	15 °C	16 °C	16 °C	18 °C	13 °C	11 °C	20 °C	16 °C
Alcohol tolerance	15.5%	15.5%	15.5%	15.5%	16%	15.5%	15.5%	15.5%	15.5%
Osmotolerance (g sugar/L)	250	250	260	260	260	265	260	260	245
Nitrogen demand	Average	Average	Average	Average	Average	High	Low	Average	Average
MLF compatibility	+++	++	++	++	+++	++	++	+	++
Sensory descriptors	Red fruit Black fruit Cocoa Floral	Soft tannins Red and black fruit Spice	Rose Floral Fruity Structure and body	Intense fruit Red fruit Round and smooth Decreased greenness	Blackberry Blackcurrant Tobacco Prune Red berries	Blackberry Blackcurrant Cherry Spice	Blackberry Blackcurrant Red berries	Structured Blackberry Blackcurrant	Red berry Floral

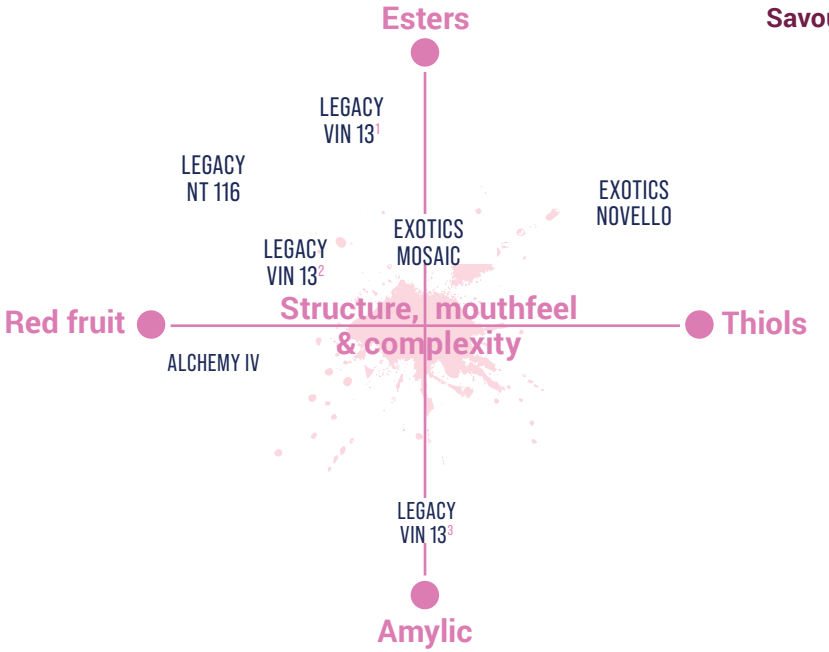
YEAST POSITIONING

White wine | Red wine | Rosé wine



[1] 1 or 5 kg SKU





[1] 12 - 14 °C | 30 - 60 NTU [2] 10 - 12 °C | 80 - 100 NTU [3] 14 - 16 °C | 50 - 80 NTU

03 | BACTERIA

Unique tools that enhance the wine's quality and aroma during MLF

DUET AROM
Fruit & spicy notes

DUET MATURE
Dark fruit notes

DUET SOFT
Softness & mouthfeel

DUET RANGE

This Duet range is the new home of the familiar and well-known *Oenococcus oeni/ Lactobacillus plantarum* bacteria blends in the Anchor portfolio, specifically developed for co-inoculation (a duet of alcoholic and malolactic fermentations).

The Duet Arom and Soft bacteria blends are focused on enhancing the quality, aroma and sensory perception of red, white and rosé wines during malolactic fermentation.

Building on the success winemakers are achieving with Duet Arom and Soft, we have created a new mixed bacteria culture: Duet Mature.

New packaging

"Expect more from your malolactic fermentation? So do we.

DUET AROM | DUET SOFT

WHY A BLEND OF BACTERIA?

- ✓ Security
- ✓ Co-inoculation benefits
- ✓ Impact on volatile acidity and diacetyl production
- ✓ Sensory benefits
- ✓ Impact on colour
- ✓ Bio-protection

Security

A blend of a robust *O. oeni* strain with *L. plantarum*, allow for the bacteria culture to perform MLF under a wide range of fermentation conditions, including pH and sulphur challenges.

Co-inoculation benefits

Addition at the same time as yeast:

TECHNOLOGICAL ADVANTAGES	MICROBIAL ADVANTAGES	SENSORY IMPACT
• Shorter total fermentation duration. • More efficient MLF in difficult wines. • Favourable fermentation heat. • No MLF nutrients required. • Reduced SO_2 usage required.	• Less inhibitory environment (fatty acids and ethanol from yeast). • Reduced risk of microbial spoilage. • Lower VA concentrations.	• Access to glycoside precursors. • Higher total esters and fruitiness. • Less diacetyl and butter characters. • More complex, integrated wines.

Impact on volatile acidity and diacetyl production

Whilst the heterofermentative *O. oeni* strain is able to produce volatile acidity, the *O. oeni* strains present in the Duet range are selected as low VA producing strains. The homofermentative *L. plantarum* strains are unable to produce any volatile acidity, even in the presence of high sugar concentrations in must during co-inoculation.

In co-inoculation conditions: A high sugar concentration results in less excess pyruvate and the bacteria prefers malic acid to citric acid in order to regenerate NAD^+. This results in the production of less diacetyl that could potentially mask complex aromas and promote wine oxidation.

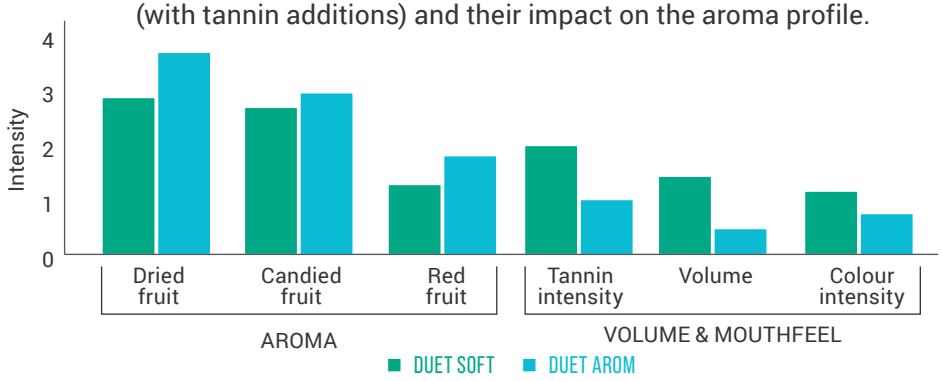
Sensory benefits

The blend allows for the more complex aroma contribution via the sensory-enhancing benefits of the *L. plantarum* bacteria species. This is due to the more complex enzymatic profile of the *L. plantarum* strain.

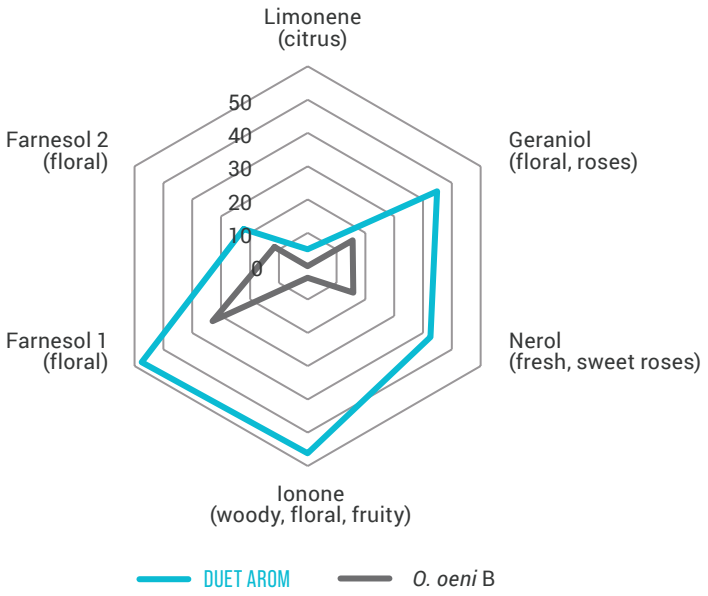
ENZYME	*L. PLANTARUM*	*O. OENI*	SIGNIFICANCE
Malolactic enzyme	+	+	Convert malic to lactic acid
β-D-glucosidase	+	-	Release bound precursors
Proline iminopeptidase	+	-	Release amino acid precursors
Esterase	+	+	Synthesis or hydrolysis of esters

The Duet range is developed to enhance the overall wine quality and the different blends have different sensory impacts in the wine.

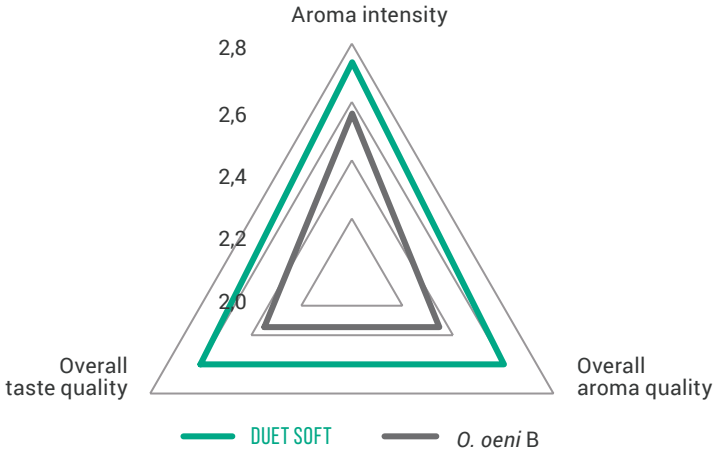
A comparison of the Duet bacteria range for co-inoculation (with tannin additions) and their impact on the aroma profile.



The *L. plantarum* strain with ß-D-glucosidase activity, like in **DUET AROM**, can liberate bound aroma compounds like monoterpenes and nor-isoprenoids. These compounds enhance the fruity and floral profile of the wine.



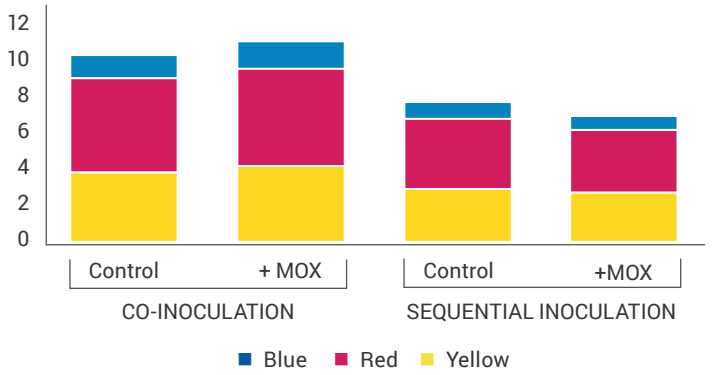
A blend of bacteria in comparison with an *O. oeni* culture in co-inoculation MLF in Tempranillo (Spain).



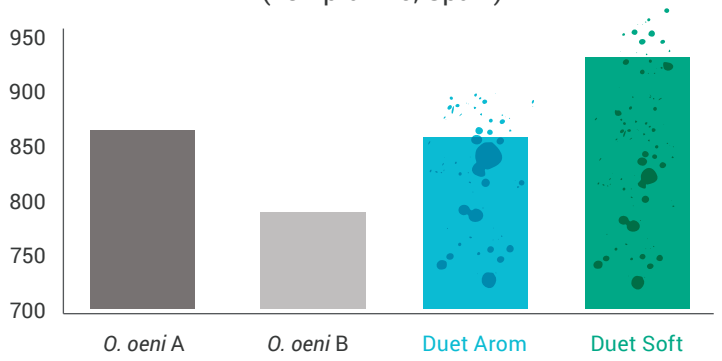
Impact on colour

The Duet range has been developed to positively impact on the colour by enhancing colour intensity and total anthocyanin concentration. These cultures are also fully compatible with micro- and macro-oxygenation and tannin additions during fermentation. In fact, these practices, together with the use of the Duet range, results in increased colour after MLF.

Impact of micro-oxygenation on colour intensity; comparing co-inoculation versus sequential inoculation (Tempranillo, Spain).

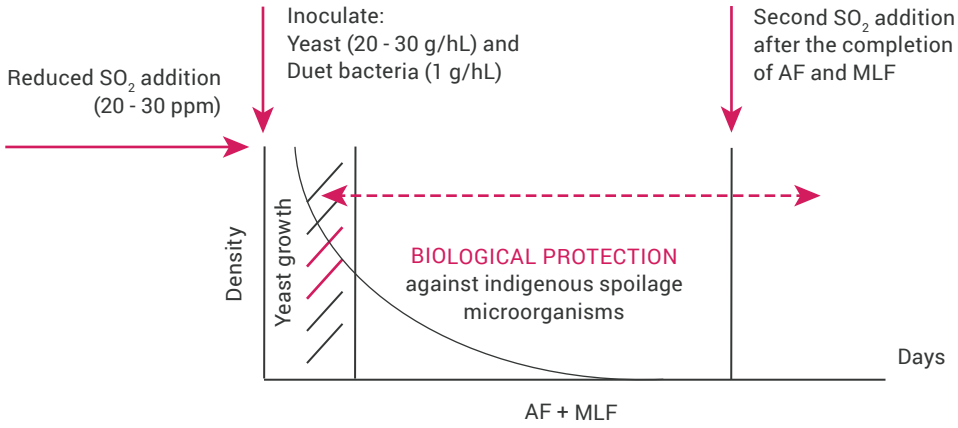


Anthocyanins (mg/L) after completion of co-inoculation (Tempranillo, Spain).



Bio-protection

With an increased interest in the sanitary state of wines (increased legislation and certification requirements), it is important to ensure that your wines are protected against unwanted microbial populations. Inoculating the Duet range at the beginning of the fermentation, allows for the usage of less sulphur. In addition, the bacteria strains present in the Anchor range are unable to produce biogenic amines or ethyl carbamate.



DUET MATURE

New product

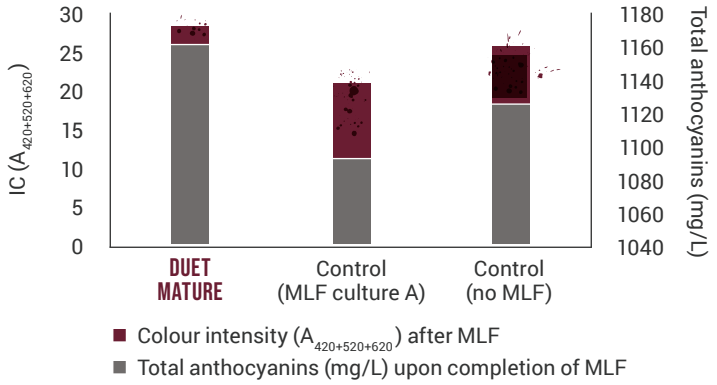
Anchor is the first company in the world to bring you unique, quality-enhancing tools in the form of bacteria blends. These blends of *Oenococcus oeni* and *Lactobacillus plantarum*, forming part of the Duet bacteria range for co-inoculation, were specifically developed to enhance the wine quality during the process of malolactic fermentation (MLF). Based on the success winemakers are achieving with Duet Arom and Duet Soft, we have created a brand new blend: Duet Mature. This new bacteria blend not only brings you all the benefits of co-inoculation, but also has the ability to enhance red wine quality during the maturation period.

POSITIVE IMPACT OF DUET MATURE IN RED WINES

Colour

In order to display the positive impact of Duet Mature on the phenolic profile of a Spanish Merlot, we measured the total anthocyanin concentration and colour intensity (CI) after MLF. Both of these parameters were highest with Duet Mature, compared to another commercial co-inoculation culture and a treatment with no MLF. This means that the red wine colour is enhanced, especially in red wines destined for maturation.

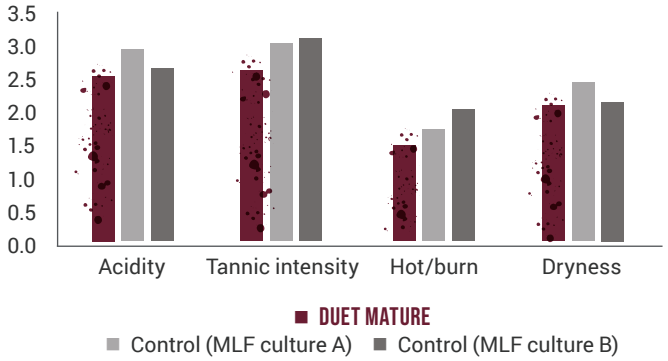
Enhanced phenolics with **DUET MATURE** | Spanish Merlot.



Quality

Besides the enhanced sensory profile delivered by Duet Mature, this bacteria culture also has the ability to reduce sensations that could negatively influence the wine quality. In a Spanish Tempranillo, Duet Mature had the ability to reduce characters of tannin intensity, hotness, dryness and herbaceousness.

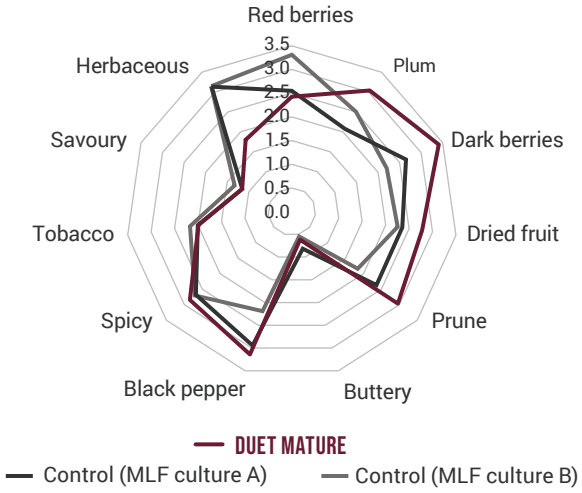
DUET MATURE vs. competitor bacteria | Spanish Tempranillo | Reduced negative sensations.



Aroma

As seen with the other blends in the Duet range, Duet Mature has a quality-enhancing aroma impact in the wine. Duet Mature significantly enhances the dark fruit profile, enhancing plum, prune, dried and dark fruit aromas. Duet Mature does not only enhance the sensory profile during MLF, but also significantly contributes to the aroma profile during the ageing period. Dimethyl sulphide (DMS), contributing blackcurrant and blackberry aromas, is released from the potential DMS (PDMS) during wine storage. Duet Mature produces PDMS and can contribute to the aroma profile of the wine even after bottling.

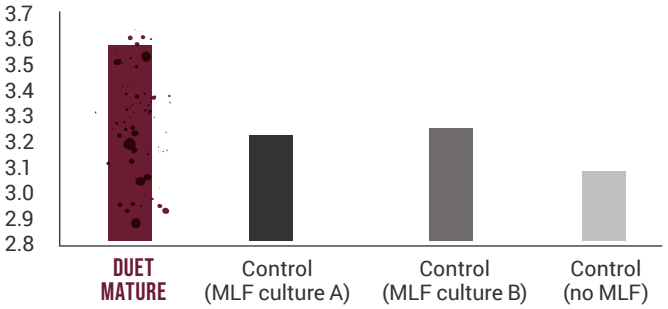
DUET MATURE n comparison with other commercial co-inoculation cultures | South African Cabernet Sauvignon.



Preference

With all these quality-enhancing aspects, it is clear why Duet Mature is the preferred wine when compared to other commercial cultures and a wine without MLF. For winemakers that want to use the process of MLF to also enhance wine quality, the Duet range is the perfect choice.

Sensory analysis after MLF - overall preference | Spanish Merlot



DUET BACTERIA PORTFOLIO

Oenococcus oeni &
Lactobacillus plantarum

Enhanced aroma profile in high pH red wines during malolactic fermentation.

APPLICATION

Red wine

SENSORY ATTRIBUTES

More fruit intensity
More red berry aroma characteristics
Enhanced spicy notes
Enhanced aroma intensity

TECHNICAL PARAMETERS

pH: ≥ 3.4

Potential alcohol tolerance: 15.5%

Temperature range: 18 - 28 °C

Total SO_2 inoculation:

40 - 50 ppm
No biogenic amine production
Little to no VA production

CO-INOCULATION

Oenococcus oeni &
Lactobacillus plantarum

Enhanced volume, mouthfeel and sensory profile in white and red wines during malolactic fermentation.

APPLICATION

Red and white wine

SENSORY ATTRIBUTES

Enhanced mouthfeel
Decrease in green characters
Reduced astringency
Enhanced dark fruit aromas

TECHNICAL PARAMETERS

pH: ≥ 3.2

Potential alcohol toolerance: 15%

Temperature range: 15 - 28 °C

Total SO_2 inoculation:

50 ppm
No biogenic amine production
Little to no VA production

CO-INOCULATION

Oenococcus oeni &
Lactobacillus plantarum

Enhanced dark fruit characters in red wines during malolactic fermentation and ageing (PDMS production).

APPLICATION

Red wine

SENSORY ATTRIBUTES

Increased plum & dark berry aromas
Hints of spice, black pepper & floral notes
Increased blackberry & blackcurrant notes:
DMS release during ageing

TECHNICAL PARAMETERS

pH: ≥ 3.3

Potential alcohol tolerance: 16%

Temperature range: 18 - 28 °C

Total SO_2 inoculation:

50 ppm
No biogenic amine production
Little to no VA production

CO-INOCULATION

04 | NUTRIENTS

Sustain The yeast, don't just feed it

The new Anchor nutrient portfolio will consist of two ranges, Inception and Sustenance, each the home of two uniquely formulated products. This new portfolio will cover all the needs of the yeast, from rehydration to fermentation. We have also collaborated with a world-renowned packaging supplier to create fully recyclable packaging, which not only ensures the longevity and survival of the yeast, but also the planet.

INCEPTION RANGE
for rehydration

Inception: The establishment or starting point of an activity.

REVIVE

Ensure yeast viability and enhanced quality.

- Provide high levels of essential growth factors and enzymatic co-factors.
- Improve yeast acclimatisation, implantation, viability and metabolism.
- Enhance precursor assimilation and fermentative aroma release.

REUSE | REDUCE | RECYCLE

SUSTANANCE RANGE

for complex nutrition

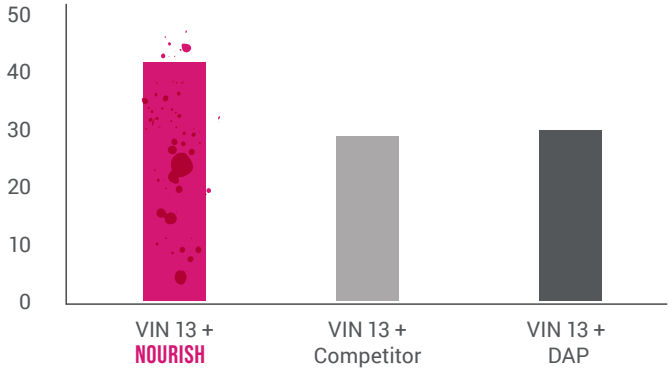
Sustenance: the maintaining of something in life or existence

NOURISH

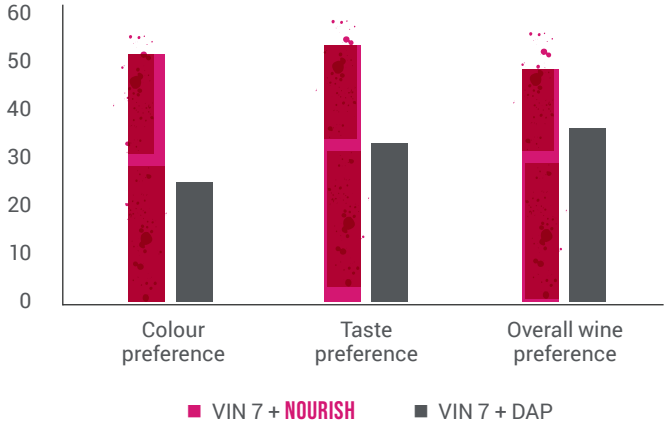
Secure the fermentation and ensure a clean aromatic profile.

- Provide a complex source of organic and inorganic nitrogen.
- A source of essential vitamins, minerals, amino acids and stress resistance factors.
- Reduce the risk and ensure a balanced and complete fermentation.
- Prevent the formation of undesirable metabolic by-products.
- Improve overall wine quality.

Total aroma-enhancing volatile aroma compounds (mg/L) with VIN 13 yeast and NOURISH addition in an Italian Moscato. With NOURISH, aroma production is increased by up to 44%, compared to a competitor product or DAP.



Ranking preference test with VIN 7 with NOURISH compared to DAP.



05 | CONTACT US

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OENOBRANDS®

ADVANCED WINEMAKING SOLUTIONS

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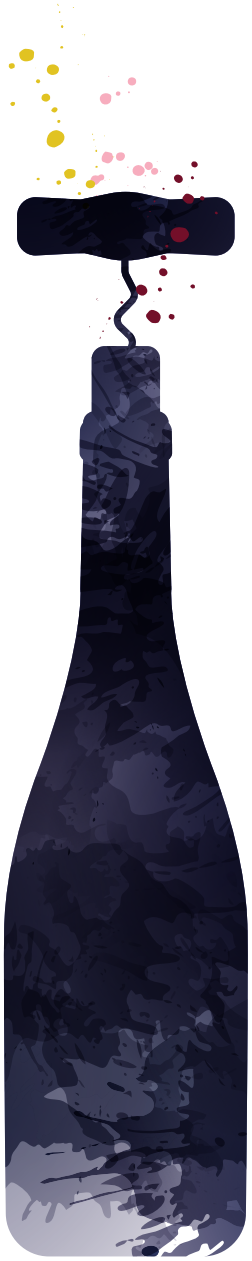

Anchor OENOLOGY

DEDICATED TO FERMENTATION EXCELLENCE