

## ENARTIS NEWS

### WHAT'S YOUR (WINE) STYLE?

*What is the aromatic style that are you looking for? Here are some suggestions on products and fermentation strategies that can be used to achieve the desired style of wine.*

#### WHITE WINES

##### Citrus style

*Origin:* This aroma is considered a varietal aroma related to the presence of terpenes (citronellol, nerol, linalool) in the grapes.

*How to enhance citrus aroma:*

- Skin contact and the use of a maceration enzyme increase the extraction of aromatic precursors from grapes.
- The expression of the aroma requires the use of a yeast strain that can convert odorless glycosylated precursors into volatile compounds.
- Fermentation temperature around 13-15°C helps terpene revelation by yeast glycosidase activity without promoting an excessive production of esters that could overshadow citrus character.
- Minimize post fermentation bentonite fining by using enzymes and tannins that can remove unstable grape proteins in the pre-fermentation stage.

##### Tropical style

*Origin:* Here we refer to aromas such as passion fruit, guava and pineapple that are produced by thiols, mainly 3-mercaptohexanol and its acetate.

*How to enhance tropical aroma:*

- Skin contact and the use of a maceration enzyme increase the extraction of aromatic precursors from grapes.
- The expression of the aroma requires the use of a yeast strain able to convert the odorless precursor bound to cysteine and glutathione into volatile compounds.
- Fermentation temperature around 14-16°C helps thiol expression by yeast beta-lyase activity and the conversion of 3-mercaptohexanol into the most powerful acetate (passion fruit, guava, grapefruit).
- Feed yeast with branched-chain amino acid rich nutrients to stimulate ester production that can enhance tropical aroma.
- Minimize post fermentation bentonite fining by using an enzyme with protease secondary activity in the pre-fermentation stage.
- Use sulfur amino acids and peptides to protect and stimulate thiol production.

##### Noble green (thiolic) style

*Origin:* Thiols such as 3-mercaptohexanol and 4-Mercapto-4-methyl-2-pentanone responsible for tomato leaf/boxwood aromas.

*How to enhance green aroma:*

- Skin contact and the use of a maceration enzyme increase the extraction of aromatic precursors from grapes.
- The expression of the aroma requires the use of a yeast strain able to convert the odorless precursors bound to cysteine and glutathione into volatile compounds.
- Minimize the production of esters that could overshadow the green, zesty character by reducing the fermentation temperature to 13-15°C and avoiding the use of branched-chain amino acid rich nutrients.
- Minimize post-fermentation bentonite fining by using an enzyme with protease secondary activity in the pre-fermentation stage.
- Provide sulfur amino acids and peptides to protect and stimulate thiol production.

##### Stone fruit style

*Origin:* Esters produced during alcoholic fermentation are mainly responsible for this stone/sweet fruit aroma.

*How to enhance stone fruit aroma:*

- Use a yeast strain with a strong ability to synthesize esters.
- Ferment around 18-20°C: high temperature favors yeast ability to synthesize esters.
- Minimize the loss of aroma caused by CO<sub>2</sub> stripping effect, preventing the volatilization of aromatic compounds with the addition of mannoproteins or chips.
- Enhance the production of esters by feeding yeast with branched-chain amino acid rich nutrients.

##### Floral style

*Origin:* Here we refer mainly to the floral notes (rose, violet) produced by phenyl ethanol and β-ionone / β-damascenone.

*How to enhance floral aroma:*

- Use a yeast strain with a strong ability to synthesize phenyl ethanol.
- Enrich the juice with phenylalanine, the amino acid precursor of phenyl ethanol.
- Ferment below 15°C to favor yeast ability to synthesize higher alcohols.
- Enhance floral aroma by using oak alternatives with this aromatic profile.

## Mineral/Flint style

*Origin:* Expression of minerality requires the lowest production of aromatics possible and a very reductive environment.

*How to enhance mineral aroma:*

- Create a reductive environment by keeping juice turbidity around 250-300 NTUs.
- Use chips to increase guaiacol concentration (it enhances the perception of mineral character).

- Limit ester production by using a neutral yeast and only feeding it with inorganic nitrogen.
- Keep YAN low (< 200 mg/L).
- Ferment at 24-26°C to favor stripping of esters by CO<sub>2</sub>.
- Provide sulfur amino acids to reduce the redox potential.

	ENZYME	YEAST	NUTRIENT	TANNIN	POLYSACCHARIDE	OAK ALTERNATIVES
<b>CITRUS STYLE</b>	EnartisZym AROM MP: 20 g/ton	EnartisFerm Q CITRUS: 20 g/hL	NUTRIFERM AROM PLUS: 20 g/hL	EnartisTan CITRUS: 5-15 g/hL		
<b>TROPICAL STYLE</b>	EnartisZym AROM MP: 20 g/ton	EnartisFerm ES181 or EnartisFerm AROMA WHITE: 20 g/hL	NUTRIFERM AROM PLUS: 20 g/hL		EnartisPro BLANCO: 30 g/hL	
<b>NOBLE GREEN (THIOLIC) STYLE</b>	EnartisZym AROM MP: 20 g/ton	EnartisFerm VINTAGE WHITE: 20 g/hL	NUTRIFERM ENERGY: 20-30 g/hL		EnartisPro BLANCO: 30 g/hL	
<b>STONE FRUIT STYLE</b>	EnartisZym RS: 2 g/hL	EnartisFerm AROMA WHITE or EnartisFerm TOP ESSENCE: 20 g/hL	NUTRIFERM AROM PLUS: 30 g/hL		EnartisPro UNO: 20-30 g/hL	INCANTO CREAM: 0.3 g/hL
<b>FLORAL STYLE</b>	EnartisZym RS: 2 g/hL	EnartisFerm ES U42: 20 g/hL	NUTRIFERM AROM PLUS: 30 g/hL			INCANTO NC WHITE: 10-20 g/hL
<b>FLINT STYLE</b>		EnartisFerm TOP 15: 20 g/hL	NUTRIFERM VIT: 10-20 g/hL		EnartisPro BLANCO: 10 g/hL	

## RED WINES

### Red Fruit

*Origin:* Esters produced during alcoholic fermentation.

*How to enhance red fruit aroma:*

- Use a yeast strain with a strong ability to synthesize esters.
- Ferment around 22-24°C until mid-fermentation to help ester synthesis and minimize CO<sub>2</sub> stripping effect.
- Enhance the production of esters by feeding yeast with branched-chain amino acids and providing pantothenic acid.
- Tannin or oak alternative addition can help antioxidant protection and enhance fruit aroma.

### Thiolic (black currant) aroma

*Origin:* Thiols provide a black currant/black berry aroma to red wine. They can be present in grapes as cysteine and glutathione-conjugates or they can be produced by a combination of C6 compounds with HS donor groups during the pre-fermentation stage.

*How to enhance black currant aroma:*

- The use of a maceration enzyme increases the extraction of aromatic precursors from grapes.
- The revelation of the aroma requires the use of a yeast strain able to turn the odorless precursor bound to cysteine and glutathione into volatile compounds.
- Ferment temperature around 24-28°C to increase the extraction of aromatic compounds from grapes.
- Feed yeast with branched-chain amino acid rich nutrients to stimulate ester production that can enhance the fruit aroma.
- Use sulfur amino acids and peptides to protect and stimulate thiol production.

### Spicy

*Origin:* Eugenol and guaiacol from oak; rotundone typical of some varieties like Syrah/Shiraz.

*How to enhance spicy aroma:*

- Use a yeast strain able to reveal rotundone.
- Provide pantothenic acid and amino acids for a healthy and regular fermentation.

- Ferment around 24-28°C to increase the extraction of aromatic compounds from grapes.
- Add polysaccharides to protect the aroma from oxidation and CO<sub>2</sub> stripping effect.
- Use an oak alternative that can contribute eugenol and guaiacol.

	ENZYME	YEAST	NUTRIENT	TANNIN	POLYSACCHARIDE	OAK ALTERNATIVES
<b>RED FRUIT STYLE</b>	EnartisZym COLOR PLUS: 20 g/ton	EnartisFerm RED FRUIT or EnartisFerm ES454 or EnartisFerm Q7: 20 g/hL	NUTRIFERM AROM PLUS: 30 g/hL	EnartisTan RED FRUIT: 5 g/hL or EnartisTan SKIN: 5 g/hL		INCANTO NC CHERRY: 10-20 g/hL
<b>BLACKCURRANT (THIOLIC) STYLE</b>	EnartisZym COLOR PLUS: 20 g/ton	EnartisFerm ES488: 20 g/hL	NUTRIFERM AROM PLUS: 20-30 g/hL		EnartisPro BLANCO: 30 g/hL	
<b>SPICY STYLE</b>	EnartisZym COLOR PLUS: 20 g/ton	EnartisFerm VINTAGE RED: 20 g/hL	NUTRIFERM ENERGY 5 g/hL + NUTRIFERM AROM PLUS: 15 g/hL		EnartisPro UNO: 20 g/hL	INCANTO SPICE or INCANTO BLACK SPICE: 15 g/hL

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