
MANAGING BOTRYTISED HARVEST

When *Botrytis cinerea*, often referred to as 'grey rot,' takes hold, it can lead to significant repercussions in winemaking. Winemakers must diligently assess grape contamination levels to tailor their vinification processes accordingly. In this technical discussion, Lamothe-Abiet outlines essential monitoring steps and effective strategies for managing grapes tainted by *Botrytis cinerea*, a phytopathogenic fungus, exploits the slightest opportunity for growth and can progress rapidly, resulting in various detrimental consequences. These challenges emphasize the importance of proactive management when dealing with *Botrytis cinerea*.

1. *Fragile grapes, susceptible to secondary contaminations, increasing the risks of volatile acidity (VA) and stuck fermentations.*

To protect your grapes effectively and prevent spoilage, consider using Excellence B-Nature alongside or instead of SO₂. Excellence B-Nature is a non-*Saccharomyces* yeast, pure *Metschnikovia pulcherrima*, that inhibits the growth of spoilage microbes like other non-*Saccharomyces* yeasts and bacteria on grapes and juice. Simply sprinkle Excellence B-Nature on top of the grapes without rehydration at picking.

2. *High sensitivity to oxidation due to Laccase activity, which expedites oxidative processes. Laccase, a polyphenol oxidase specific to Botrytis, resistant to factors like SO₂, low pH, and high temperatures.*

To counter this, it's essential to use Pro Tanin R for red wines or Tanin gallique a l'alcool for white/rosé wines. These tannins are vital to prevent laccase and PPO activities and to protect grapes from oxidation and the loss of their aromatic and phenolic characteristics. As soon as the grapes are picked, sprinkle the tannin on them to start the protection process.

3. *Nitrogen and thiamine deficiencies, causing fermentations problems.*

Concerning the risk of fermentation problems due to nitrogen and thiamine deficiencies, focus on providing yeast with a well-balanced nutrition rich in vitamins and minerals, particularly during rehydration. Use OenoStim, a yeast protector with minerals, vitamins, sterols, unsaturated fatty acids, and more. This will reinforce yeast activity, optimize metabolism, and enhance yeast resistance, especially in challenging conditions.

4. *Production of aromatic compounds, causing undesirable moldy or earthy odors.*

To eliminate off-aromatic compounds, use Polymix Natur during the cold settling process for white/rosé wines. This vegan, allergen-free fining agent contains PVPP, yeast derivatives, and bentonite, effectively removing oxidized and easily oxidizable phenolic compounds and off-aromas.

To enhance aromatic complexity, we recommend the use of OptiEsters, a yeast nutrient, specially developed to provide aromatic precursors. This supplementation stimulates yeast to produce esters and acetates, thereby enriching the wine with fruity, fresh, and floral aromas. Consequently, this contributes to an overall elevation of aromatic complexity.

Additionally, during fermentation, incorporating Granular Oenofresh can further augment aromatic complexity. Granular Oenofresh, composed of carefully selected oak granules, serves to accentuate fruit characteristics, 'ripen' the fruit aromas, bolster mid-palate sensations, and extend the wine's length and roundness on the palate.

5. *Clarification and Filtration challenges due to the high production of glucans*

Finally, to address challenges related to clarification and filtration due to high glucan levels, rely on VinoTaste Pro. This product improves juice and wine clarification and filtrability by utilizing its efficient and purified pectinase and β -glucanase activities. It also enhances the overall taste and mouthfeel of wines during aging.

FOCUS PRODUCTS

Excellence B-Nature – non-Saccharomyces yeast, pure *Metschnikovia pulcherrima*, non fermentative. It inhibits the development of spoilage microbes such as other non-Saccharomyces, and bacteria on grapes and juice. Excellence® B-Nature® is an organic anti-microbial solution, used as alternative to SO₂ on grapes. It protects grapes/juice from microbial contamination during transport and processing, does not inhibit *Saccharomyces cerevisiae*, and reduces SO₂ combining compounds production, thus increasing SO₂ efficiency. Excellence B-nature can be added directly to grapes, without rehydration. Simply sprinkle the yeast on the top of the grapes at picking.

Tanin gallique a l'alcool – pure gallic tannin, developed for whites and roses, to scavenge oxygen radicals and inhibit oxidative enzymes such as laccase and PPO. It protects grapes and juice from oxidation. It has strong affinity with proteins, improving protein stability, thus reducing the needs of bentonite on wine. It can be added directly on grapes or in juice. Simply sprinkle it on the top of the grapes at picking.

Pro Tanin R – Pro-anthocyanidin tannin, use as sacrificial tannin. Developed for application on red grapes, to scavenge oxygen radicals, inhibit oxidative enzymes such as laccase and PPO and eliminates reactive proteins, thus protecting grape polyphenols. It is instantaneously soluble, simply sprinkle it on the top of the grapes at harvest.

Polymix Natur' – PVPP, Yeast extracts, Bentonite. Vegan, allergen free fining agent focused on removing oxidized and easily oxidable phenolic compounds. Polymix Natur' treats and prevents oxidation, improves oxidative stability, wine expression and elongates wine shelf life.

Oenozym Clear – Pectinase with strong de-pectinization activity for a quick and effective clarification. Purified from side activities such as cinnamyl-esterase and anthocyanases. Resistant to low (5°C) and high (68°C) temperatures.

OptiEsters - Yeast nutrient composed of amino acids and ergosterols selected to increase the production of esters, acetates and ethylesters, thus increase red fruits, floral, berries notes. It increases aromatic complexity, freshness and intensity. Interesting tools to boost freshness and complexity of a wine, as well as compensate for off-aromas.

Oenofresh Granular – blend of French toasted oak granular. They can be used in fermentation and ageing to build up the mid palate, bring 'sweetness', roundness and smoothness to wine. It highlights wine's fruitiness, ripens aromas and reduces the perception of green characters.

Softan Vinification – catechins tannins bounded to plant polysaccharides. Added during fermentation, Softan Vinification has a strong ability to stabilize color and protect it from loss during fermentation. It is a gentle tannin that contributes to mouthfeel and build up mid-palate.

Natur'Soft - preparation of specific yeasts hulls, selected for their high content of polysaccharides. It is strongly effective in color stabilization, as well as filling mid palate and improving mouthfeel. It increases wine complexity, reduces tannins perception, and stabilize color.

Aroma Protect - inactivated yeasts, naturally rich in glutathione, a natural antioxidant, sulfurous tripeptide with great reductive power. It gives immediate protection against oxidative mechanisms, releasing glutathione (GSH) into the wine, thus slowing down oxidation.

Tan&Sense Volume – pure untoasted oak tannins, with high capacity to scavenge oxygen radicals, buffer redox potential and maintain wine freshness. It is a gentle tannin, increasing sweetness and roundness perception.

KillBrett – pure chitosan, wide spectrum anti-microbial agent. KillBrett eliminates and inhibits Brettanomyces, Lactic Acid Bacteria and Acetic Acid Bacteria. It can be used during the entire process of winemaking, we recommend using it as preventive, post MLF, at 4 g/hL

Vinitan Advance – pure grape tannin with low phenol content. It improves wine structure while respecting its finesse and balance. Excellent for color stabilization during ageing, it also boosts the fruits aromas and maintain a clean and balance wine profile during ageing.

VinoTaste Pro – Purified pectinase and β glucanase enzyme, very helpful in a situation of contaminated grapes and high glucan content. VinoTaste Pro improves clarification of juices and wines thanks to the hydrolysis of polysaccharides. VinoTaste Pro also improves the organoleptic complexity of wines by increasing the roundness and volume in the mouth during ageing.

WHITE WINES – WINEMAKING GUIDELINES

<p>HARVEST AND GRAPE TRANSPORT</p>	<p>Rigorously sort, in the vineyard or on processing in the winery.</p> <p>To prevent microbial contamination, add in complement or as alternative to SO₂, Excellence B-Nature at 50 g/ton, sprinkle directly on grapes, as soon as possible after picking to prevent any microbial contamination and spoilage.</p> <p>Laccase activity causes oxidation of phenolic and aromatic compounds. Removing this activity as early as possible helps to conserve the grapes organoleptic quality.</p> <ul style="list-style-type: none"> - Add 40-60 ppm of SO₂ - Add 80-100 g/ton of <u>Tanin gallique a l'alcool</u> sprinkled on the grapes at harvest.
<p>PRESSING</p>	<p>We recommend a whole cluster pressing, short cycle with limited rotations and limited extraction. Juices coming from the bottom of the hopper or at press filling must be separated and treated separately, as they concentrate a strong laccase activity.</p>
<p>CLARIFICATION</p>	<p><i>Botrytis Cinerea</i> and the laccase activity leaves undesirable compounds in the must. It is therefore important to properly clean the must for an optimal alcoholic fermentation.</p> <ul style="list-style-type: none"> - Optimize and facilitate rapid clarification by using Oenzym Clear, at 3-5 ml/hL after pressing. - Juice fining is essential to eliminate off-aromas, the oxidized and oxidizable phenolic compounds and any toxins that would inhibit alcoholic fermentation. We recommend Polymix Natur' at 40-60 g/hL.
<p>ALCOHOLIC FERMENTATION</p>	<p><i>Botrytis Cinerea</i> contamination leads to nitrogen deficiencies which needs to be compensated to prevent stuck fermentation. It is essential rehydrate yeast with OenoStim at 30 g/hL to reinforce yeast activity, increase aromatic production and ensure yeast health and resistance along the fermentation.</p> <p><u>Fruity, Floral and Terpenes</u></p> <ul style="list-style-type: none"> - Temperature: 56-60°F - Yeast: Excellence STR at 20 g/hL to produce fruity, fresh, and delicate aromatic profile with smooth structure. - OenoStim at 30 g/hL during rehydration - OptiThiols® at 10 g/hL to improve wine's antioxidant potential. - OptiEsters at 30 g/hL to promote the production of ethylesters, enhance floral characters and improve aromatic expression. <p><u>Thiolic, Tropical</u></p> <ul style="list-style-type: none"> - Temperature: 60-62°F - Yeast: Excellence FTH at 20 g/hL to produce thiolic, fresh, mineral wine profile - OenoStim at 30 g/hL during rehydration - OptiThiols® at 20 g/hL to boost thiolic compounds expression and improve wine's antioxidant potential. - OptiEsters at 20 g/hL to promote fresh fruit, tropical aromas and improve aromatic expression. <p>1 DAY AFTER INOCULATION</p> <ul style="list-style-type: none"> - Ensure good yeast nutrition and limit off-flavors production with Optiflore O® at 40 g/hL (complete organic nutrient based on inactivated yeast). Optiflore O also helps detoxifying the must for better fermentations. - For aromatic complexity and mouthfeel balance, add Oenofresh Granular at 2 g/L to highlight fruitiness, ripen fruits aromas and, 'mask' off-aromas. It will also bring roundness and mouthfeel weight. <p>AT 18 BRIX</p> <ul style="list-style-type: none"> - Add 20-30 g/hL of OptiFerm (ammonium salts and vitamin B1) at 1/3 of fermentation. - Improve protein stability and eliminate residual laccase with 40-80 g/hL of Bentosol Poudre during fermentation
<p>AGEING</p>	<p>Once AF completed: rack off gross lees, using inert gas during transfer.</p> <ul style="list-style-type: none"> - SO₂ 3-4 g/hL and KillBrett at 4 g/hL to prevent any microbial development and protect wine from spoilage and oxidation. - Rebalance the redox potential and natural oxidation resistance of the wine by using formulation rich in glutathione such as Aroma Protect at 20 g/hL. It will maintain wine freshness, protect from oxidation, lower redox potential, and limit SO₂ loss during ageing. - Tan&Sense Volume at 0.5 g/hL (pure untoasted oak tannins) every racking to protect from oxidation, regulate redox potential and scavenge oxygen radicals. It will also give some roundness to wine. - We recommend using VinoTaste Pro at 6 g/hL to improve clarification, filtration and round up the mouthfeel.

RED WINES WINEMAKING GUIDELINES

<p>HARVEST AND GRAPE TRANSPORT</p>	<p>Rigorously sort, in the vineyard or on processing in the winery.</p> <p>To prevent microbial contamination, add in complement or as alternative to SO₂, Excellence B-Nature at 50 g/ton, sprinkle directly on grapes, as soon as possible after picking to prevent any microbial contamination and spoilage</p> <p>Laccase activity causes oxidation of phenolic and aromatic compounds. Aerated pump-overs should be avoided until the laccase activity has been eliminated. Removing this activity as early as possible helps to conserve the grapes organoleptic quality.</p> <ul style="list-style-type: none"> - Add 40-60 ppm of SO₂ - Add 180-220 g/ton of Pro Tanin R, sprinkled on the grapes at harvest. <p>In case of high contamination levels, thermovinification can be an option, please see our specific protocol.</p>
<p>MACERATION</p>	<p>Limit the use of extraction enzymes since laccase will have already strongly weakened the grapes' cell walls. Avoid cold soaking.</p>
<p>ALCOHOLIC FERMENTATION</p>	<p><i>Botrytis Cinerea</i> contamination leads to nitrogen deficiencies which need to be compensated to prevent stuck fermentation. It is essential rehydrate yeast with OenoStim at 30 g/hL to reinforce yeast activity, increase aromatic production and ensure yeast health and resistance along the fermentation.</p> <ul style="list-style-type: none"> - Yeast: Excellence DS at 20 g/hL to produce fresh, fruity, spicy, and elegant profile with smooth structure - OptiEsters at 20 g/hL to promote the production of ethylesters and enhance fresh, fruity, and floral characters. <p>1 DAY AFTER INOCULATION</p> <p><i>Botrytis Cinerea</i> consumes nitrogen during its development and induces a deficiency in assimilable nitrogen. It is therefore necessary to correct the must by adding a specific nutrition, rich in nitrogen and thiamine</p> <ul style="list-style-type: none"> - As soon as the fermentation starts, fine the must to remove any off-aromas, undesirable phenolic compounds, and signs of oxidation. Proceed to a delestage (drain all must). Add Polymix Natur' or GreenFine Must at 40 g/hL into the drained juice. Rack the 'cleaned' juice back on the top the grapes. - Ensure good yeast nutrition and limit off-flavors production with Optiflore O® at 40 g/hL (complete organic nutrient based on inactivated yeast). Optiflore O also helps detoxifying the must for better fermentations. - 120 g/ton of Softan Vinification to encourage the stabilization of anthocyanins via co-pigmentation and condensation, protect anthocyanins and fill mid palate. - For aromatic complexity and mouthfeel balance, add Oenofresh Granular at 1.5kg/ton to highlight fruitiness, ripen fruits aromas and, 'mask' off-aromas. It will also bring roundness and mouthfeel weight. <p>AT 18 BRIX</p> <ul style="list-style-type: none"> - Add 20-30 g/hL of OptiFerm (ammonium salts and vitamin B1) at 1/3 of fermentation. - 150 g/ton of Natur'Soft to stabilize color, fill mid palate and increase wine length and volume.
<p>PRESSING</p>	<p>Press early when phenolic compounds extraction is sufficient (decide with tasting). Add Vinitan Advance at 5 g/hL to improve wine phenolic balance, increase antioxidant resistance and stabilize color.</p>
<p>MLF</p>	<p>Add Oeno1 at 1g/hL once AF is completed</p>
<p>AGEING</p>	<p>Once AF and MLF completed: rack off gross lees after fermentation using inert gas.</p> <ul style="list-style-type: none"> - SO₂ 3-4 g/hL and KillBrett at 4 g/hL to prevent any microbial development and protect wine from spoilage and oxidation. - Rebalance the redox potential and natural oxidation resistance of the wine by using formulation rich in glutathione such as Aroma Protect at 20 g/hL. It will maintain wine freshness, protect from oxidation, lower redox potential, and limit SO₂ loss during ageing. - Tan&Sense Volume at 0.5 g/hL (pure untoasted oak tannins) every racking to protect from oxidation, regulate redox potential and scavenge oxygen radicals. It will also give some roundness to wine. - We recommend using VinoTaste Pro at 10 g/hL to improve clarification, filtration and round up the mouthfeel.