

LAMOTHE - ABIET

SOLUTIONS FOR CIDERMAKING

Fermenting fruit sources other than grapes can pose many challenges including lower starting nutrients, higher pectin content, A starting sugar, etc. The most common challenges in cidemaking are about improving settling and filtration, limiting the production of H₂S, and other reductive compounds during fermentation and microbial management.

There are many factors that can affect final cider taste and quality. Major contributors are apple type (culinary vs. cider) and processing method (fresh fruit, stored fruit, bulk juice, or concentrate). However, fermentation decisions can also strongly impact cider flavor profile. Yeast, Enzymes, Nutrient as well as temperature and juice turbidity are essential parameters to manage to orientate and control your cider style.

Featured Lamothe-Abiet Products:

Tanin gallique a l'alcool – Pure gallic tannin, excellent anti-oxidant as well as sacrificial tannin. It is used to protect from oxidation, bind with protein, thus inhibiting oxidative enzymes, improving protein stability, and helping with clarification and filtration.

Oenozym Crush – Pectolytic enzyme preparation, purified in cinnamyl esterase. Added on milled apples, it improves extraction of skin compounds, such as aromatic precursors, polysaccharides, and phenolic compounds while also improving juice yield at pressing.

Oenozym Clear – Pectinase, purified in cinnamyl esterase. Added in juice to break down pectin chains, improve settling and filtration while releasing polysaccharides participating to mouthfeel, colloidal stability, and bubble quality.

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

Greenfine Must - Pure pea protein, vegan, allergen-free fining agent used to prevent and treat oxidation. It helps prevent and eliminate oxidation by removing phenolic compounds and yellow shades from juices and ciders. It also promotes a rapid clarification with a good lees compaction. Great versatile alternative to casein, gelatin, and PVPP.

OenoStim - Inactivated yeasts naturally rich in sterols, fatty acids, vitamins, and minerals for the rehydration of yeast. OenoStim® is a yeast protector and activator, playing an important role in maintaining the structural integrity of cell membrane, helping yeast resist to stressful conditions. It reinforces yeast activity, limits fermentation risks, reduces H₂S production, prevents VA production and increases aromatic production.

Optiflore O® - Yeast autolysates and inactivated yeasts. Optiflore® O is a complete nutrient based on organic nitrogen and detoxifying properties. It promotes the develop of yeast, helps them during the entire fermentation, and prevents off-aromas development.

OptiFerm – Inactivated yeasts, DAP, and thiamine. OptiFerm® provides all nutritional elements required for a good alcoholic fermentation. It contains thiamine to optimize the yeasts' metabolism, DAP for mineral nitrogen, directly assimilable by yeast, and survival factors.

OptiThiols - Inactivated yeasts naturally rich in GSH and cysteine derivates, thiolic precursors. It increases the production of thiolic compounds, thus increasing aromatic complexity and freshness of cider. It also helps to slow down oxidative.

OptiEsters - Inactivated yeasts naturally rich in amino acids and ergosterols, aromatic precursors of esters and acetates. During fermentation, the yeast can use this nutrient to produce fermentary esters, for fruity, and floral ciders.

Natur'Soft - Preparation of specific yeasts hulls, selected for their high content of mannoproteins. Natur'Soft® increases cider complexity, reduces tannins perception, and enhances fruity characters. It also participates to colloidal stability and bubbles quality.

Oeno1 – Great ML Bacteria for difficult conditions such as ciders. Can be used in co-inoculation with yeast to save time, quality, and boost fruity aromas.

Bacteria XTREM – ML bacteria resistant to extreme conditions. To be used post-fermentation to produce complex cider with creamy, buttery notes.

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 cidemaking, we recommend using it as preventive, post MLF, at 4 g/hL.

Aroma Protect - Inactivated yeasts, naturally rich in GSH, a natural antioxidant, sulfurous tripeptide with great reductive power. Aroma Protect® gives immediate protection against the oxidative mechanisms, and can be used as an alternative to SO₂ during ageing.



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Improve extraction and juice yield when pressing.

- To protect from oxidation, improve settling and filtration, add **Tanin gallique a l'alcool** at 0.8 lb/1000 gal (10 g/hL). Directly sprinkling on the apples
- To improve skin compounds extraction and juice yield at press, Use **Oenzym Crush** at 50 mL/ton on apples, before maceration.

Promote fast and effective clarification.

- To protect from oxidation, improve settling and filtration, add **Tanin gallique a l'alcool** at 0.8 lb/1000 gal (10 g/hL)
- Use **Oenzym Clear** at 230 mL/1000 gal (6 mL/hL) in the juice to improve settling speed and lees compaction.
- Juice fining with **Polymix Natur'** or **Greenfine Must** at 1.6 – 3.6 lb/1000 gal (20-40 g/hL) to eliminate oxidized and oxidable phenolic compounds and improve lees compaction.
- Turbidity: 100-150 NTU to optimize the production of esters. 200-250 NTU to favor varietal characteristics.

Alcoholic fermentation: ensure good yeast nutrition.

Fermentation temperature: 53-57°F to promote fruity, fresh, and floral aromas, 60-65°F to promote 'terroir' and varietal profile.

- Proper yeast rehydration is one of the most important steps to help ensure a strong and healthy fermentation.
 - Suspend **2.5 lbs/1000 gal** of **OenoStim** in 20 times its weight of clean, chlorine free, 110°F water. **OenoStim**
 - Once temperature of the solution has dropped to 104°F, add 2 lb/1000 gal of active dried yeast. Wait 20 min.
 - Slowly add some juice to the yeast suspension to drop temperature of maximum 18°F. This will help the yeast adjust to the cooler temperature of the juice and will help avoid cold shock caused by a rapid temperature drop. Wait 20 min. Repeat.
 - Once temperature difference between yeast preparation and juice is about 18°F, add the yeast preparation to tank.
- Ensure good yeast nutrition and reduce off-flavors production with: **Optiflore O®** at 2.5 lbs/1000 gal at the beginning of fermentation and **OptiFerm** at 2.5 lbs/1000 gal at 1/3 of fermentation.
- Adding natural yeast derivatives such as **OptiThiols** and **OptiEsters**, at the beginning of the fermentation will boost the aromatic production and help defining cider style.
 - Boost esters and acetates - fruity, fresh, and floral aromas - with **OptiEsters** at 2.5 lbs/1000 gal.
 - Boost thiolic compounds - citrus, fresh, floral aromas – with **OptiThiols** at 2.5 lbs/1000 gal.
- To improve mouthfeel bubble quality and colloidal stability, add **Natur'Soft** at 1.6 lbs/1000 gal.
- To stabilize protein, add at 1/3 fermentation, **Bentosol Poudre** at 1.6 – 3.6 lbs/1000 gal.

Malolactic fermentation: if desired

- For fresh, fruity style - co-inoculation. Add 1 g/hL of **Oeno1**, 72 hours after yeast.
- For creamy, complex style and very low pH conditions – sequential. Add 1 g/hL **Bacteria XTREM** post-fermentation.

Ageing

- If lees are clean (microbial and smell) and free from off-aromas, you can age cider on its own lees to gain texture, complexity, and mouthfeel. If not, consider racking 24 hours after fermentations are finished.
- Add **SO₂** and **KillBrett** at 0.35 lb/1000 gal (4 g/hL) to eliminate any spoilage microbes.
- Add **Aroma Protect** at 1.6 lb/1000 gal (20 g/hL) to protect from oxidation and maintain cider freshness during ageing.

Finishing products can be valuable tools for perfecting a cider. They are very helpful with: • mask pyrazines/greenness • maximize fruit • fill mid-palate • increase aromatic intensity • increase body • help minimize impact of Brettanomyces or smoke • brighten acid • impart oaky character • increase perception of sweetness.

Bench trials are a very important step to determine the right fit for any of these products. Finishing aids have been found to help with: **Ask us a sample kit to set up bench trials.**



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// CIDER STYLES GUIDELINES

	FRUITY/TERPENES	FRUITY/TROPICAL	TERROIR	'RESERVE'
Clarification	CEnozym® Clear , 150-300 mL/1000 gal (4-8 mL/hL) Tannin Gallique a l'alcool , 0.8 lbs/1000 gal (10 g/hL) Polymix Natur'® , 1.8-3.6 lbs/1000 gal (20-40 g/hL)			
Turbidity	100 NTU	200 NTU	200-250 NTU	250 NTU
Fermentation Temperature	53-57°F	58-62°F	60-64°F	
Yeast	Excellence® STR , 2 lbs/1000 gal (25 g/hL)	Excellence® FTH , 2 lbs/1000 gal (25 g/hL)	Excellence® XR , 2 lbs/1000 gal (25 g/hL)	Excellence® TXL , 2 lbs/1000 gal (25 g/hL)
At yeast rehydration	CEnostim® , 2.5 lbs/1000 gal (30 g/hL)			
At inoculation	OptiEsters® , 2.5 lbs/1000 gal (30 g/hL)	OptiThiols® , 2.5 lbs/1000 gal (30 g/hL)	OptiEsters® + OptiThiols® , 1.6 lb/1000gal (20 g/hL) of each product	
	OptiFlore O® , 2.5 lbs/1000 gal (30 g/hL)			
		CEnozym® Thiols , 230 mL/1000 gal (6 mL/hL)	CEnozym® Thiols , 150 mL/1000 gal (4 mL/hL)	CEnozym® Thiols , 230 mL/1000 gal (6 mL/hL)
1/3 fermentation	OptiFerm® , 2.5 lbs/1000 gal (30 g/hL)			
	Natur'Soft® , 1.6 lbs/1000 gal (20 g/hL)		Natur'Soft® , 2.5 lbs/1000 gal (30 g/hL)	
				Tan&Sense Volume® , 0.4-1.6 lbs/1000 gal (5-20 g/hL)
	CEnozym® FW , 230 g/1000 gal (6 g/hL)		CEnozym® FW , 150 g/1000 gal (4 g/hL)	CEnozym® FW , 230 g/1000 gal (6 g/hL)
	Bentosol Poudre			
MLF if desired			Bacteria XTREM , 1-2 g/hL	
End of AF	SO ₂ Killbrett® , 0.4 lbs/1000 gal (4 g/hL) Aroma Protect® , 1.8 lbs/1000 gal (20 g/hL) If desired: Oak OENOBOSIS			

