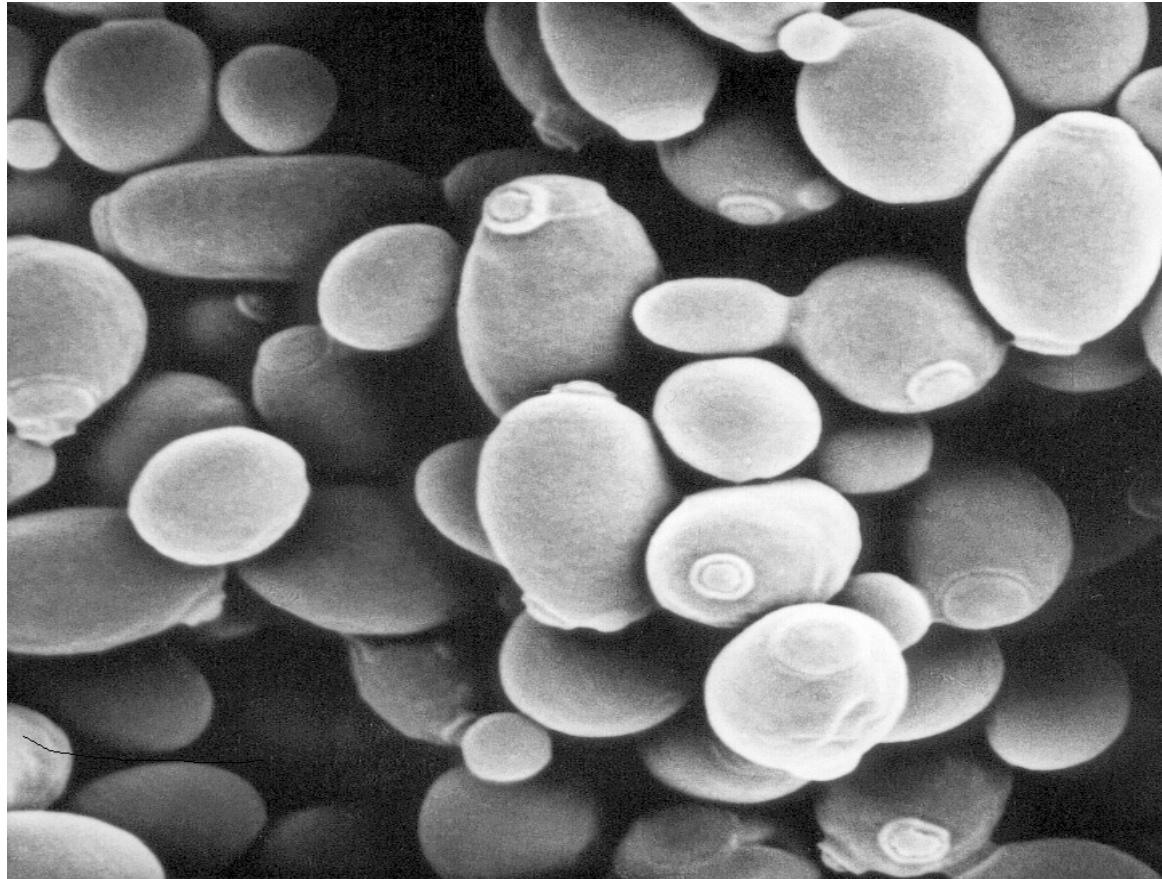




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Active dry yeast





Why using active dry yeast?

- ▶ Fast fermentation
- ▶ Increase of natural aroma components
- ▶ Increase of fermentation aroma components
- ▶ Avoiding of off-flavours
- ▶ Increase of colours extraction
- ▶ Avoiding of negative secondary fermentation products:
 - ▶ acetaldehyde, pyruvate, ketoglutarate
- ▶ Avoiding of sluggish fermentation (especially sparkling wine)



More points to use active dry yeast

To avoid the development of “wild yeasts”

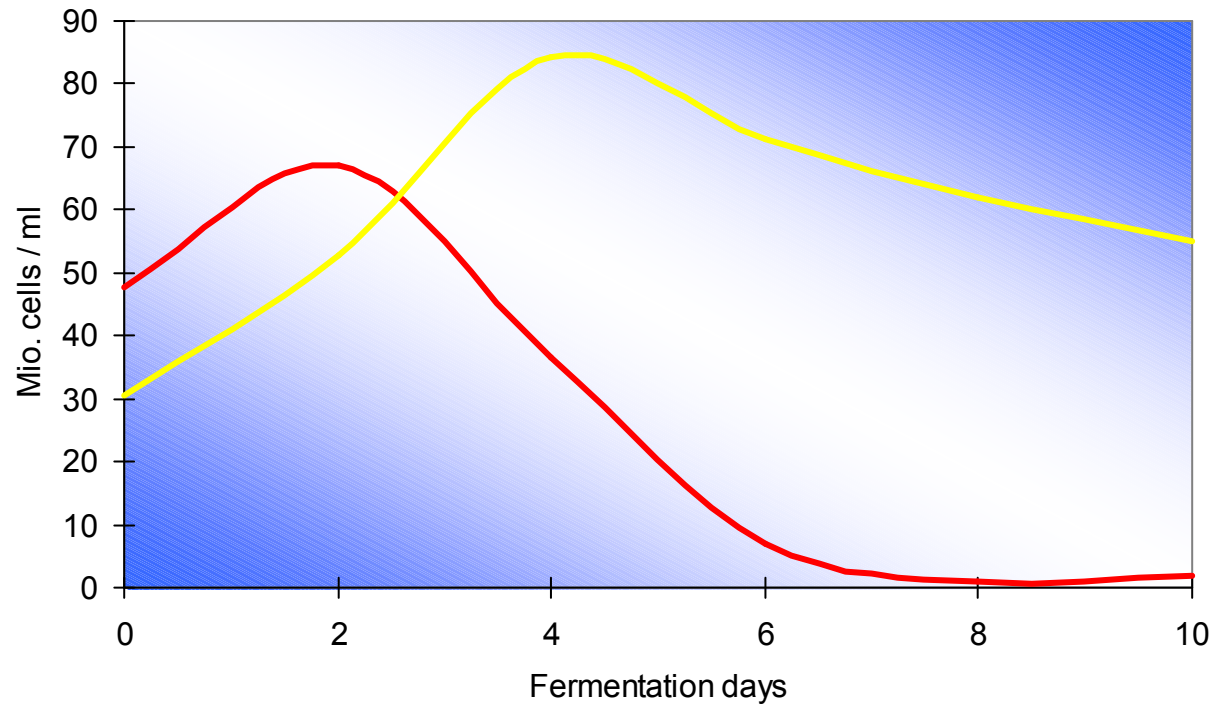
- ▶ Cloeckera
- ▶ Hansenula
- ▶ Metschnikowia
- ▶ Pichia
- ▶ Candida

Increase of ethanol concentration

Decrease the SO₂ addition

To gain time and money

Development of yeast populations

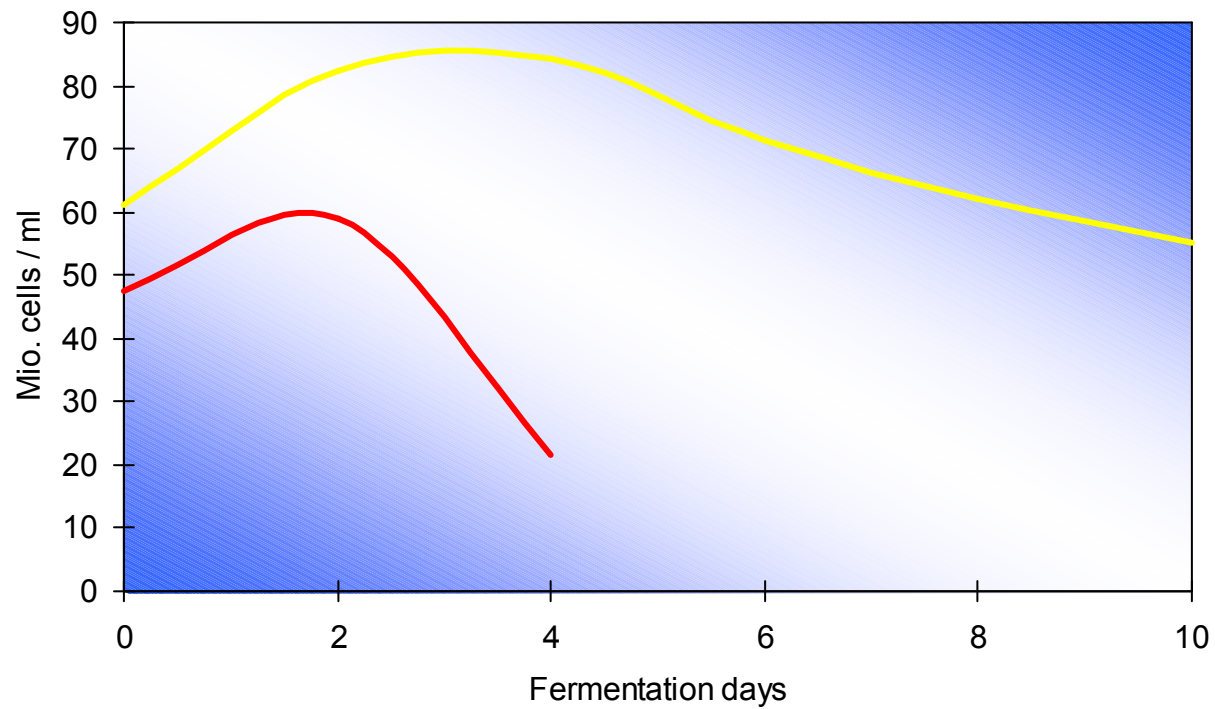


— wild yeast — *Saccharomyces cerevisiae*

- ▶ *Kloeckera apiculata*
- ▶ *Metschnikowia pulcherima*
- ▶ *Hansenula anomala*
- ▶ *Pichia membranefaciens*
- ▶ *Zygosaccharomyces ballii*

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Development of yeast populations Inoculation with 20 g/hL active dry yeast



— wild yeast — *Saccharomyces cerevisiae*



Vegetative Cell cyclus...

G_0

Daughter

Mother

G_1

S

G_2

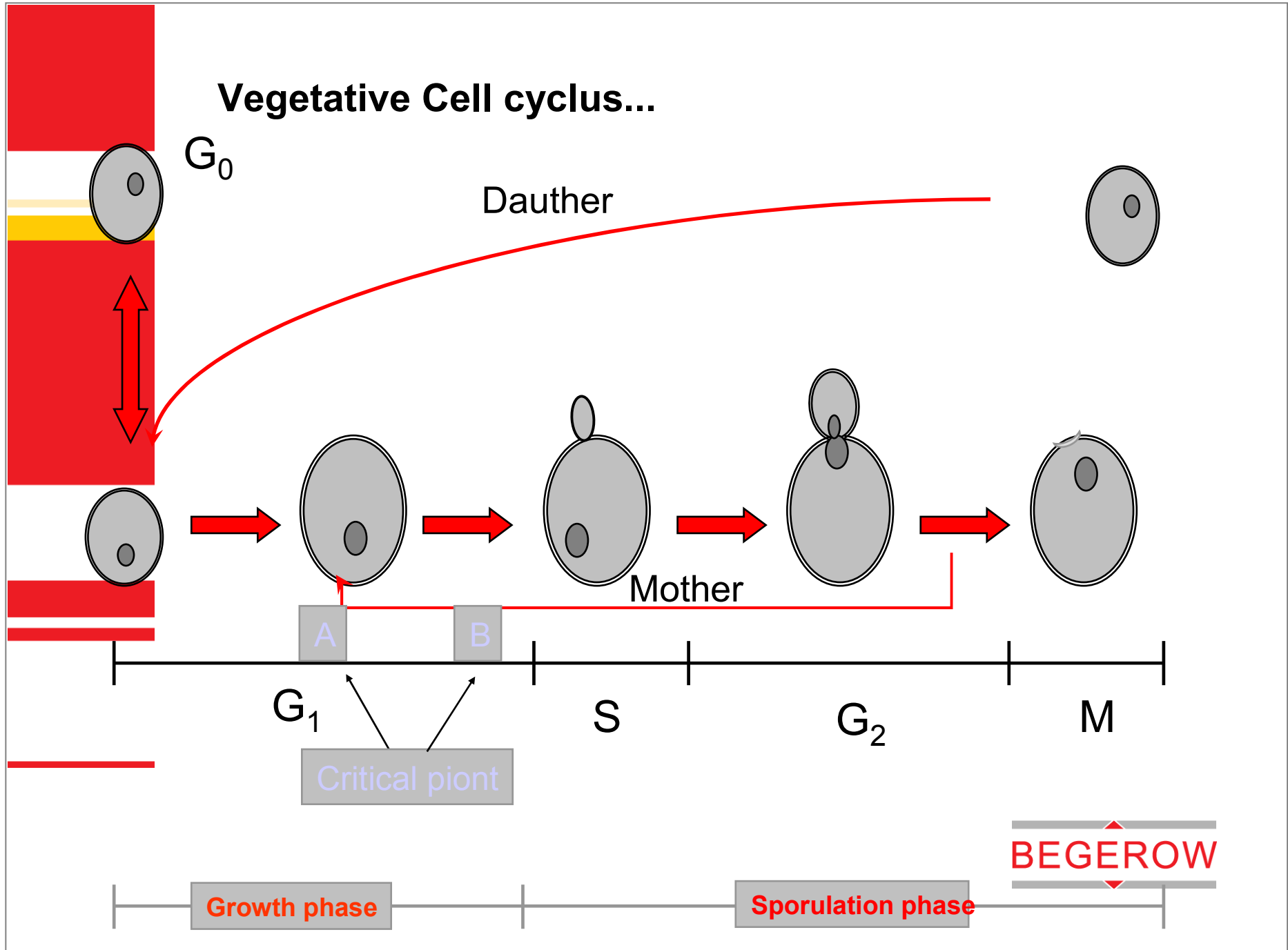
M

Critical piont

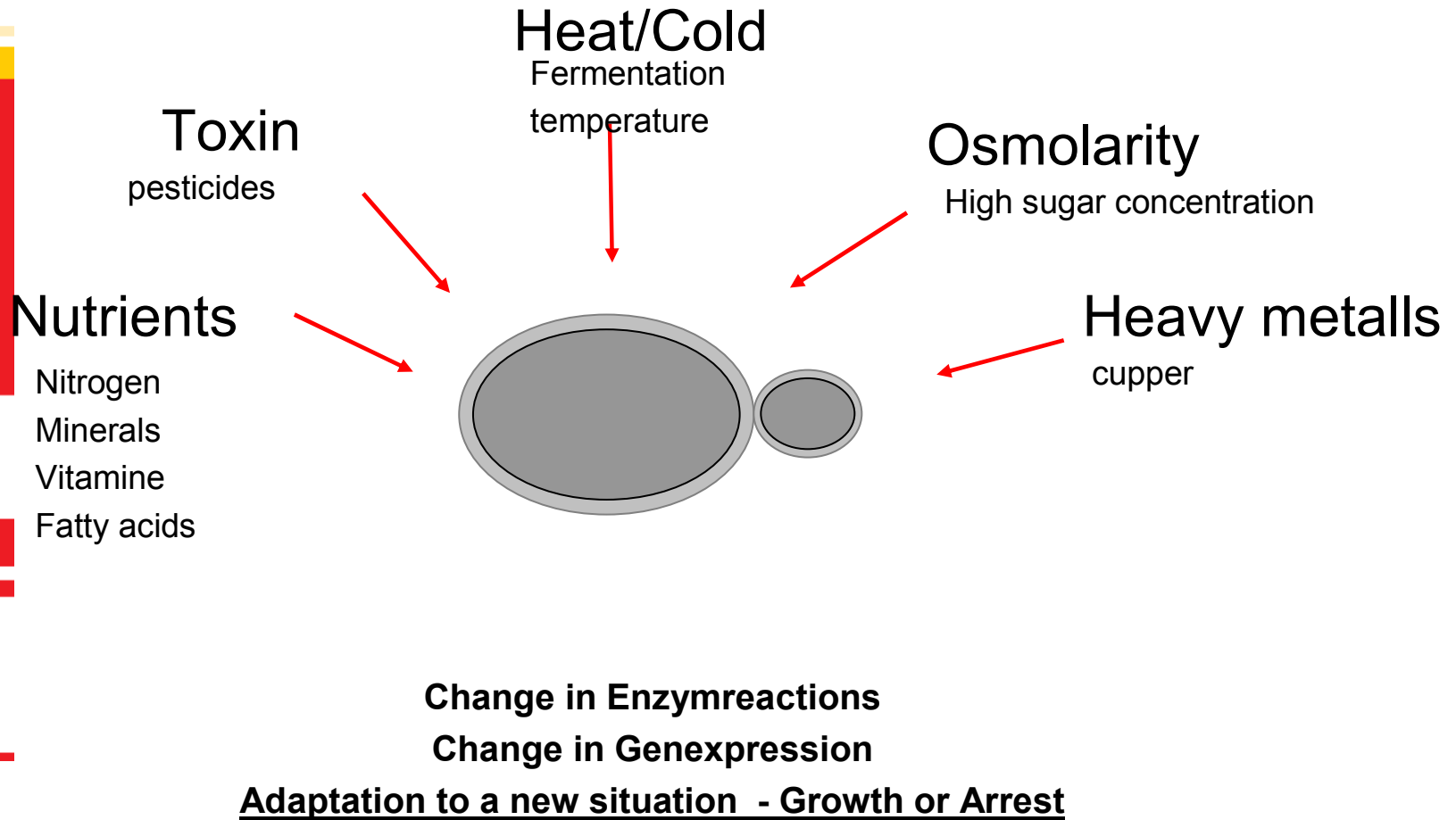
Growth phase

Sporulation phase

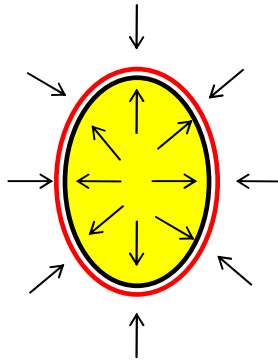
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Stress factor on yeast...

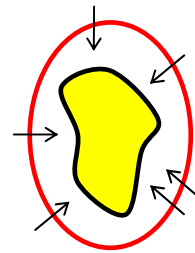


Rehydration of active dry yeast...



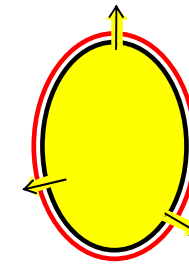
must/water

50 % must/water
is the optimal condition for
the rehydration and
for fast cell growing



Pure must

Pure must is dissatisfied
because of the increased
sugar concentration causing
a high osmotic pressure

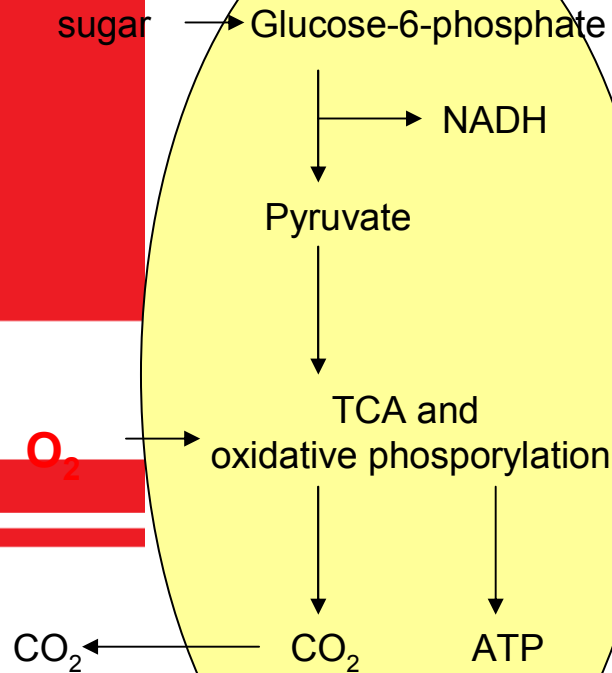


Pure water

Pure water causes an
Uncontrolled uptake of
water into the cell.
The worst case is
a burst of the cell

rehydration
start 12-24 h of fermentation

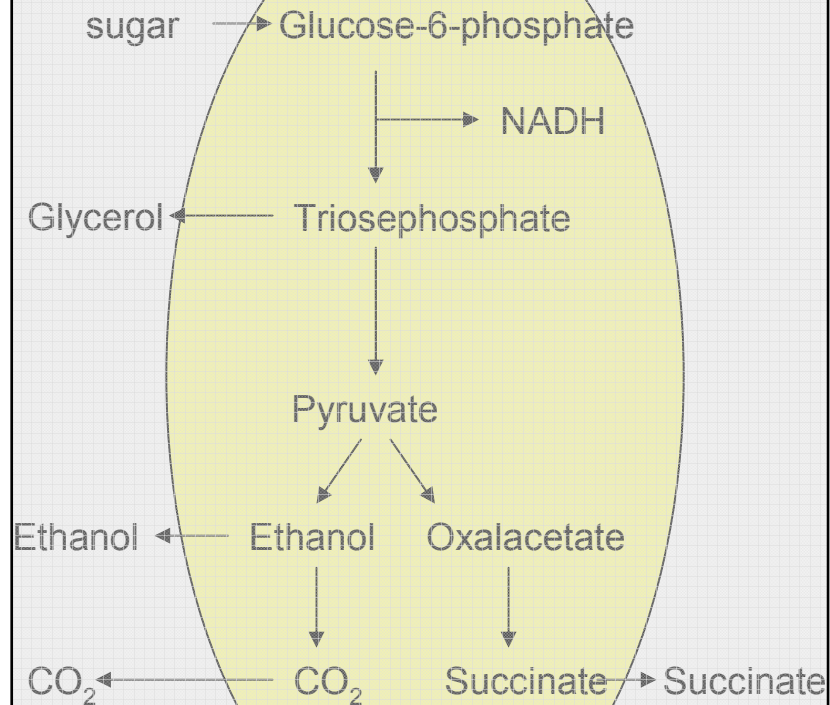
Aerobic conditions



Goal: Increase of biomass

Alcoholic fermentation

Anaerobic conditions

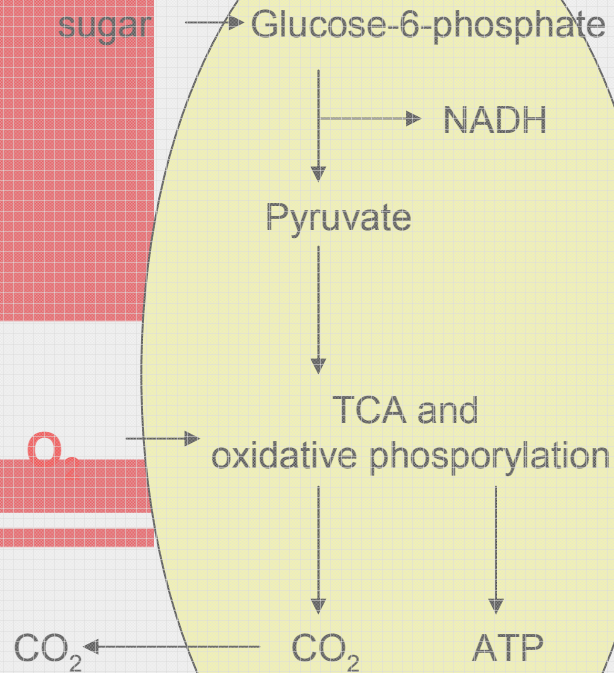


**Goal: Ethanol, higher alcohols,
Fatty acids**

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rehydration
start 12-24 h of fermentation

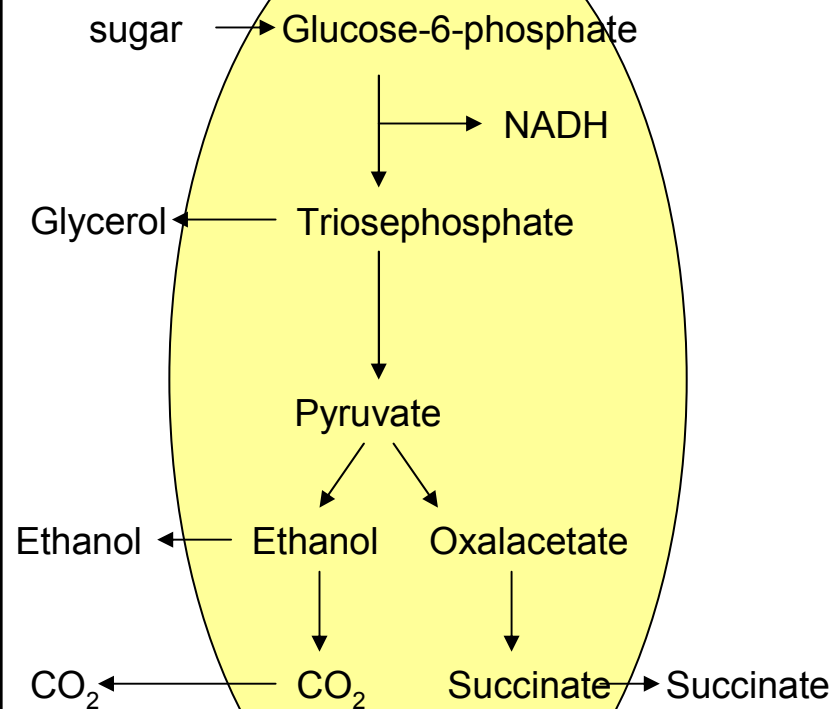
Aerobic conditions



Goal: Increase of biomass

Alcoholic fermentation

Anaerobic conditions



Goal: Ethanol, higher alcohols,
Fatty acids

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SIHA Speed-Ferm – Goals...

What is SIHA Speed-Ferm ?

100% yeast preparation
complex nutrient for yeast:
vitamine, minerals, α -aminoacids, sterole, fatty acids

When to use ?

during the rehydratation of active dry yeast

The effect ?

Micronutrients increase the biomass formation of yeast
no development of wild yeast

Speed - Ferm advantage ?

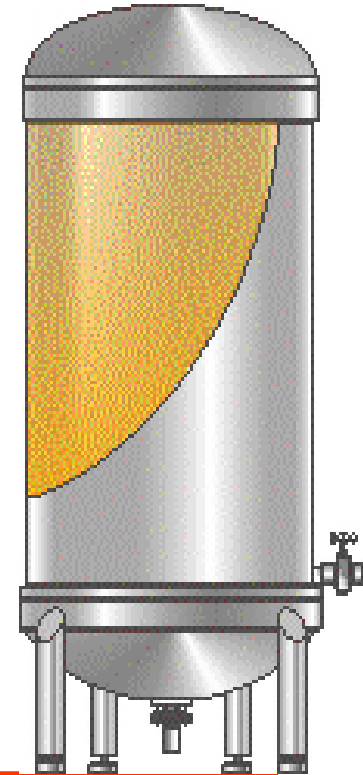
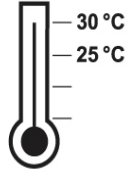
secure fermentation
higher cell amount during the whole fermentation

Application...

SIHA Speed Ferm

Speed ferm
in 40°C water

Addition to
must



Water
30 g/hl SIHA Speed Ferm

Addition of must 50%
25 g/hl yeast

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The Effect at 18°C...

Fermentation temp.: 18°C
Must: Chasan (RZ 240 g/l), FAN: 266 mg/l
yeast: SIHA active yeast 8

dCO_2/dt (g/l.h)

1

0,9

0,8

0,7

0,6

0,5

0,4

0,3

0,2

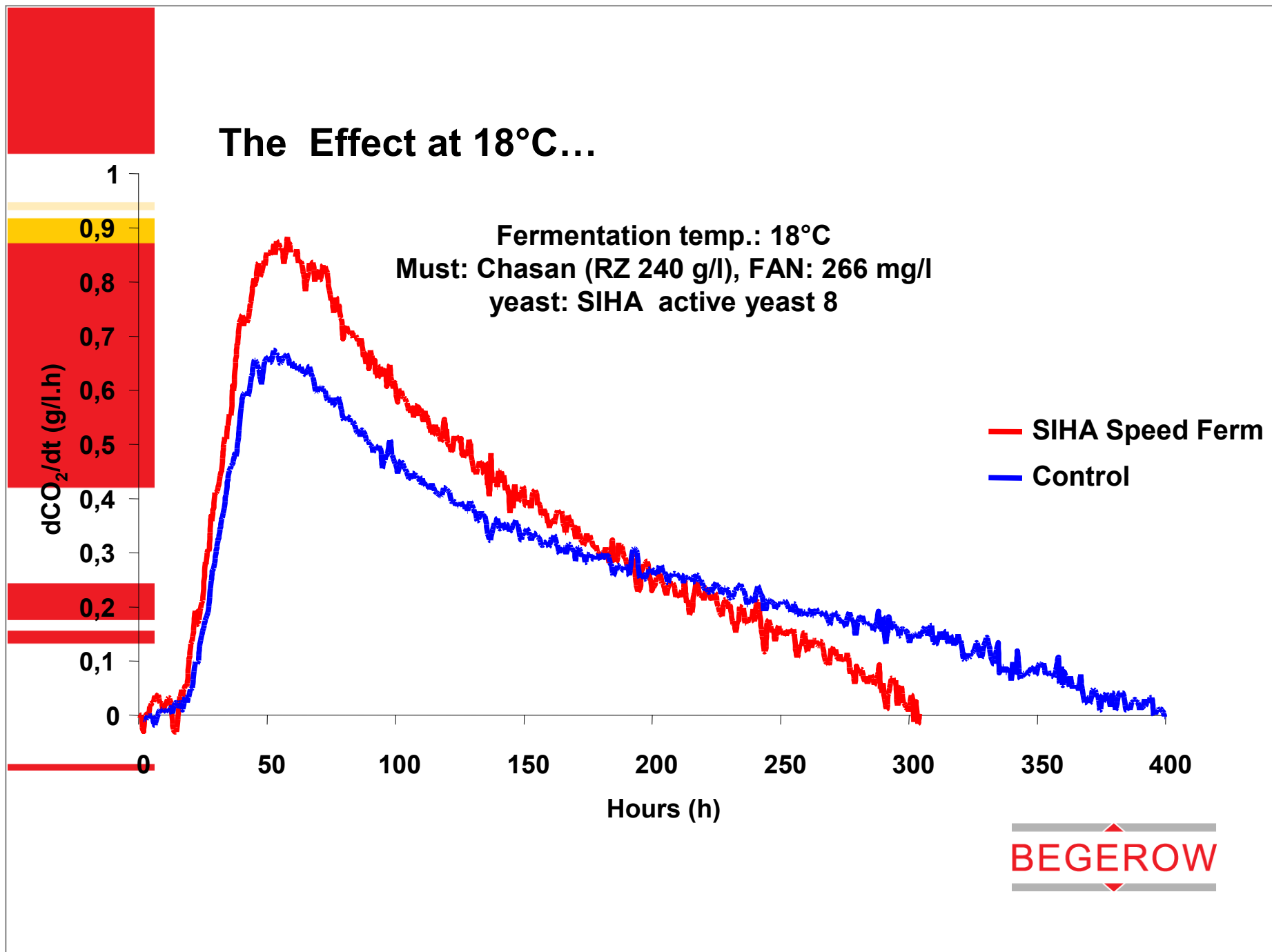
0,1

0

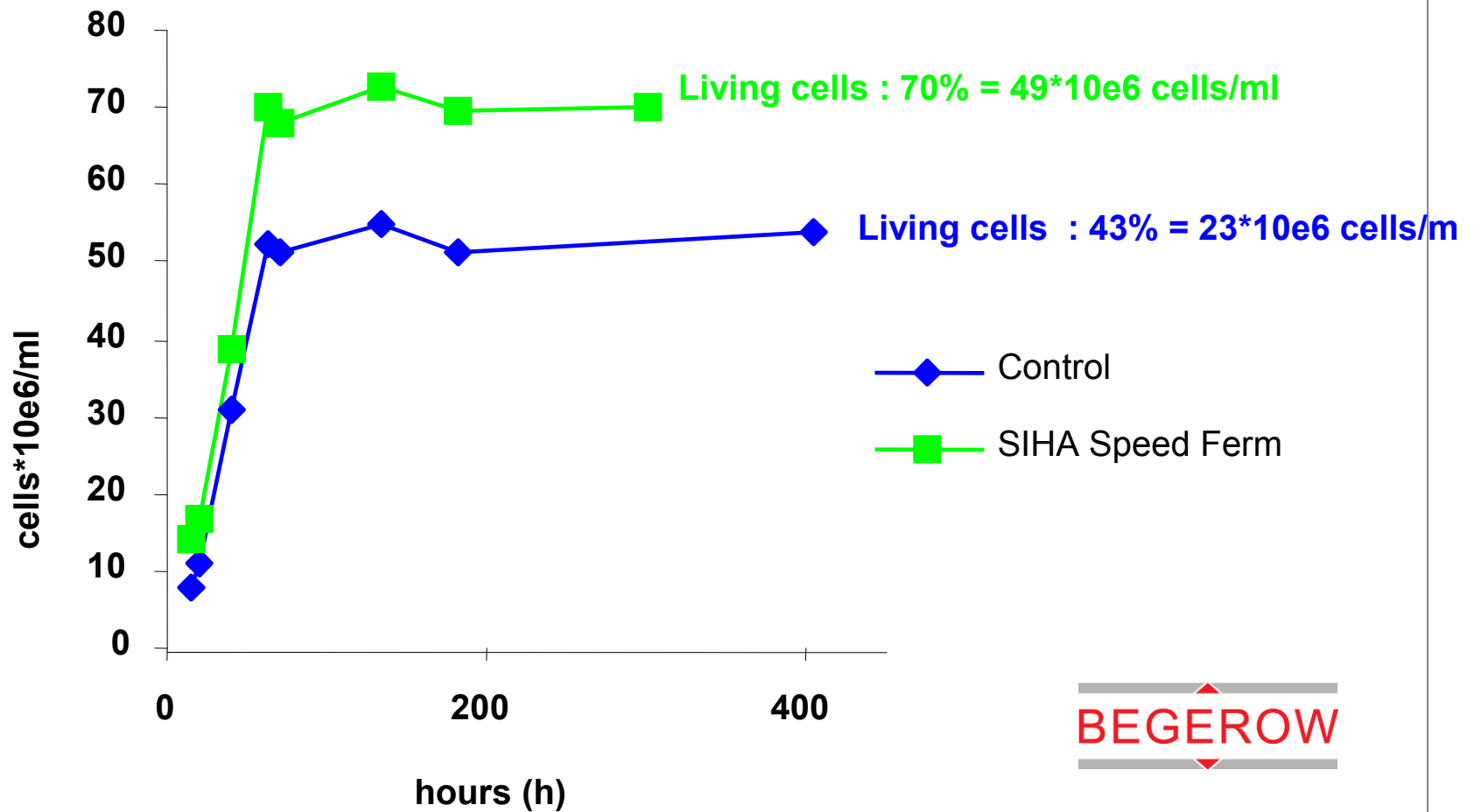
— SIHA Speed Ferm
— Control

Hours (h)

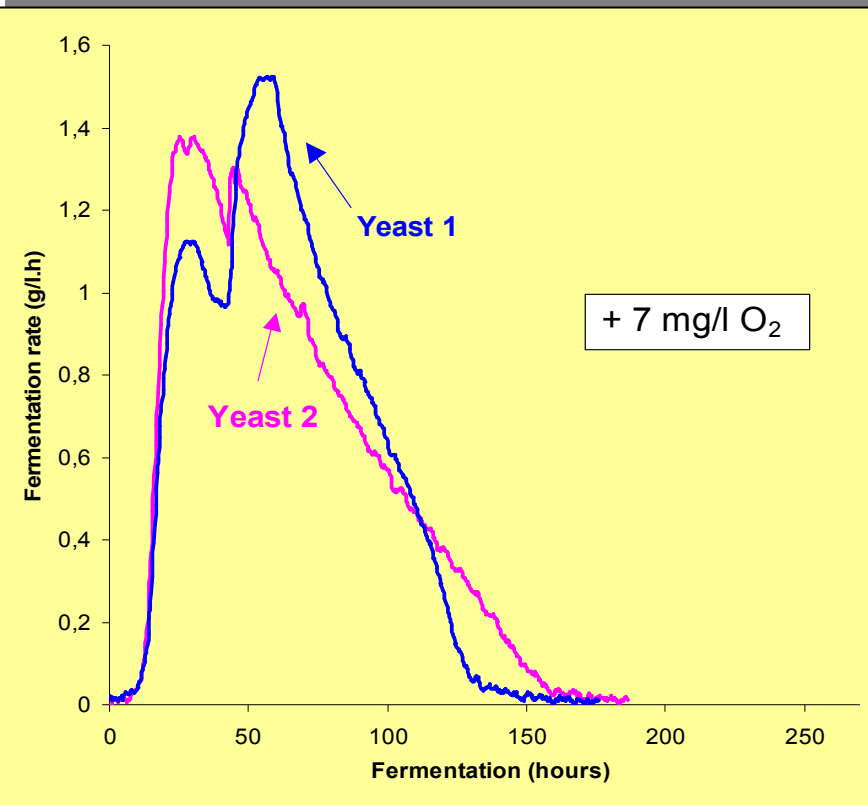
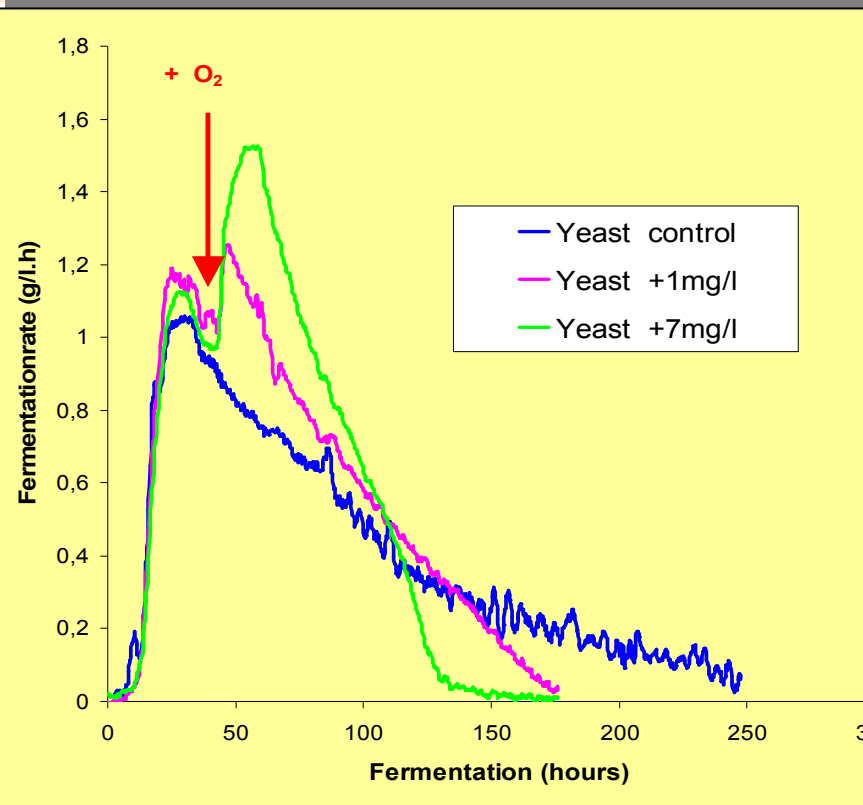
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Cell-development at 18°C...

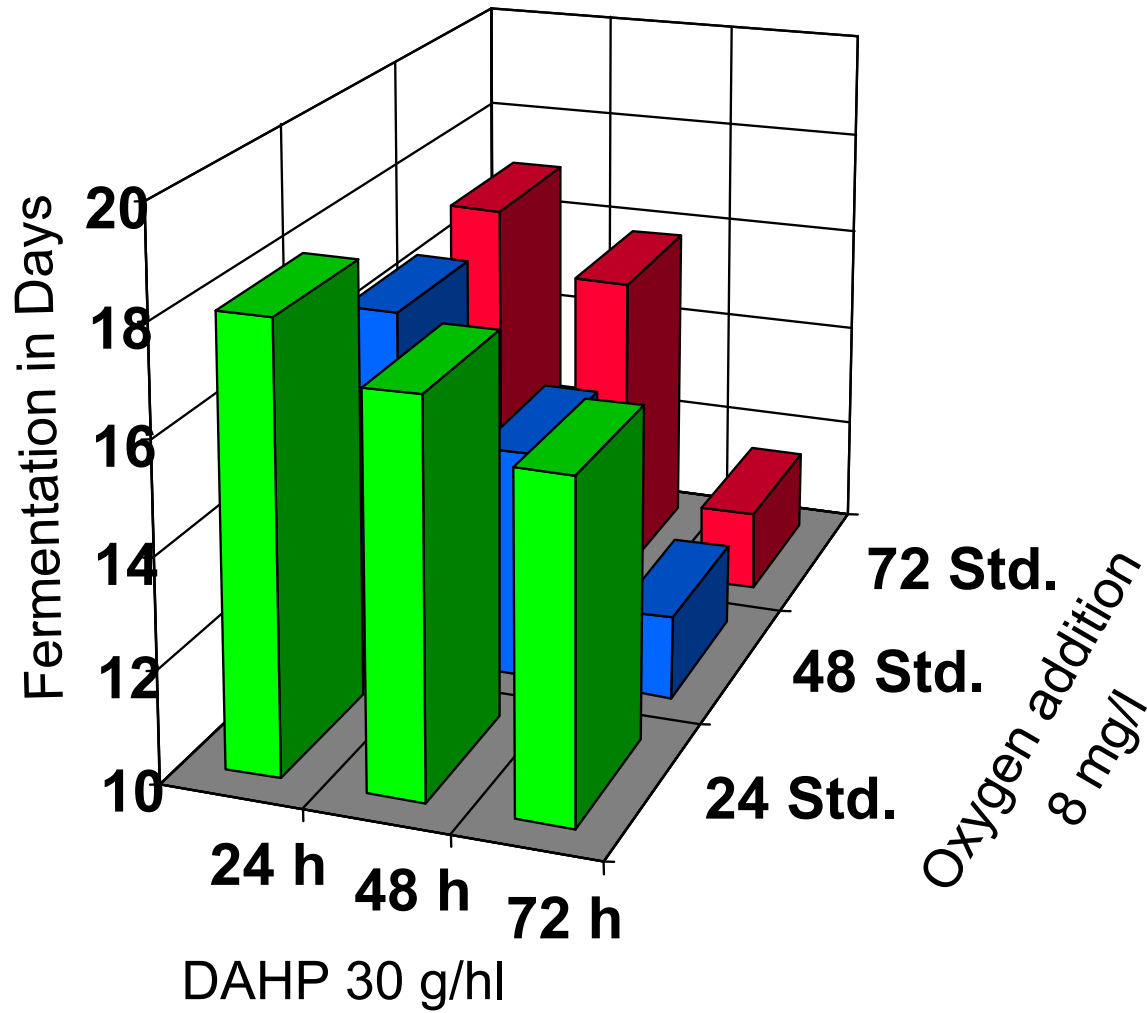


Oxygen - Effect...



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Oxygen/Nitrogen-Effect....



Addition of nitrogen (f.e.DAP) -Theorie-


↑
before the alcoholic fermentation



alcoholic fermentation
↑ begin ↑ 1/3 ↑ middle



stuck fermentation



malolactic fermentation



Sparkling wine

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News – Laws - Europe...

1. „Fermentatin salt“:
Diammoniumhydrogenphosphat (DAHP)/Ammoniumsulfat
since 08.08.2003: Dosage 100 g/hl
2. Thiamin:
Dosage 60 mg/hl
3. Yeast cell wall preparation:
Dosage 40 g/hl
4. Ascorbic Acid
since 08.08.2003: Dosage 250 mg/l
5. L-Tartaric acid-Dosage: Suisse: yes

Austria: yes (restriction)
Germany: yes for the saison 2003

Nutrient and function ...

	Concentration in must	Effect in yeast and fermentation	problems
N ₂	150-700 mg/l as assimilable nitrogen source	Amino acid metabolism and proteine synthesis	Reduction by: <ul style="list-style-type: none"> - extreme clarification - Increased mustfinnings - high sugar musts
Vitamin	Normally sufficient	Rate of cell grow of yeast	„oxidative, native Yeast“ metabolise in a great amount vitamins and nitrogen
minerals	Sufficient in must	Co-Factor for enzymes	Reduction by extrem must clarification
Unsaturated fatty acids	differently	for cell growth	metabolised by natural yeasts
Sterole	differently	For membran synthesis	In deficient bad cell growth



SIHA-Active dry yeast

Sparkling wine yeasts

Yeast	Description	Use	Yeast characteristics
SIHA 5 „Agglocompact“	Champagne yeast	Chardonnay, Weißburgunder, Grauburgunder, Kerner	Nut, Apple, Cremant
SIHA 4	fine Mosseux, for barrel and bottle fermentation, sluggish fermentation	Chardonnay, Weißburgunder, Grauburgunder, Kerner	Nut, Apple, Cremant
SIHA 3	Universal yeast, for fruit juice, for white wine and red wine	Müller-Thurgau, Silvaner, Grauburgunder, Weißburgunder, Portugieser, Trollinger	

Red wine yeasts

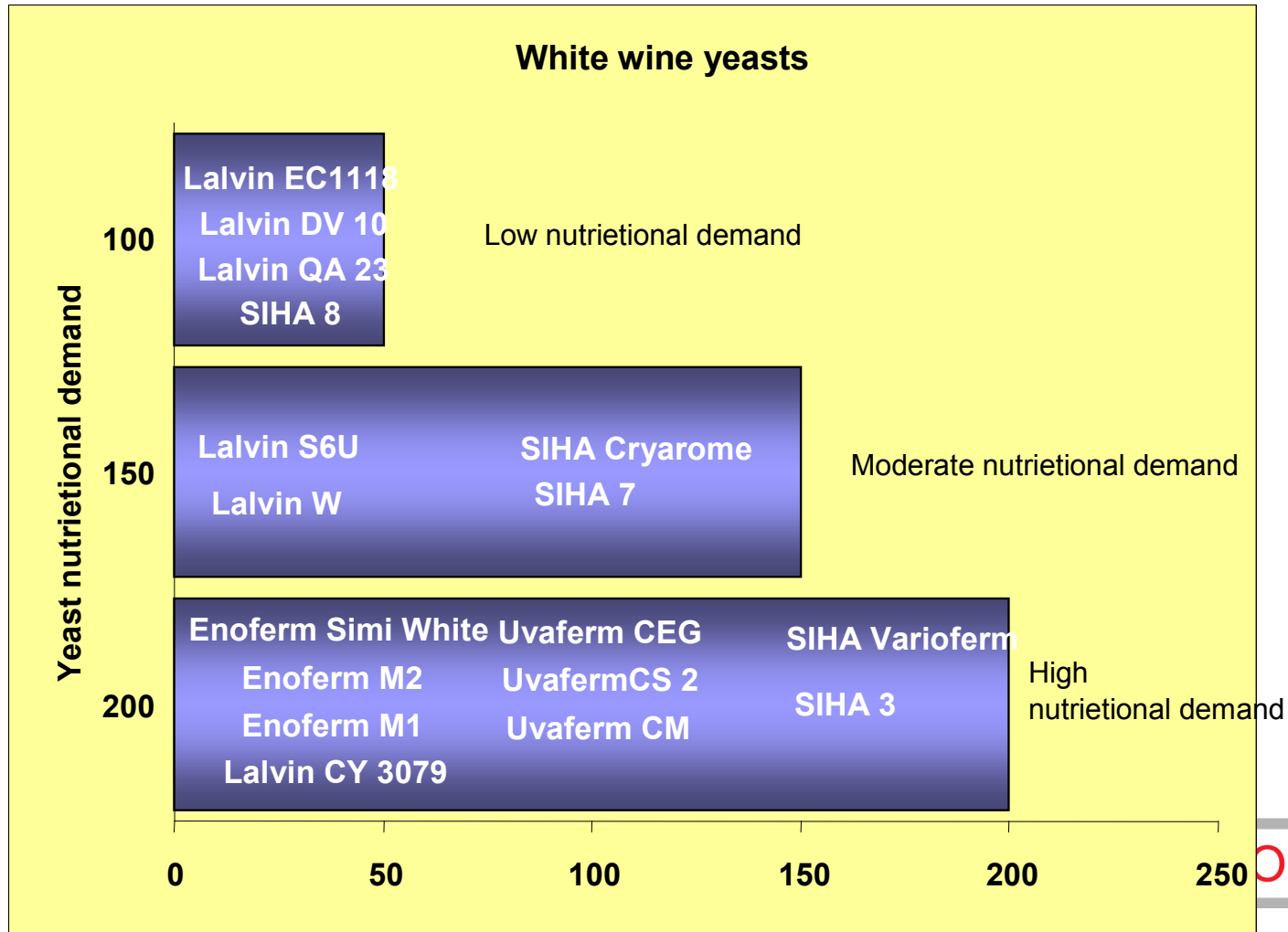
Yeast	Description	Use	Yeast characteristics
SIHA 10 Red Roman	High alcohol tolerant, high ability of polysaccharide extraction	Cabernet Sauvignon, Cabernet franc, Dornfelder, Lemberger, Syrah, Zinfandel	Spicy, bitter note
SIHA 8 Burgundy yeast	Colour stabile red wines, autolyses stabile	Spätburgunder, Dornfelder, Merlot, Schwarzriesling, for Barrique treatment	Aroma after cherries, blackberries

White wine yeasts

Yeast	Description	Use	Yeast characteristics
SIHA 3	Universal yeast, for elegant fruity white and red-wines	Müller-Thurgau, Silvaner, Grauburgunder, Weißburgunder, Portugieser, Trollinger	
SIHA 7 Riesling yeast	Aroma yeasts, increase grape varietal aroma	Riesling, Müller-Thurgau, Muskatsorten, Gewürztraminer, Sauvignon blanc, sweet wines	Tropical fruit, Ananas, Citrus
SIHA-Varioferm	Yeast combination, slow fermenter	Chardonnay, Weißburgunder, Grauburgunder, Riesling, for barrique treatment	Fruits taste, tropical fruit
SIHA Cryarome	Cold fermenter at 12-15 °C, lyase-activity	Riesling, Müller-Thurgau, Silvaner, Muskateller, Sauvignon blanc, Bacchus	spicy, fresh wines, Cassis, Mouthfeel

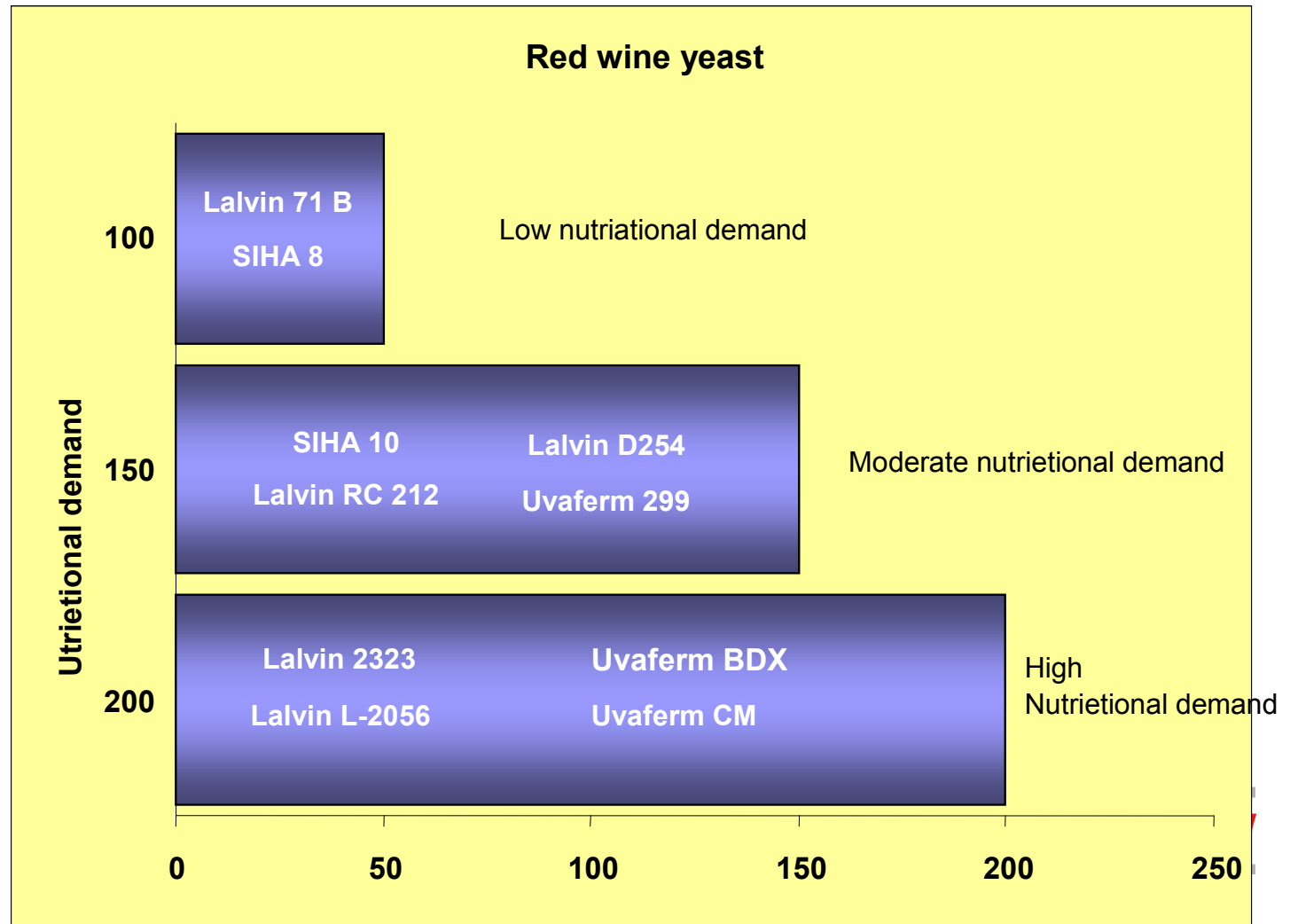
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Nutritional demand of white wine yeasts



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Nutritional demand of red wine yeasts



Red wine stile

„Pinot“-type

„Bordeaux“-type

Grape variety

Pinot noir, Schwarzriesling
Pinotage

Cabernet Sauvignon,
Cabernet franc, Syrah, Merlot

Mash
treatment

Desteam and mash
2 - 4 g/hL SIHA-PANZYM® Extract
(> 20 °C 3 - 4 h / < 15 °C 6 - 12 h)
30 - 40 mg/l SO₂

Desteam and mash
4 - 6 g/hL SIHA-PANZYM® Extract
Maceration carbonique

Fermentation

Fermentation (20 - 25 °C)
15-20 g/hL SIHA-8 (Burgundy yeast)
6-8 g/hL SIHA-Tannin FC

Fermentation (22 - 28 °C)
15 - 20 g/hL SIHA-10 (Red Roman)
or SIHA-Cryarome
6 - 8 g/hL SIHA-Tannin FC
4 - 6 g/hL SIHA-PANZYM® Fino

After racking

Barrique (after 3 year)
SIHA-Sigma Lact.
SIHA-Bactiferm
2 g/hL SIHA-Isinglass

Barriques (new)
SIHA-Sigma Lact.
SIHA-Bactiferm
2 g/hL SIHA-Isinglass

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White wine stile

„New world“-type

„European“-type

Grape
treatment

No mash
1 - 2 g/hL SIHA-PANZYM® Extract
(> 20 °C 3 - 4 h / < 15 °C 6 - 12 h)

No mash
8 - 10 mL/hL SIHA-Pektinase W
„liquid“ (2 - 3 h)

Must
clarification

Good clarification
2-4 g/hl SIHA-PANZYM® Clair Rapide
30-50 g/hl SIHA-Optigel®
100-150 g/hl SIHA-Puranit®

Good clarifiication
1 - 2 g/hL SIHA-Panzym Clair Rapide
30 - 50 g/hl SIHA-Optigel®
100 - 200 g/hl SIHA-Puranit®

Fermentation

Cold fermentation (12 - 15 °C)
20 - 25 g/hL SIHA-Cryarome plus
20 - 30 g/hL SIHA-Proferm Plus
2 - 4 g/hL SIHA-PANZYM® Fino

slow fermentation (15 - 18 °C)
15 - 20 g/hL SIHA-Active Yeast 7
or SIHA-Varioferm
0.6 g/1000 l. SIHA-Vitamin B₁
30 g/hL SIHA-Fermentation Salt

After racking

Racking or „sur lie“= „on lees“
SIHA-Sigma Lact.
SIHA-Bactiferm
1 - 2 g/hL SIHA-Isinglass

Yeast contact time
2 - 4 weeks
SIHA-Sigma Lact.
1 - 2 g/hL SIHA-Isinglass

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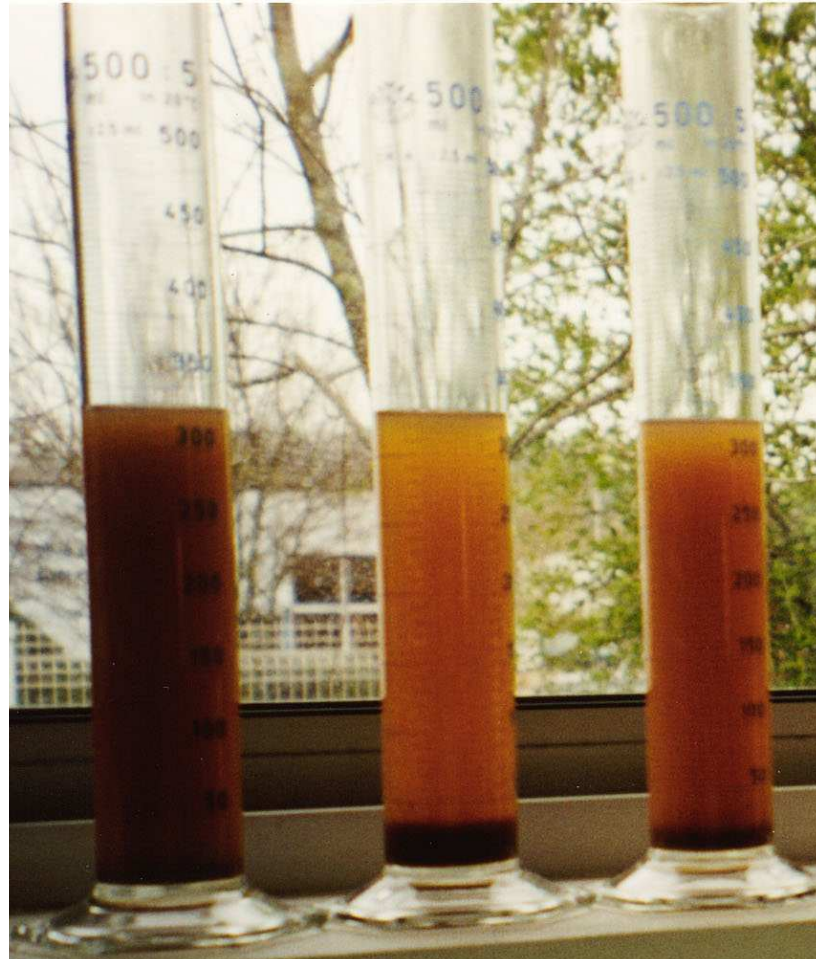
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Enzymes are the natural processing aids of maceration ...

- ▶ Effect on cell wall porosity
- ▶ Mechanism of release of the tannins from the vacuole

Clairification – pectinase – reaction ...



Grape variety: White Ugni (Airen-France)

20 °C, pH = 3,09

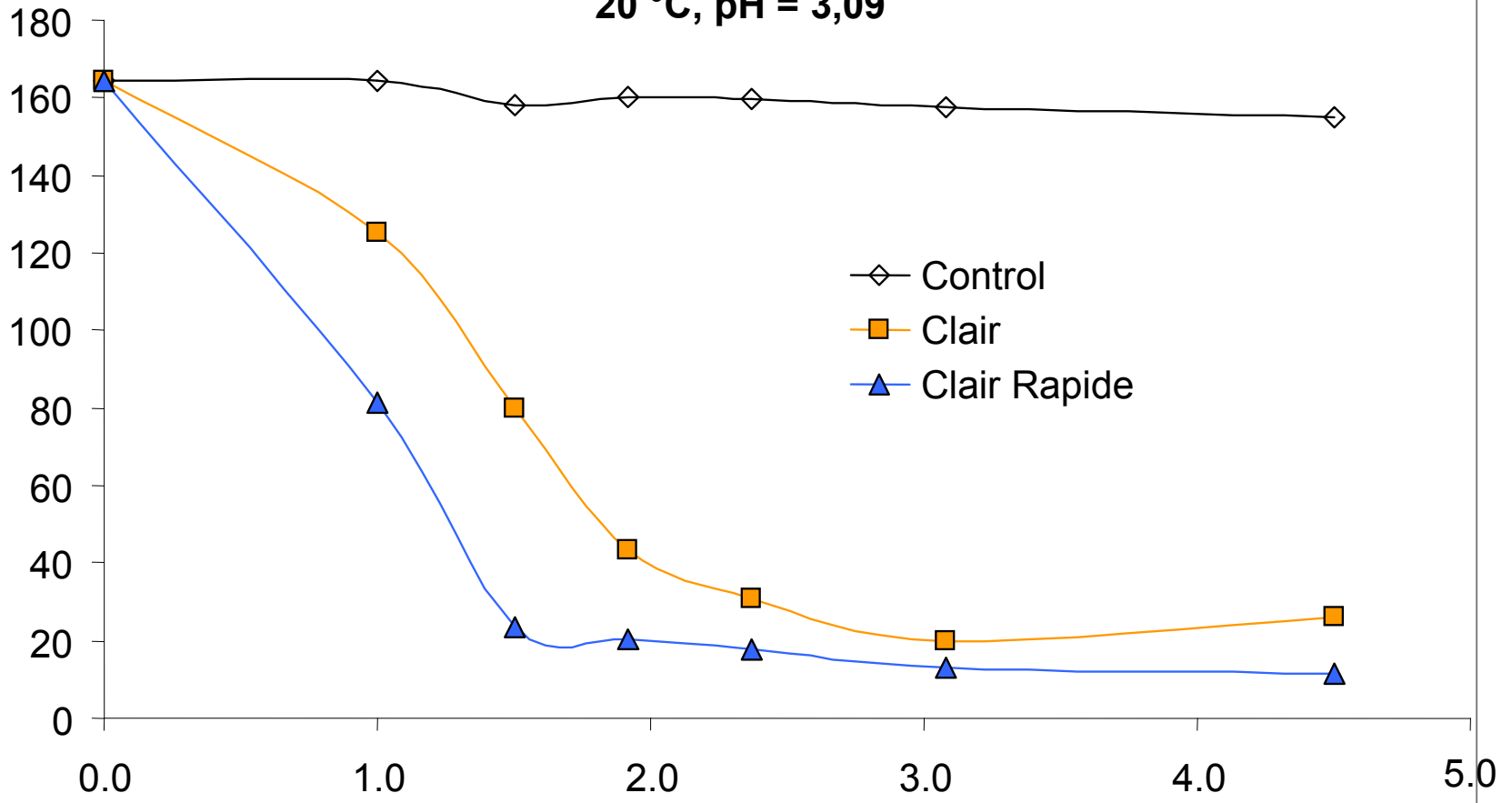
NTU (Turbidity)

- ◇ Control
- Clair
- ▲ Clair Rapide

0.0 1.0 2.0 3.0 4.0 5.0

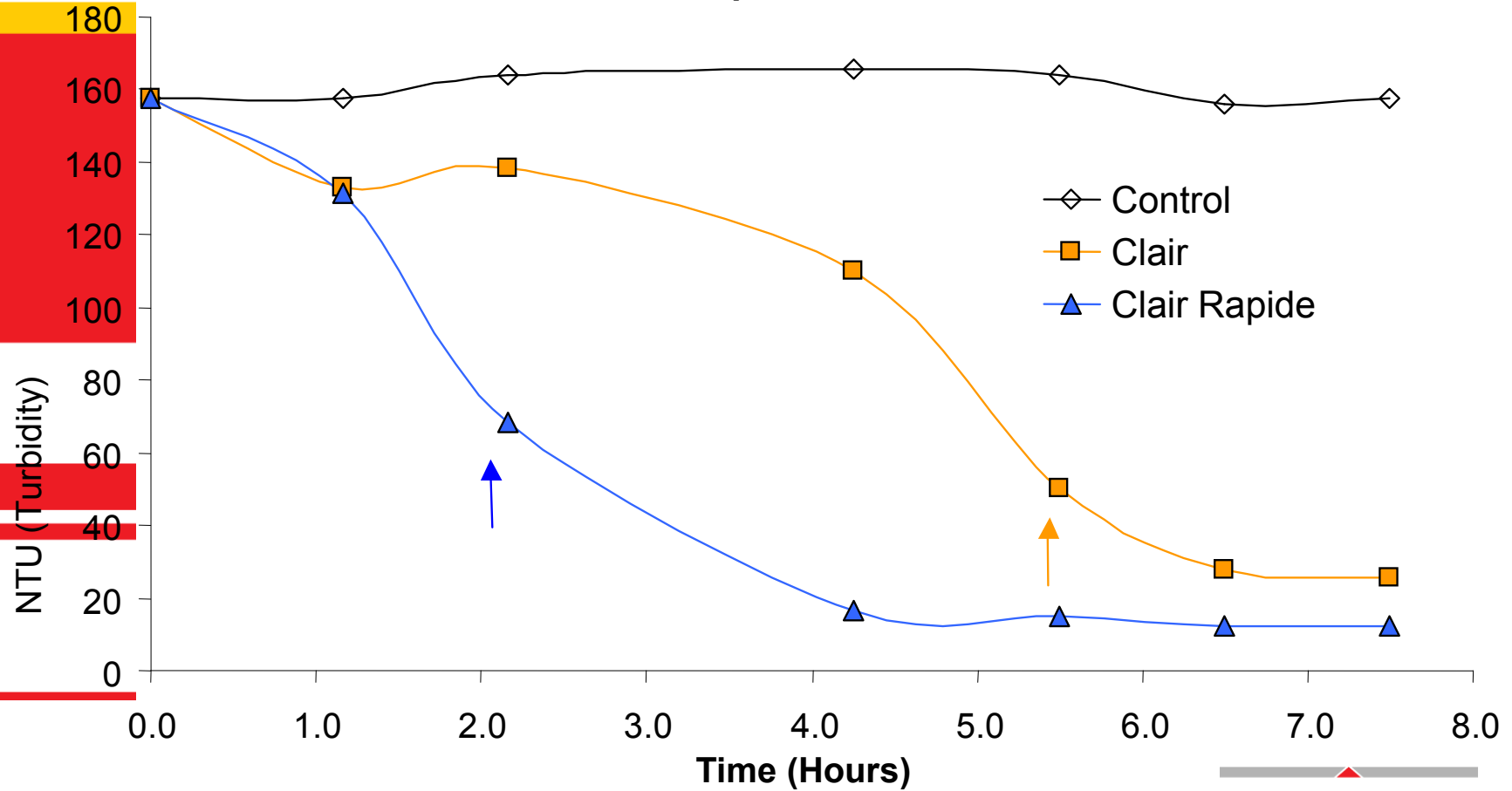
Time (hours)

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Grape variety: Gros plant (Val de Loire-France)

12°C, pH=3,01



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Mouldy grapes...

Enzyme with β -glucanase activity

- ▶ fast degradation of botrytis glucane
- ▶ increase of filterability
- ▶ protection and stabilization of aroma
- ▶ increase of mouthfeel by mannoprotein extraction
- ▶ special effect of “sur lie” treatment:
 - ▶ Degradation of yeast cell wall proteins