



# Pioneering Solutions to Increase Profitability & Sustainability

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AIDA National Technical Seminar & Exhibition  
24<sup>th</sup> June, 2023

# Our Story

Founded in Montréal by  
Fred A. Lallemant at the  
end of the  
**19<sup>th</sup> century**



Yeast  
production  
started in  
**1923**



**Over 4,500**  
**employees**  
globally



**48 plants** including  
**27 yeast** and  
**9 bacteria** plants



Owned by the Chagnon family since  
**1952**



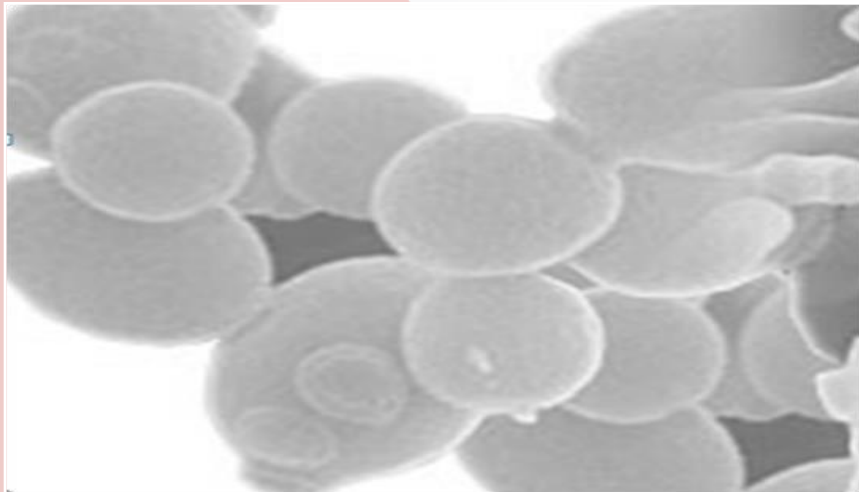
**A worldwide  
presence**



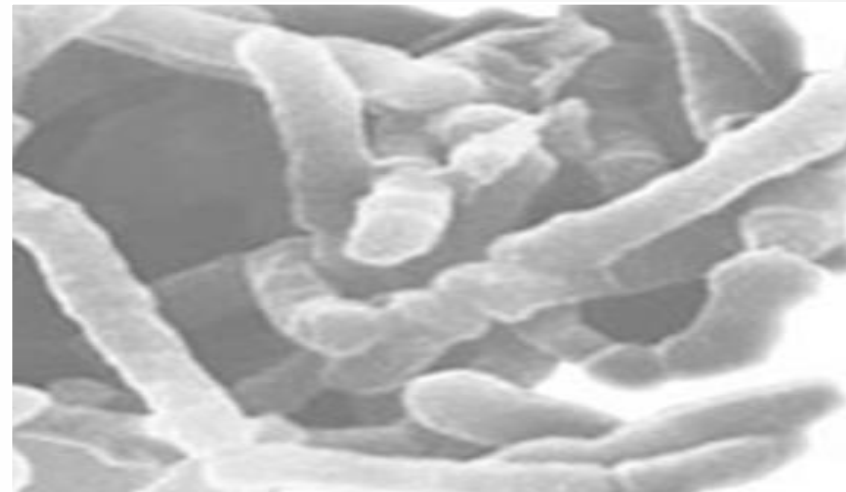
# Lallemand's Core Activity

Development, production and marketing of...

## Yeast



## Bacteria



.....and their derivatives

# A World of Yeast and Bacteria (Applications)



**ANIMAL  
NUTRITION**



**COFFEE**



**OENOLOGY**



**BAKING**



**COSMETICS**



**PHARMA**



**BIOFUELS**



**DISTILLED SPIRITS**



**PLANT CARE**



**BREWING**



**FERMENTATION  
MEDIA**



**SAVOURY  
INGREDIENTS**



**COCOA**



**HEALTH  
SOLUTIONS**



**SPECIALTY  
CULTURES**

# Lallemand Around The World (2023)

## North America

- 9 yeast plants (2 downstream)
- 3 bacteria plants
- 3 other plants
- 5 research labs

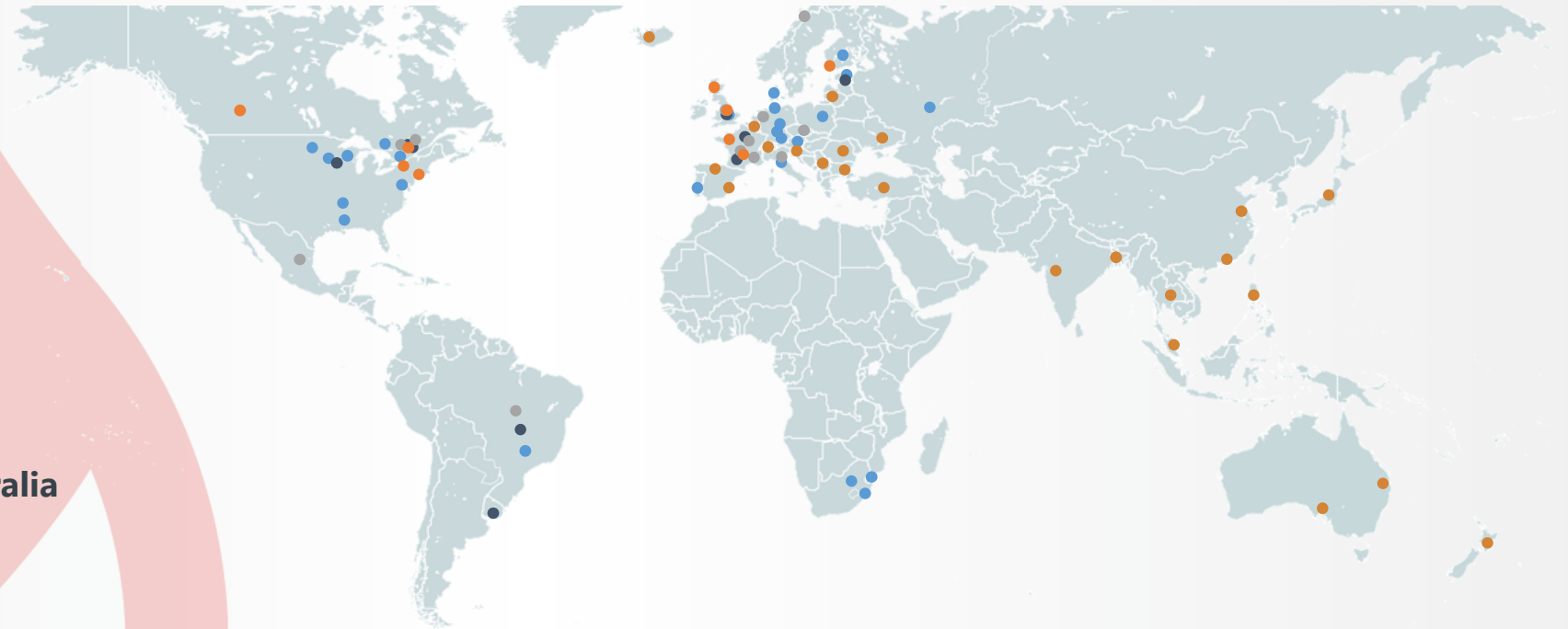
## Europe

- 14 yeast plants (1 downstream)
- 4 bacteria plants
- 8 other plants
- 6 research labs

## Africa, Asia, South America & Australia

- 4 yeast plants (2 downstream)
- 2 bacteria plants
- 1 other plants
- 1 research lab

● Yeast plants   ● Bacteria plants   ● Other plants   ● Research labs   ● Commercial / Distribution



# Lallemand Biofuels & Distilled Spirits

- LBDS is a leading global supplier of fermentation ingredients and technical solutions for alcohol production:

## Biofuels



## Distilled Spirits



# LBDS – Research & Development

- Improved yeast strains (both classical and genetically enhanced)
- Different yeast product forms
- New types of yeast nutrients
- Antibiotic alternatives
- Valuable laboratory services
- Continued commitment to industry education

# Thermosacc Introduction in India – High Alcohol %

- Introduced Thermosacc Dry (ADY) for grain plants in 2010-11 in India
- High gravity fermentation
- Increasing alcohol %.....pioneering the high alcohol % (> 14%)
- Benefits
  - Water saving
  - Lower energy
  - Reduced discharge
  - Higher throughput (capacity increase)

# Launching Enzymes (L-Zyme™) in Indian Market

**L-Zyme™ AlphaLP**

Alpha-amylase for Alcohol Fermentations

**L-Zyme™ GlucoPro**

Glucoamylase for Alcohol Fermentations

**L-Zyme™ AlphaMax**

Alpha-amylase for Alcohol Fermentations

**L-Zyme™ GlucoMax**

Glucoamylase for Alcohol Fermentations

# Bio-Engineered Yeasts for Grain Ethanol (USA)

- Modified yeast are currently used in >80% of all US ethanol facilities

- DDGS as feed – no risk involved

**TRANSFERM<sup>®</sup>**  
Yield+

- Ethanol yield increase (less glycerol)
- Reduction in exogenous enzyme

**TRANSFERM<sup>®</sup>**

- First commercial glucoamylase expressing yeast

**TRANSFERM<sup>®</sup>**  
YP3

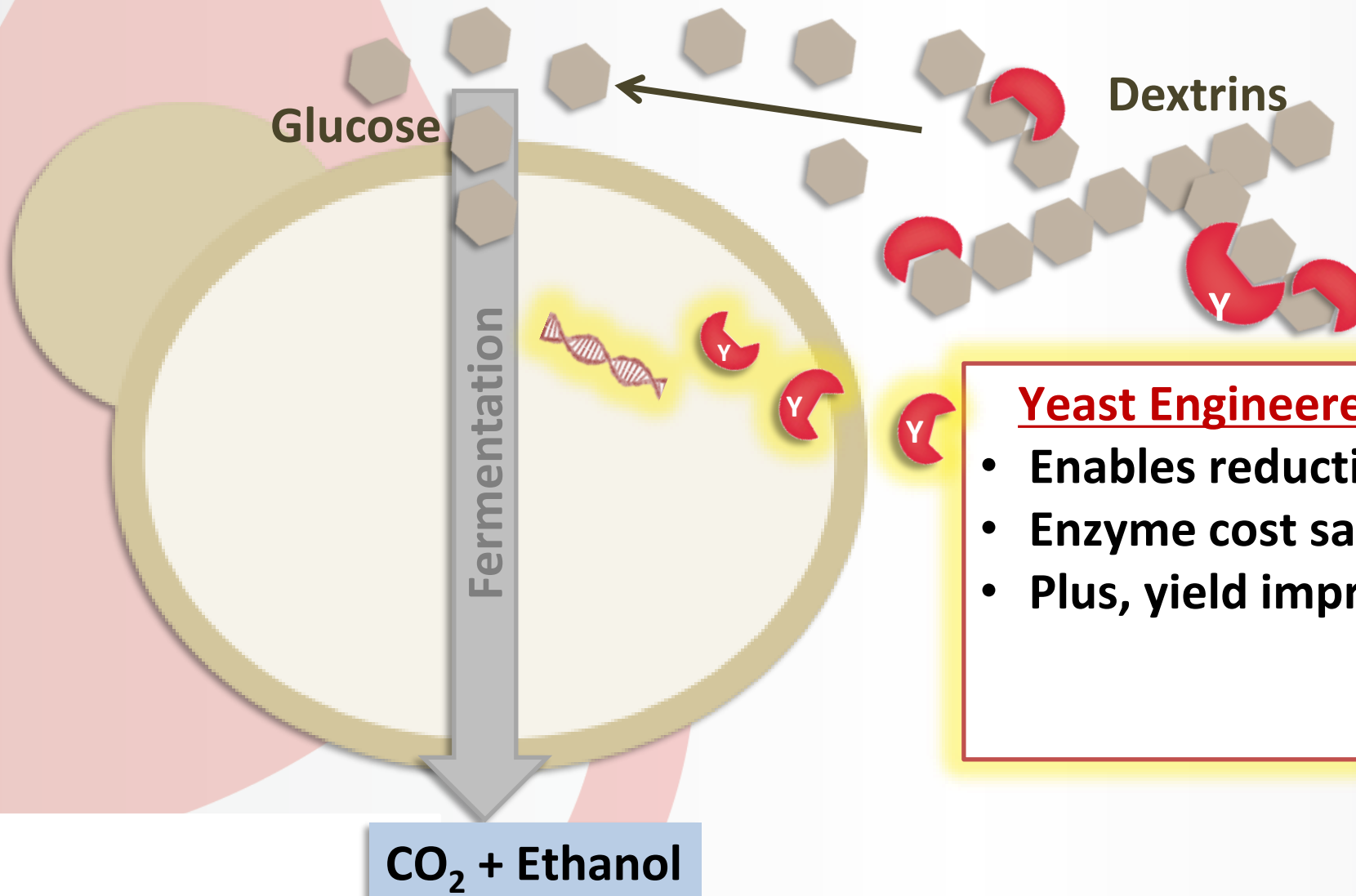
- Ethanol yield increase and less glycerol vs Yield+
- Greater reduction in exogenous enzyme

**TRANSFERM<sup>®</sup>**  
CV5  
**Bio-Ferm<sup>®</sup> EGA**

**TRANSFERM<sup>®</sup>**  
RB3

- Ethanol yield increase and less glycerol and exogenous enzyme vs Yield+
- Increase tolerance to fusels and acid stress

# Advanced Yeast for Fuel Ethanol Production – *Glucoamylase Expression*



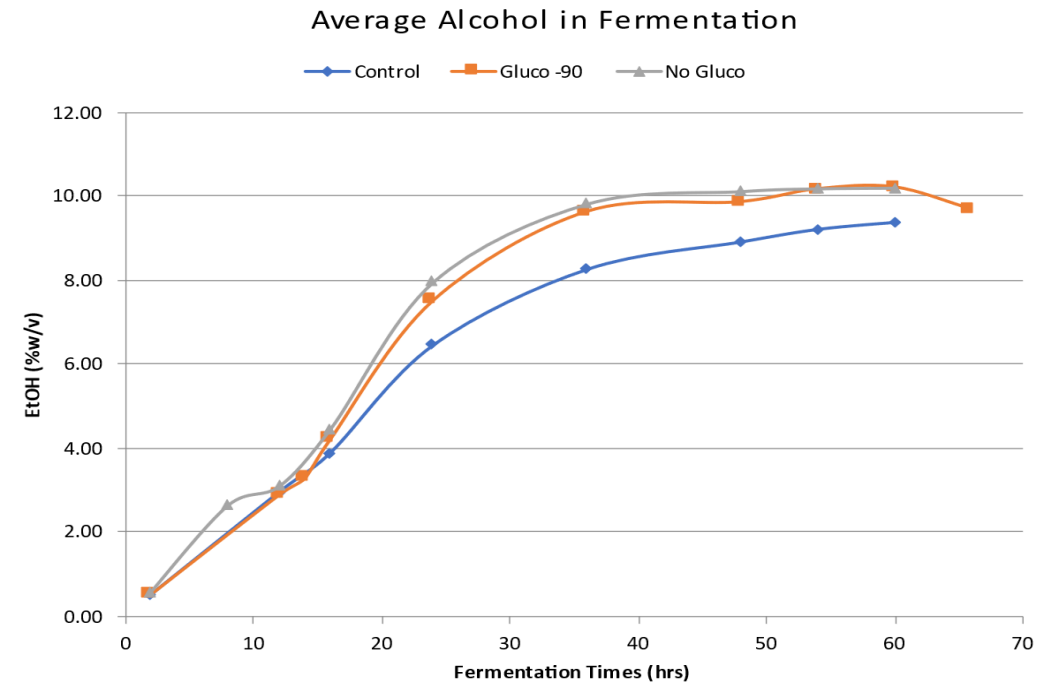
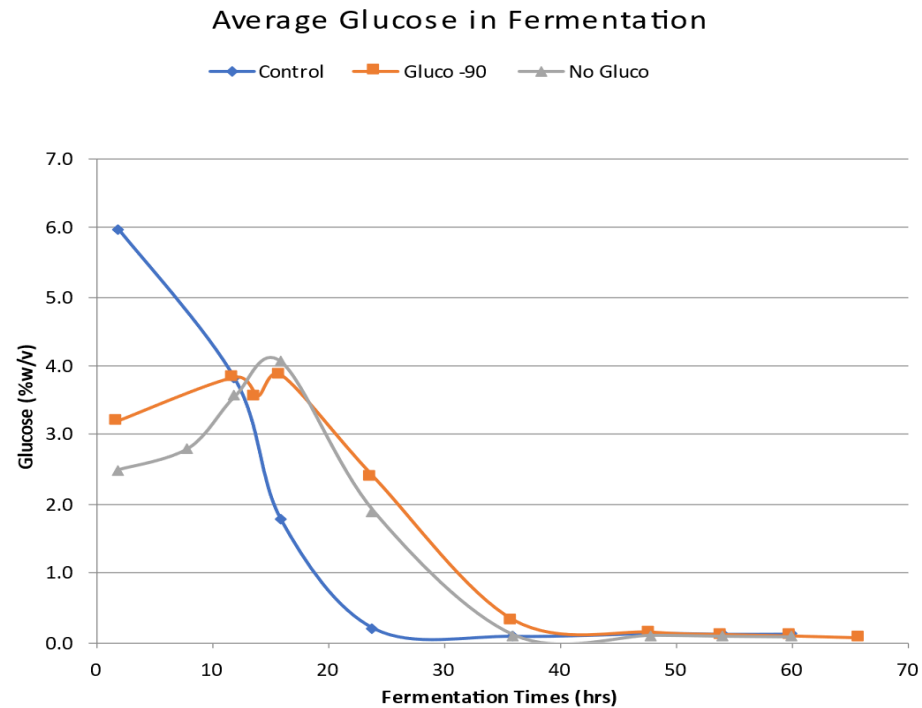
## Yeast Engineered to Express Glucoamylase

- Enables reduction of the purchased enzyme
- Enzyme cost saving
- Plus, yield improvement

# Fermboost – Advanced ADY for “Fuel Ethanol” Fermentation (India)

- *Saccharomyces cerevisiae* that expresses glucoamylase (GA) & Trehalase enzyme
- Robust yeast strain
- Reduction of separately purchased GA enzyme by over 90 - 100%
- Yield improvements of around 1 - 2% over standard dry yeast
- Lallemand will guide customers on regulatory and technicalities for product use
- This can be game changer for Indian ethanol industry
  - Similar to what Lallemand did with Thermosacc more than decade back

# Fermboost – Plant Trial Results (Thailand)



# Premium Spirits – Lallemand Distilling

- Highest quality products in partnership with expert technical support and education programs, all specific to the needs of distillers

|                               |                                                                                                                                                                             |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DistilaMax® Yeasts</b>     | Producing Vodka, Whisky, Cachaça, Rhum Agricole, Rum, Tequila, Mescal and other spirits involves fermenting very different feedstocks with varying fermentation conditions. |
| <b>DistilaVite® Nutrients</b> | Vital to the health and structure of the yeast cell. It help to made high-quality spirits.                                                                                  |
| <b>DistilaZyme® Enzymes</b>   | Increased alcohol yield and fermentation consistency.                                                                                                                       |
| <b>DistilaBact® Bacteria</b>  | Designed specifically for use in managing sour mash development during the production of distilled spirits and grants the distiller to create a unique flavor profile.      |

# LBDS Products Currently Marketed in India

**Thermosacc® XL**

High Performance Active Dry Yeast

**Thermosacc® ML**

High Performance Active Dry Yeast

**Lactoside 247™**

Powdered Antimicrobial Blend

**DistilaMax® MW**

- **Starch / grain-based fermentation**
- **Sugar / molasses-based fermentation**
- **Proprietary Virginiamycin blend**
- **Malt fermentation**

# Complete Solutions for Biofuels & Distilling Industry

- Yeast / Advanced Yeast, Enzymes, Nutrients & Antimicrobials
- Our solutions are based on practicality and will be suited to meet the needs of your distillery
- Dedicated Support
  - Product application and optimization in Liquefaction & Fermentation
  - Trouble shooting
  - Hygiene audits
  - R&D
  - Training – Lab (Analytical) and Plant (Operations)
  - Lab support – HPLC, analytical testing
  - Sensory evaluation
  - Education

# Education

- For over 40 years, LBDS has led education in the ethanol / distilling industry
- No industry educational initiative has a higher profile than The Alcohol School run by LBDS subsidiary *The Ethanol Technology Institute*.



## Bangkok

The Westin Grande Sukhumvit  
July 18 - 21, 2023



# Channel Partners



AADITYA FINECHEM PVT. LTD.

# Conclusion



**"Right" process changes  
can help to improve  
process efficiency,  
profitability &  
sustainability**

**Advanced products  
combined with our  
Technical Service is  
the key  
differentiator**

**We can work with you  
to analyze your plant  
data's and  
recommend solutions  
for improvement**

**LBDS & Aaditya Finechem  
look forward to working  
together with you all in  
future.....  
Thank you!**

