

A Brief Introduction to Lesaffre & Phileo



Our Group

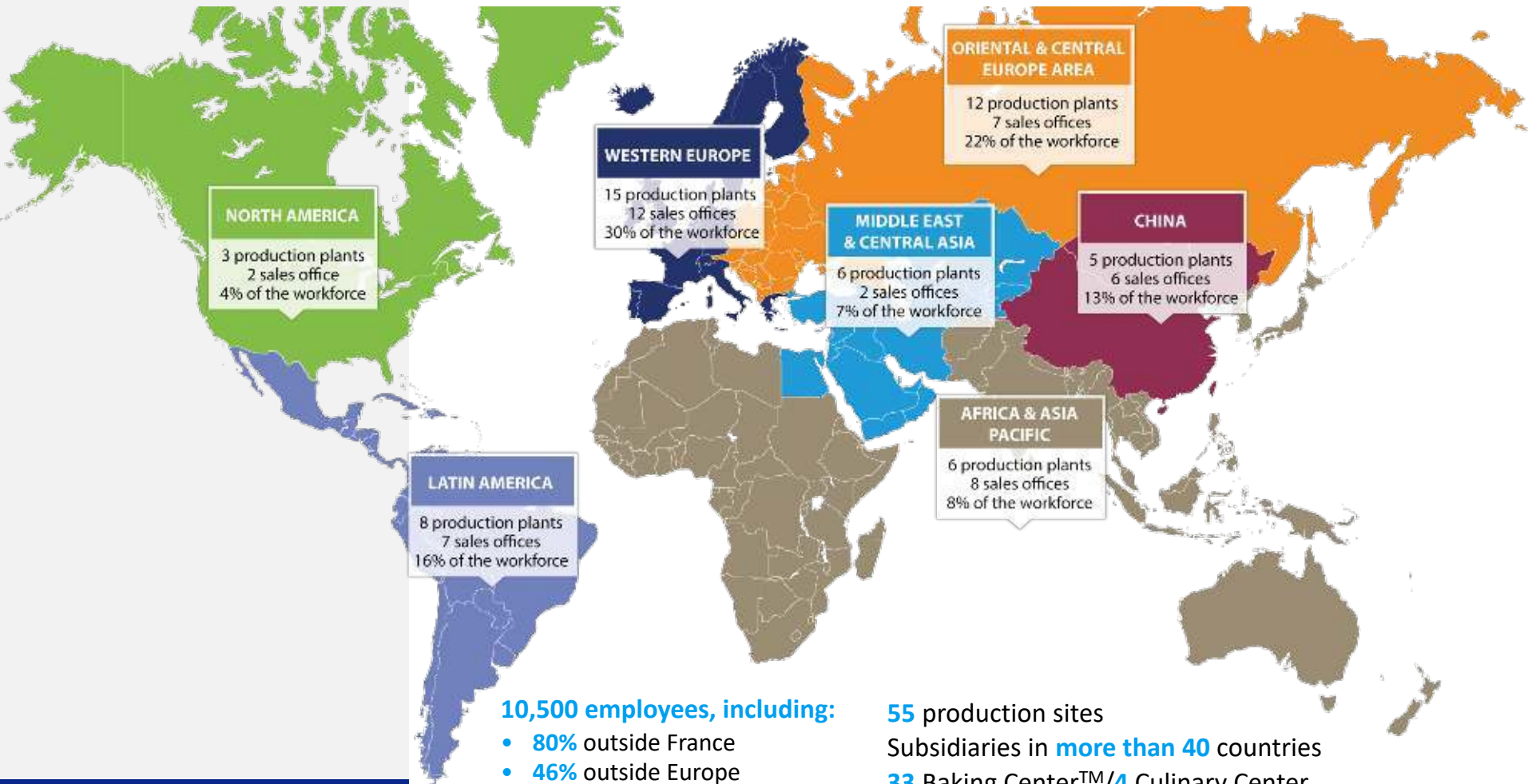
A family-owned corporation founded in northern France

Today we are a multinational, multicultural group

Our development has been driven by innovation since 1853

A few key facts:

- **€2.0 billion** turnover
- **More than 160 years** of experience and know-how
- **45% of the world's bread** is made with Lesaffre yeast
- Every day, **more than one billion people** around the world consume food made with our products



10,500 employees, including:

- 80% outside France
- 46% outside Europe
- more than 70 different nationalities

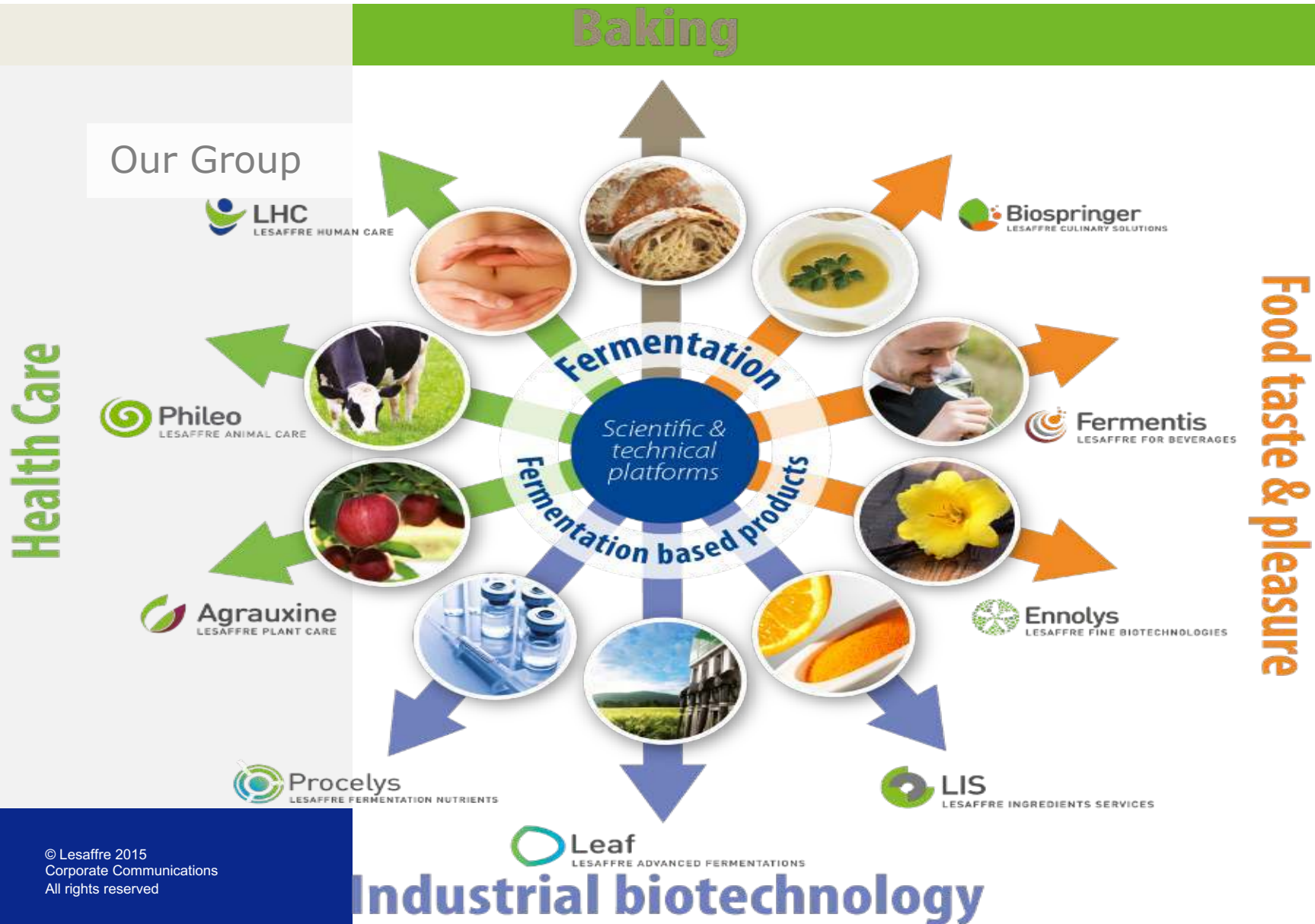
55 production sites

Subsidiaries in more than 40 countries

33 Baking Center™/4 Culinary Center

World headquarters is based in Lille area, France

2nd largest Manufacturing Facility Cedar Rapids, IA





Phileo

LESAFFRE ANIMAL CARE

- **Phileo is the animal health and nutrition division of Lesaffre. Phileo researches, designs, and markets products that offer solutions to challenges faced in production agriculture**
- **Phileo is backed by the strength, integrity, and technological capability of the Lesaffre Group**



Phileo

LESAFFRE ANIMAL CARE

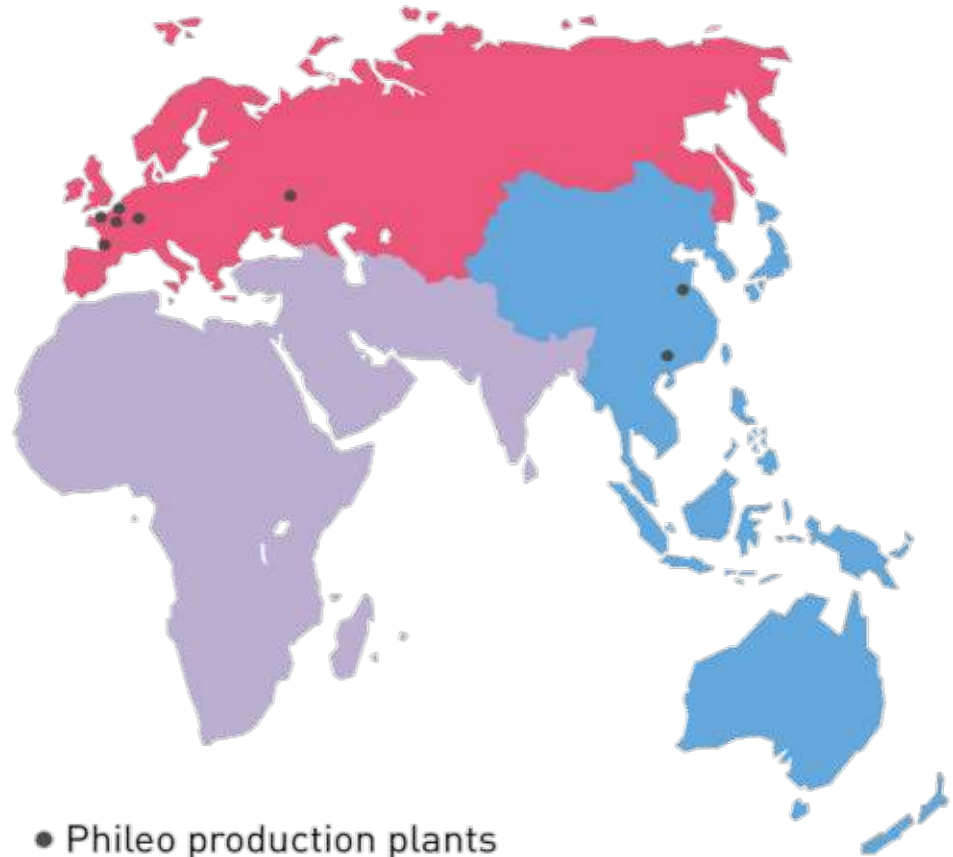
Some key facts:

- **More than 30 years** of experience and know-how
- 1998: official creation
- **130 employees** worldwide
- **Dedicated R&D** department
- Present in **22 countries**
- **16 production plants** across the 5 continents
- Phileo products distributed in more than **70 countries**



Phileo

LESAFFRE ANIMAL CARE



● Phileo production plants

Red Star Yeast LLC Cedar Rapids, IA





Phileo

LESAFFRE ANIMAL CARE

Our business:

- To find within the range of fermentation products, **the best nutrition and health solutions for animals** for which we have scientifically demonstrated the benefits

Our solutions:

- Yeasts, bacteria and yeast products, used together or alone, to **improve yields and promote resistance** to the specific diseases affecting each species: ruminants, pigs, poultry, fish, etc.

Advantages for our customers:

- Our customers receive **innovative and comprehensive solutions**: products, zootechnical studies, recommendations on use, and more.
- **Allow reduction of use of antibiotics** while improving the performance and well-being of animals.



RAISING LIFE



Nothing is more precious than life

Enhance animal
performance and well-being
to better feed the world
and protect the planet



Phileo

LESAFFRE ANIMAL CARE



Phileo

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PROBIOTICS

ActiSaf

Premium thermostable
live yeast concentrate

Procreatin 7

Live yeast concentrate

YEAST FRACTIONS

SafMannan

Premium yeast fractions
rich in active ingredients

NucleoSaf

Range of inner yeast
cell fractions rich in
nucleotides

SPECIFIC ACTIVE INGREDIENTS

SelSaf

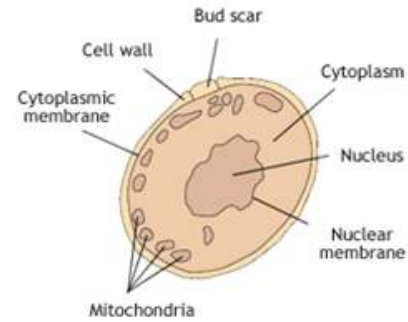
Premium selenium yeast

NutriSaf

Sustainable protein
source with added-value
functional properties



What is “YEAST”



**Diagram of a yeast cell
(diameter = 8 microns)**

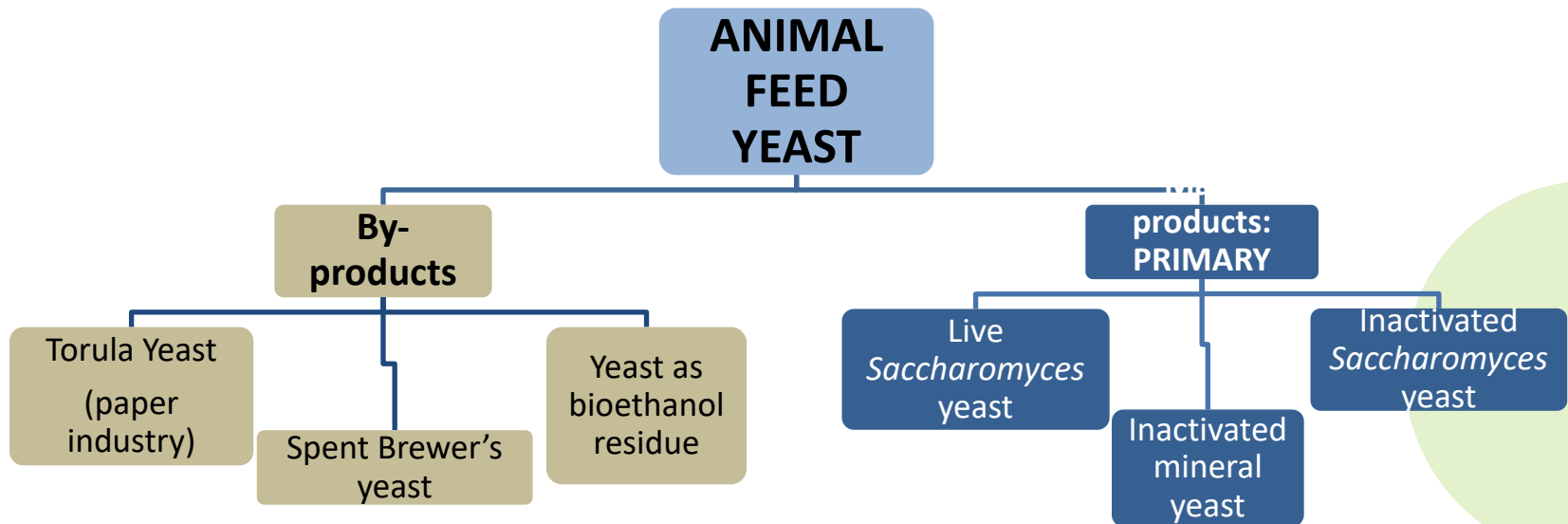
- **Yeast is a naturally occurring fungi.**
 - The most common type is *Saccharomyces cerevisiae*(Sc)

- **Lesaffre maintains a catalog of over 9,000 yeast strains and strain variants.**
 - Not all yeasts are the same; just like not all fungi are the same.
 - Strains are tested for efficacy for different applications.
 - Alcohol product, wine flavor production, high sugar bread applications, Yeast Extract yield, animal bacterial challenges.

- **Phileo works with several specific different strains of yeast, depending on the application.**



Huge diversity of marketed yeast derived products





YEAST IS NOT YEAST!

Most animal nutritionists have not been exposed to the differences in products (strains used, production, etc, & how these changes can modify how yeast elicits a response in the animal).

For More Information, Ask about “Yeast 101” and schedule some time to review with Phileo Lesaffre Animal Care.

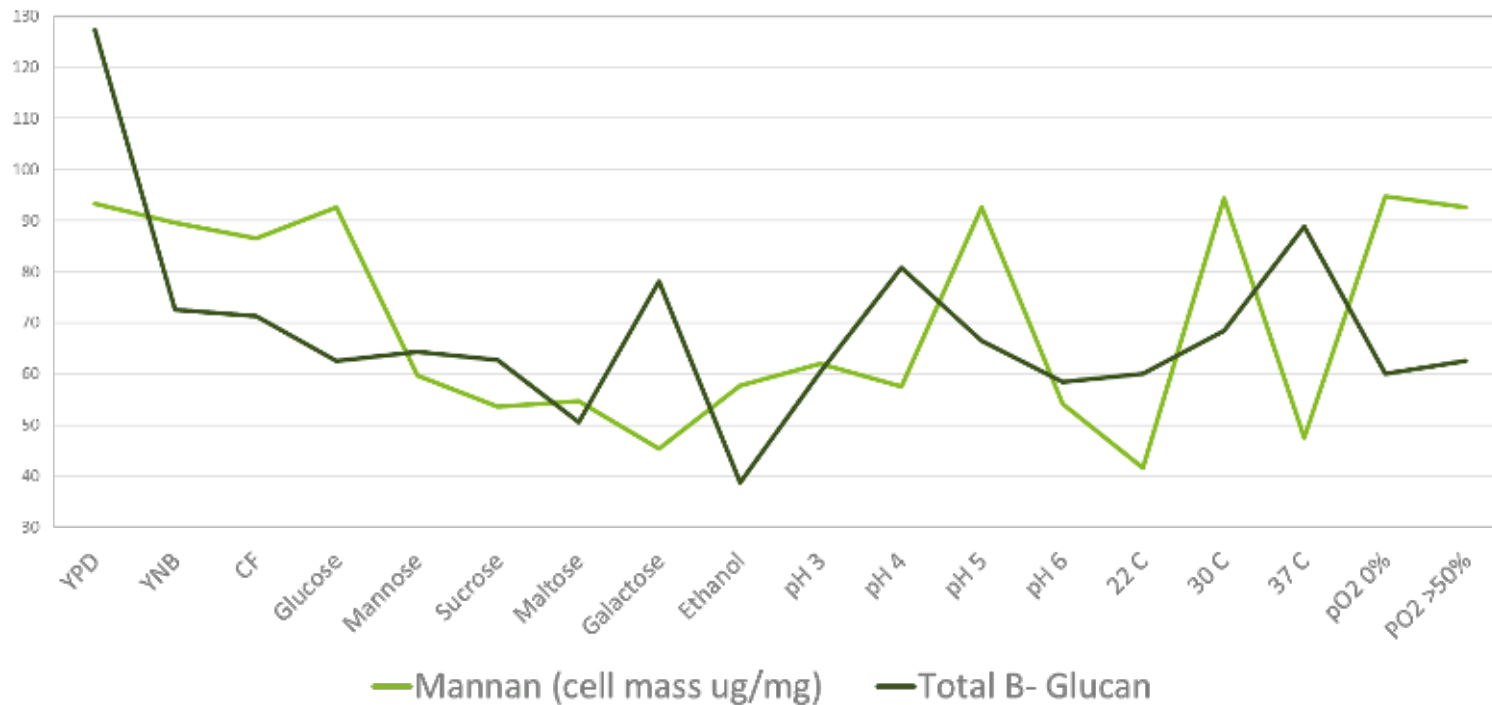


Quality Issues in Yeast Products

- **Consistency and knowledge of source and strain of yeast**
- **Consistency of production system for product**
 - Drying method
 - Acidification method
 - Sourcing of yeast for process
- ***In Vivo* evaluation of effectiveness**
- **Consistency in structure, type and branching of glucan structures as well as mannan type and content and analysis**



Production Influences Composition



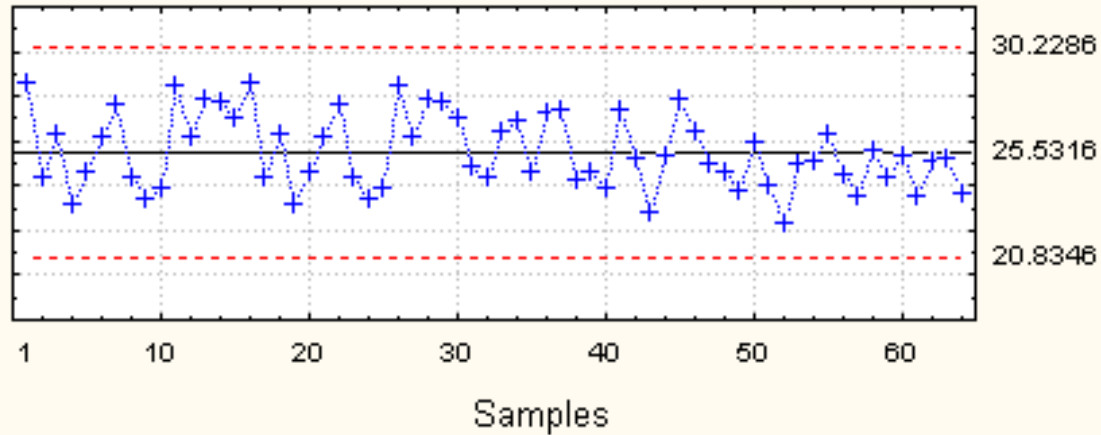
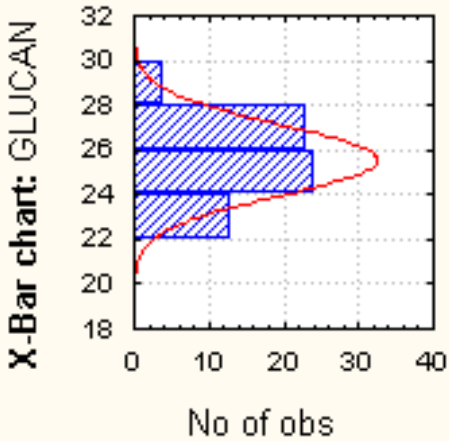
Adapted from B. Aguilar-Uscanga and J.M. Francois, 2003

Safmannan Consistency

Safmannan – Glucan SPC

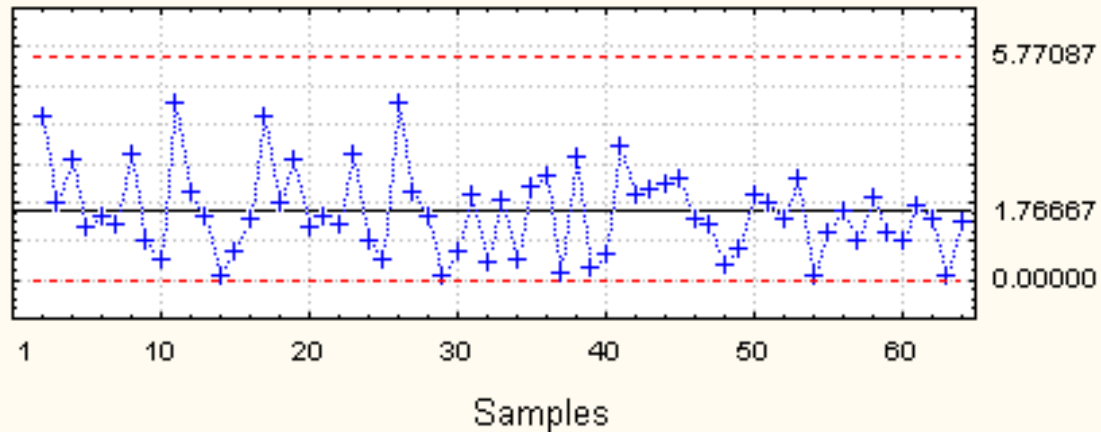
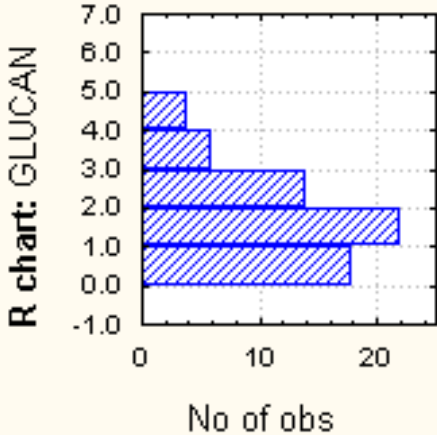
Histogram of Means

X-BAR Mean:25.5316 (25.5316) Proc. sigma:1.56567 (1.56567) n:1



Histogram of Ranges

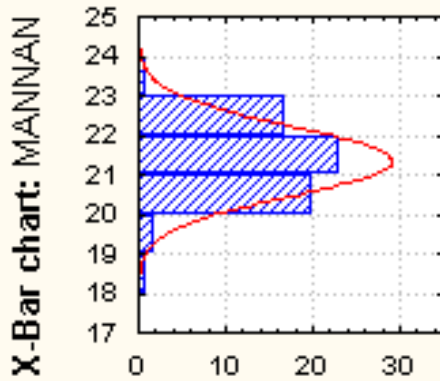
Range Mean: 1.76667 (1.76667) Sigma:1.33474 (1.33474) n:1



Safmannan Consistency

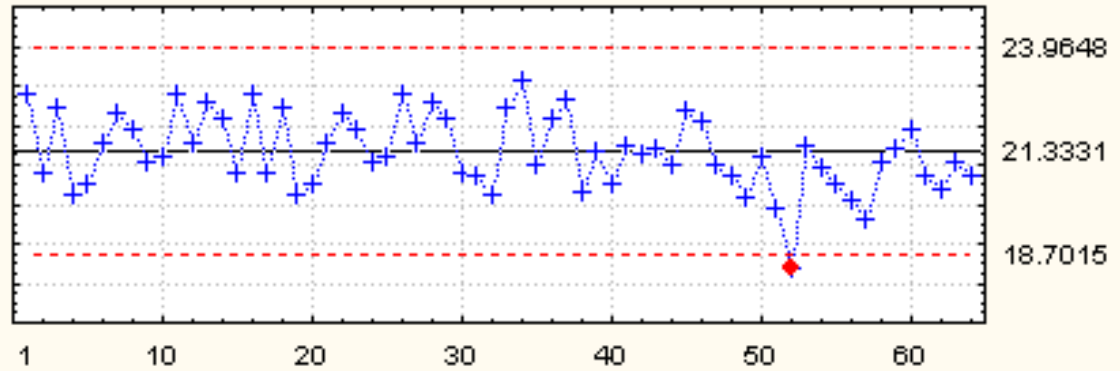
Safmannan – Mannan SPC

Histogram of Means



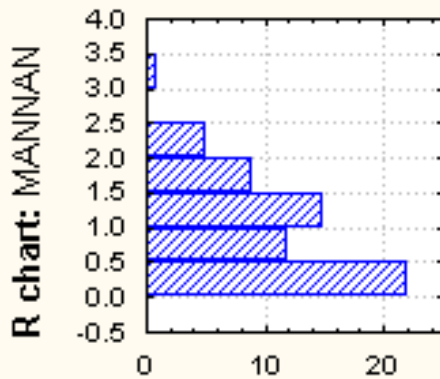
No of obs

X-BAR Mean:21.3331 (21.3331) Proc. sigma:.877224 (.877224) n:1



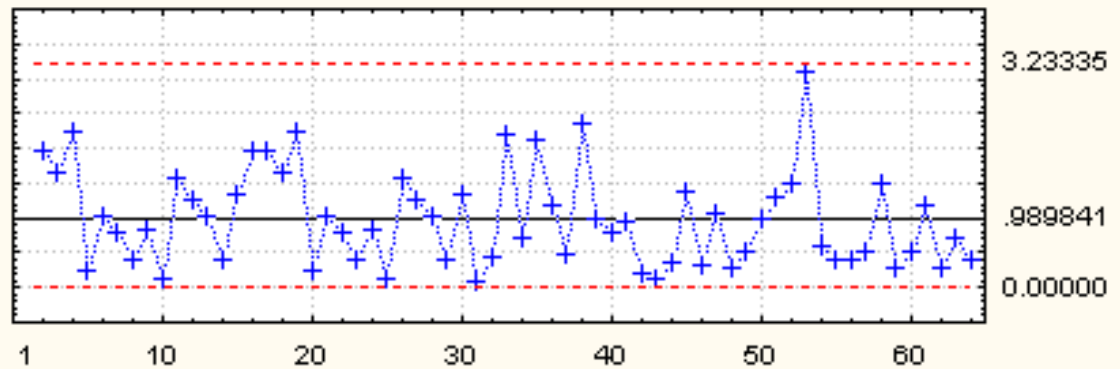
Samples

Histogram of Ranges



No of obs

Range Mean: .989841 (.989841) Sigma:.747836 (.747836) n:1



Samples



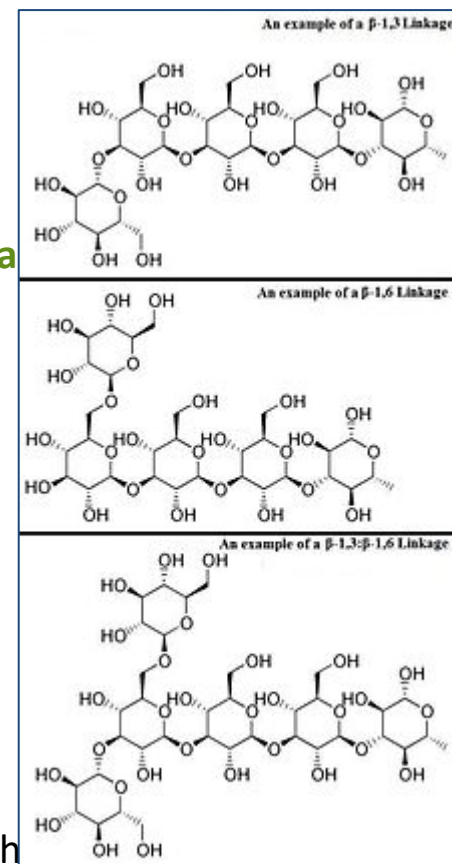
Method of analysis: Glucan Portion

- β -Glucans are polysaccharides that contain only glucose as structural components, and are linked with β -glycosidic bonds. By definition, beta glucans are chains of D-glucose polysaccharides, linked by beta-type glycosidic bonds

Alpha-glucan :
glycogène

Béta-glucan

- **Principle Eurasyp method :**
 - Hydrolysis of glucosidic chain and analysis of glucose.
 - No distinction of the type of glycosidic bonds.
- Enzymatic method has been developed by Lesaffre in order to distinguish the type of glycosidic bonds
- **Enzymatic analysis :**
 - Measurement of beta-glucan
 - Measurement of glycogène (alpha-glucan)





Analysis of Alpha & Beta-Glucans

	Total Glucans	β -Glucans	α -Glucan (Glycogèn)
Product 1	37%	15%	21%
Product 2	25%	16%	10%
Safmannan	25%	25%	3%



Phileo Lesaffre Animal Care Yeast Products Summary

- Process the “Right Strain” in a manner to maximize performance.
- This is as important – or more important – than strain selection
- *Phileo Lesaffre Animal Care continues to identify new and Improved strains, production processes, and analytical methods to optimize the use of the Yeast Products in the Livestock Industry*
- 160+ years of production expertise and know how
- Dedicated to highly researched & quality products!



Working together to
better
feed and protect the
planet

