

Quality and Innovation through Sensory Excellence

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A Leading Global Agribusiness & Food Company

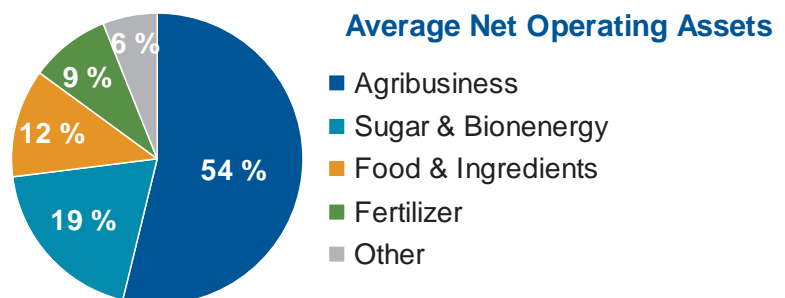
Key Facts

Revenue: **\$46 Billion**

Employees: **~32,000**

Facilities: **~400**

Countries of Operations: **30+**



Agribusiness



- A global leader in oilseed processing
- A global leader in grain and oilseed marketing

Sugar & Bioenergy



- 21 mmt sugarcane milling capacity producing sugar, ethanol and electricity
- #2 in global trade and distribution

Food & Ingredients



- Leading producer of oils, margarines & industrial fats in the Americas and Europe
- Growing oils position in Asia
- Leading corn and wheat miller in the Americas

Fertilizer



- Fertilizer operations in Brazil, Argentina and the U.S.
- Joint venture with OCP in Morocco

Bunge, Food & Ingredients

Our Leading Bottled Oil Brands



→ **Floriol** in Hungary, Romania and Poland

Ideal in Russia

Kujawski and **Oliwier** in Poland

Oleina in Russia and Ukraine

Rozumnitsa in Ukraine

Unisol in Romania

Vénusz in Hungary

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Our Leading Margarine Brands

→ **Smakowita, Maslo Roslinne, Manuel and Masmix** in Poland
Deli Reform in Germany
Keiju in Finland
Benecol in Poland and in Finland
Holland Premium, Linco and Summer Light in Hungary



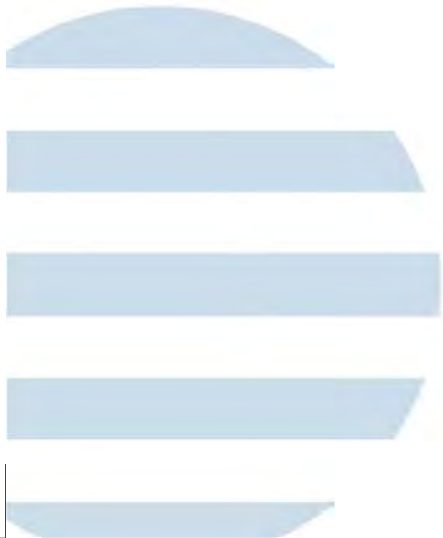
■ Production and sales
■ Export markets

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Quality and Innovation Through Sensory Excellence



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Why sensory quality is a key consumer driver ?

- Taste is one of the major motivation for consumers
- Sensory quality is much more than taste
- We need to record and minimise the variation in sensory quality resulting from variation in raw materials, factories, processes,...
- Superior sensory quality can lead to a clear competitive edge and gain market share

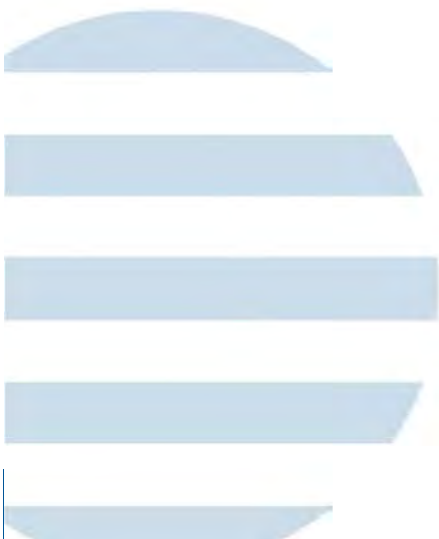


Understanding consumer needs

- We need to understand consumers and target product development to fulfill consumer needs
 - Monitoring evolution of the market and our perceived quality compared to the competition
 - Understand key quality drivers and allow to improve them
- Strong consumer trends toward value for money force to focus on precise attributes



Innovation through Sensory Excellence



Expert panel training

► Testing of senses

- To identify the suitable panelists
- To select the unsuitable persons
- To get information about the special sensitivities or weaknesses of the suitable panelists



Expert panel training

► Product specific training

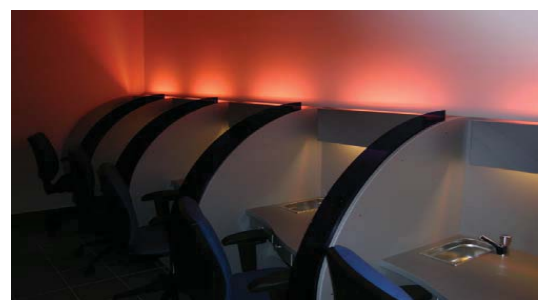
- Learning the characteristic attributes of the product
- Recognizing the off- and after flavours
- Training is done using wide variety of products from the market; own- and competitor products
- Tasting of ingredients used in product category and learning how to describe for example raw material taste



Expert panel training

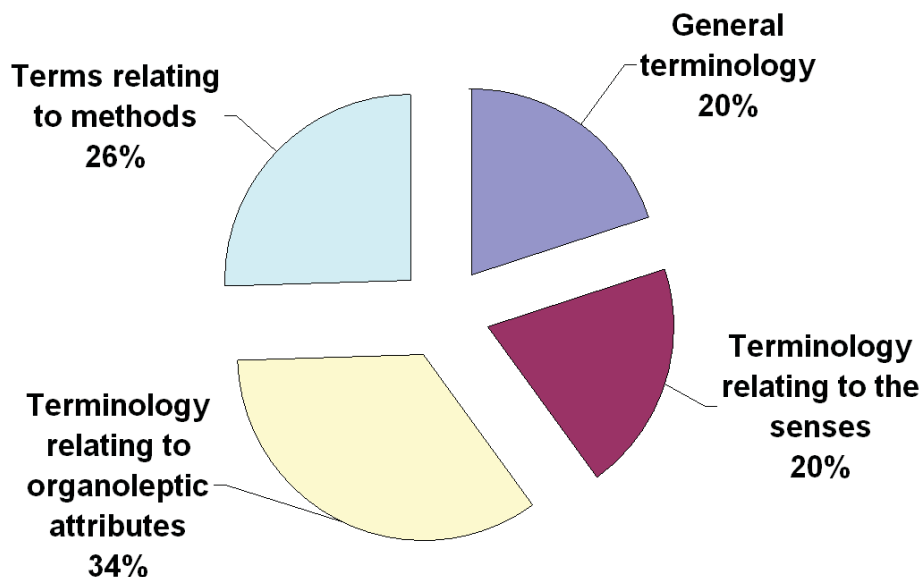
➤ Instructions on sensory methods

- To learn the own sensitivity and ability
- To get information on sensory analytical methods (e.g. profile method)
- To get information on sensory preference method



Product training

- Sensory Attributes of product category
- Definition of terms and creation of a glossary
- Selection of reference materials and comparison samples



Expert panel work

► Discrimination tests

- To check similarities or differences in samples or products (pair test, triangle test, A/notA, etc.)

► Descriptive tests

- Produce objective descriptions of the sensory characteristics of products which enables comparisons between products
- Identification, description and quantification of the sensory components of a consumer product

► Types of application

- New product development
- Monitor of competitors products
- Quality control in production
 - Outlook of packaging & product
 - Product's odour, taste and structure
 - Acceptance compared to specification

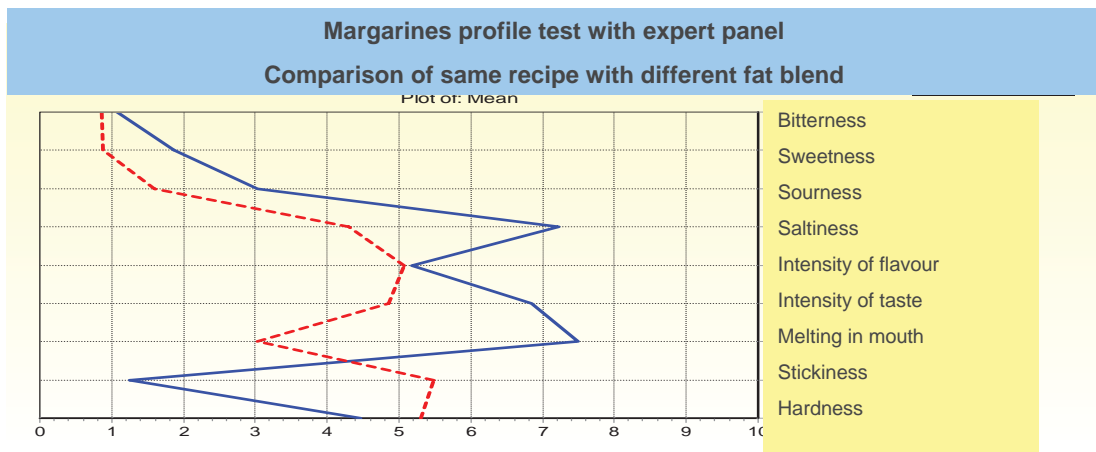
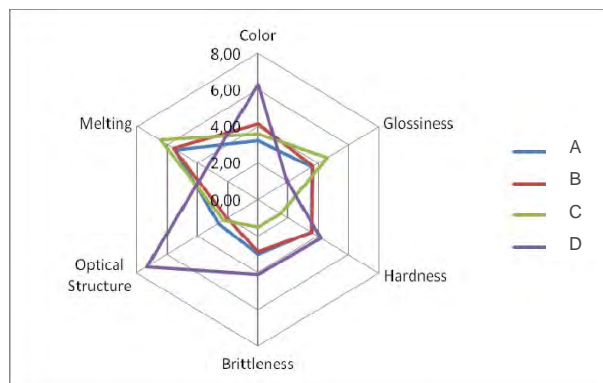
► Example: Key attributes of Margarine

- Appearance: color, glossiness
- Smell: butter, milky, yoghurt, fermented
- Taste: salty, sour, butter, milky, yoghurt, fermented
- Mouthfeel: melting
- Texture: optical structure, hardness, brittleness

Profiling

► Attributes

- Taste
- Odor
- Texture
- Vision
- ...



Physical and chemical measurements



- Attributes can be measured by physical instruments and chemical analyses
- Texture is a complex measure of resistance, penetration, elastic property, etc..
- Outlook and colour can be also measured analytically
- 'Freshness' can be measured chemically
- Analytical results are compared to sensory evaluation results

Example: Margarine

Analytical	Sensory
Solid fat content, dropping point, melting point	Melting in mouth, hardness, stickiness
Colour	Observed colour
Texture analysis, penetration	Observed structure, hardness, brittleness etc..
Peroxide value, free fatty acids	Rancid taste, old taste

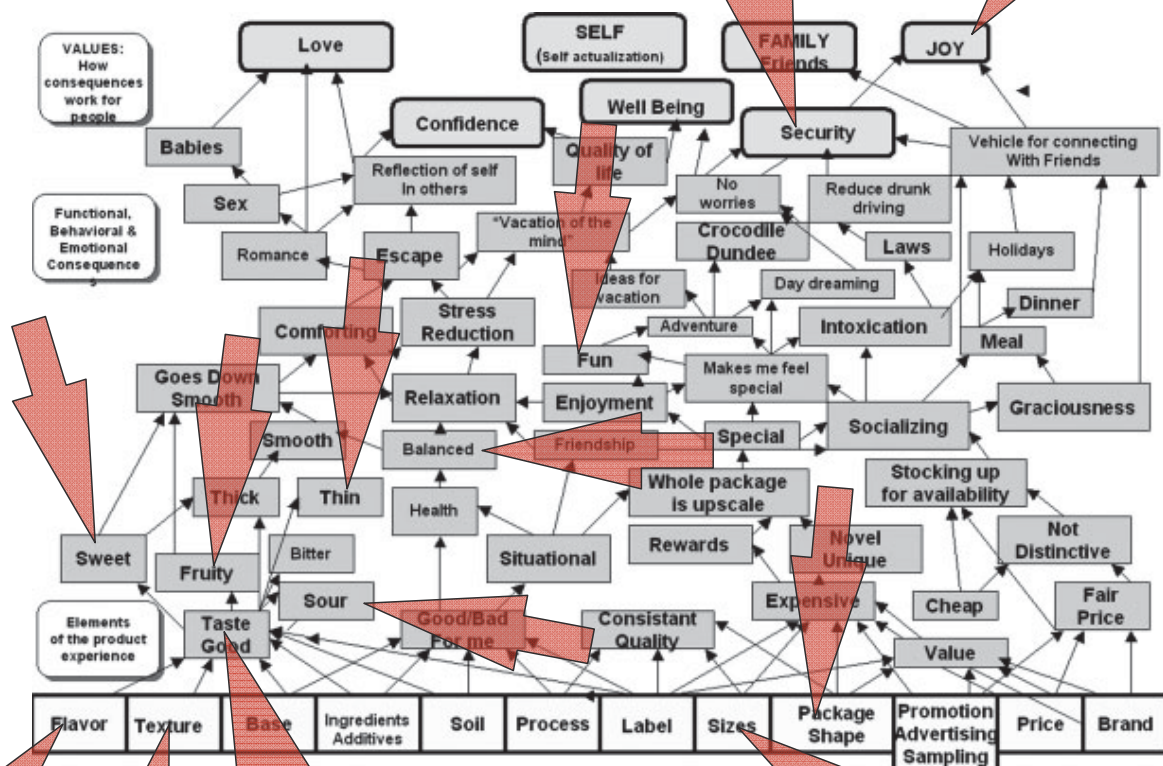
Understanding and Testing Consumer Preferences

Determinants of food choice

- **Biological;** Hunger, appetite
- **Economical,** Cost, income, availability
- **Physical;** Access / availability, cooking skills
- **Social;** Culture, family, eating habits
- **Attitude and knowledge;** Nutrition, beliefs, sustainability

Taste

How to deliver products consumers want or need



Value diagram describing the attributes of product experience, its consequences and values

(H.R.Moskowitz, Sensory and Consumer Research in Food Product Design and Development, Blackwell Publishing, 2006)

Translation of consumer needs to food product

Consumer tests analyse the appreciation of the consumer towards the appearance of the product in terms of

- Packaging, design, image, color,...
- Odor, taste, flavor, texture (when touching, when eating) and/or sound of a product
- Test organised as central location and home-use testing

➤ Blind test

- Acceptance test on sensory basis, not testing product concept
- Selection of best product/recipe
- Guidance to development for new products or change of current products

➤ Branded test

- Concept & packaging affects the result
- Previous positive or negative experience affects the result
- Important when target is to estimate overall product acceptance and consumers interest to buy the product

Translation of consumer needs to food product

Types of consumer tests

➤ Qualitative tests

- Identifying most important quality attributes
- Trained **Focus group** test gives data on important positive and undesirable characteristics of product → useful tool before Quantitative tests

➤ Quantitative tests

- Quantifying overall preference and acceptance

Focus group

Consumers trained to sensory evaluation techniques

- Ability to give detailed descriptions of products
- Gives important information for products screening before big consumer test
- Cost & result effective

Hedonic Test: Preferences

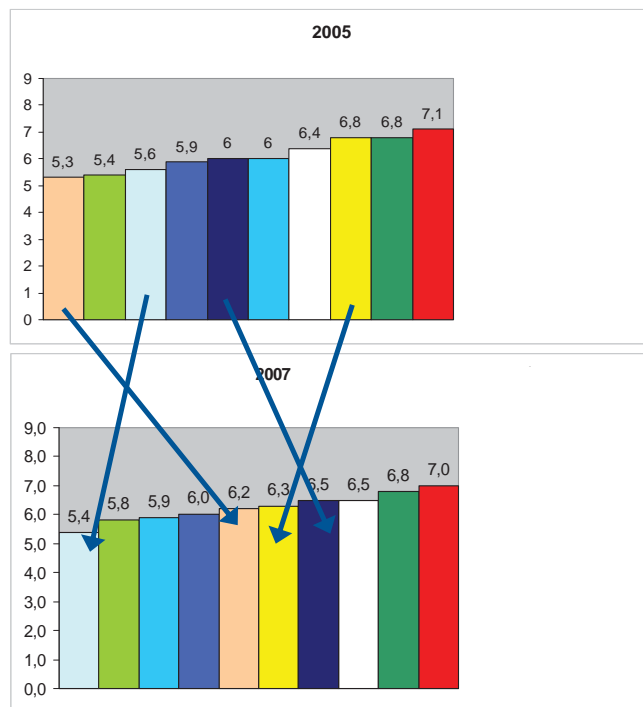
Is the product preferred ?

Here is my product positioned relative to my competitors' products?

Why is my product positioned there?

How can I reposition my existing products?

What new products should I create?



Preference mapping

Sensory evaluation

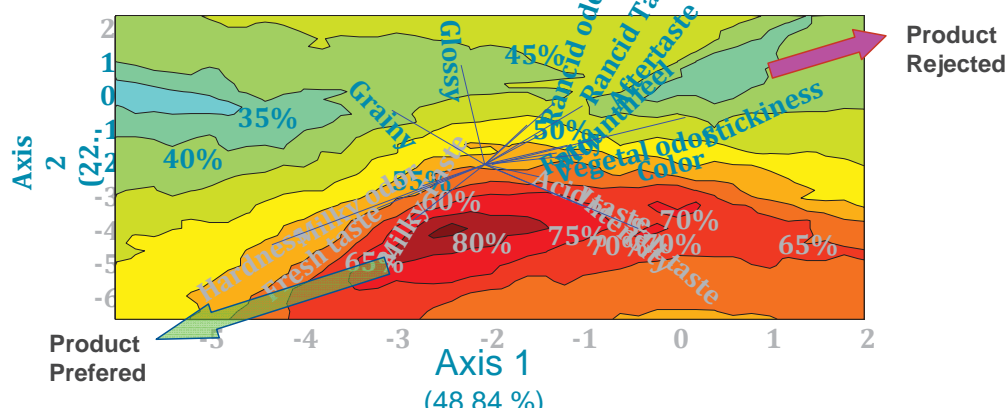
Sensory Profile
by the expert panel

Consumer test

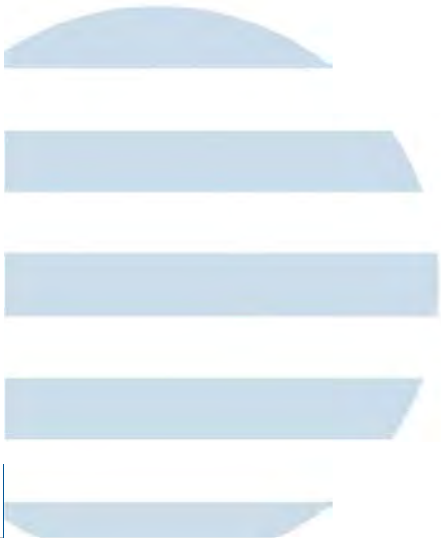


Preference mapping

Analysis based on specific regression models between the experts data and the consumers data



Product development and Innovation



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Focusing on innovation to better serve customers & consumers

► Innovation on taste

- Development of solutions that meet consumers' needs for new experiences
- Understanding consumers needs in different markets

► Innovation on health

- Healthy solutions combine functionality to care for families

► Innovation on convenience

- Packaging, portion size, easiness to use



Modification of the composition and development of technology

➤ Sensory evaluation is used in every step of product & technology development

- Selection of raw materials & ingredients
- When changing recipes or processes
 - Improvements of product
 - Checking that change does not affect product characteristics
- Actions based on consumer tests or feedback from consumers
- Consumer needs & preference change during time → need to follow



Innovation : Smakowita De Luxe

- Flavor development based on Bread
- Increase Butterlikness significantly
- Consumer Preference increases
- Communication based on the delicious fresh bread odor
- Launch in Poland Sept 2010 with great success



Taste of spread makes sense only with
Bread



Innovation : Oleina Zapashna

I like taste and smell of crude oil, and I often buy it for salads.

But I always worry for its quality and safety for health.

Oleina Zapashna

- Refined oil with addition of pressed oil; quality is guaranteed by Oleina
- Gives your salads light taste and aroma of seeds without risk for health
- Consumer Preference has raised significantly with this oil
- Oleina Zapashna has been launched in Ukraine in October 2010



Conclusion and perspective

- Sensory science allow us to characterize products and guarantee quality in production
- Preference test and preference mapping help us to understand which characteristic is driving the preference
- Taste and functionality are the most important trends in food
- This allows us to built excellent sensory property into product design
- It will allow also to create breakthrough innovation
→ All to the benefit of final consumer



Thank you



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