C&E Spring Meeting

Consumer Driven Cereal Innovation: Where Science Meets Industry

MONTPELLIER, France, May 2-4 2007

- Consumer drivers
- Challenges to the industry
- Science and Technology

www.cerealsandeurope.net  www.aaccnet.org
Dear Friends and Colleagues,

We are honoured to welcome you to this Cereals&Europe Spring 2007 meeting in Montpellier, France. It is the first European-based congress of AACC International: a congress focused on consumer needs for cereal-based products and how to best meet them via appealing innovations. Consumer needs are perhaps best summarized as the need for safe, healthy, and tasty foods: but that is easier said than done. With respect to safety, the food industry can already boast a long tradition of safeguarding an excellent reputation for cereal products. But how can one define "healthy"? How to distinguish fact from fiction? And if we can define how to best add health benefits to cereal products, we still need to please the consumer's palate. Secondly, how to manufacture these products in a safe and cost effective way? All these questions are central to the meeting. This will be a unique meeting for more than one reason: it will be the first conference AACC International has organised in Europe; it will also be a meeting, not only full of presentations and their related questions, but also of forming a common opinion: What are the key challenges that both science and industry are faced with? What are the next steps to best meet these challenges?

Cereals&Europe is the largest European organisation of R&D professionals in the cereal-based products area. In its 10 years of existence as the European Section of AACC International, it has aimed to disseminate cereal science and technology and to generate and stimulate networking within the cereal-based product R&D community in Europe. We hope that this conference is yet another opportunity to meet these goals!

We are extremely pleased with the tremendous support we have received from the French cereals community. INRA, The National Institute for Agricultural Research, has been especially involved in the organization of this meeting, because of its mission to conduct scientific research related to public health policy as well as out of its intention to support the development of the cereal sector. Arvalis-Institut du végétal, Passion Céréales, and AEMIC have all given their full support to this initiative. Major French companies as well as many others have generously sponsored this undertaking as well. A special word of thanks also goes to the EU HEALTHGRAIN project for its support. Without all this help we would never have succeeded in making this happen. Thank you! Merci!

Rob Hamer, AACC International President
Joël Abecassis, Chairman Local Organising Committee
Peter Weegels, Chairman Cereals&Europe, Chairman Programme Committee
May it be known that

Jean-Claude Autran

attended the Cereals&Europe Spring Meeting

Consumer Driven Cereal Innovation: Where Science Meets Industry

May 2-4, 2007 in Montpellier, France

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Research for the cereal industry at the Institut National de la Recherche Agronomique (INRA): Flavour, health and safety

France is the major cereals producer in Europe. It is also exporting an important quantity of its production. The cereal industry is deeply changing, facing the evolution of consumers’ behaviour, food safety and environmental concerns. Research at INRA aims to provide answers to the new consumer expectations in terms of taste, health and safety. In the field of food research, INRA employs eight hundred researchers and engineers.

The research activities at INRA cover the complete chain of the cereal sector, from breeding and sustained seed improvement, farming practices and processing techniques to the digestion and the availability of the micronutrients in the human body. Economists are contributing at all levels by providing analyses of production systems, markets and the impact of political policies. Research for the complete cereal chain is also of increasing interest within the context of organic farming and sustainable and integrated agriculture. Both will have a strong impact on the choice of varieties and crop systems. Research can provide elements of response to the hedonic, nutritional and safety expectations of the consumer by prediction of sensorial properties, bio-availability of micronutrients and reduction of allergy risks or contaminants. By encouraging soft processing technologies (new grain fractionation techniques to fully exploit the potential of cereal grain; new formulation processes to develop more efficient ways to process flour and semolina in food products) it leads to an optimized quality of *in vivo* properties of the grain in an effort to satisfy the new demands.

**Improving varieties**

INRA owns genetic resource centres that preserve the biodiversity of wheat, oat, barley sorghum and maize strains. Successive crossbreeding has lead to the selection of varieties less sensitive to diseases and pests. The selection also aims at improving the quality of the grain: texture, allergy risks and nutritional composition (fibres and micronutrient contents).

**Farming techniques**

To find answers to the growing environmental concerns, INRA's research programme conceives reverse engineering procedures to enhance the efficient use of resources and to limit inputs, as well as to develop decision support systems for farmers.

**Processing**

Wheat grain fractionation research is carried out to ensure that beneficial components are included in flours and that their bi-accessibility will be increased. Unwanted components are excluded to guarantee flour safety. Extended research efforts are directed towards dough and cereal food texture enhancing procedures to stimulate the development of new kinds of healthy and tasty foods. A lot of attention goes to the many possibilities for new uses and applications offered by cereals: sustainable and biodegradable packaging materials, lubricants, and biofuel.

**Facilitating partnership**

INRA’s many research platforms act as experimental facilities open to other academic and professional partners.

At the INRA facilities in Montpellier, the pilot plant for grain and seed fractionation is used for the transformation of cereals and, more precisely, for the fractionation of raw plant materials with low to intermediate humidity. Several pieces of equipment of different sizes (1kg to 300 kg/h) are available: conventional mills, a debranning system, an air classifier, jet milling and cryogenic milling equipment as well as other related systems (physicochemical characterization, rheology, Raman microspectroscopy, etc.)

This platform is positioned at the crossroads between experimental research know-how and transfer within an industrial setting.

At INRA in Nantes, the Biopolymers - Interactions - Structural Biology platform is devoted to biopolymer analysis, their structure and their organization at molecular and supramolecular scale. The technical resources of the facility include three different types of instruments: mass spectrometry (ESI and MALDI ionisation), nuclear magnetic resonance (solid and liquid NMR) and microscopy (transmission electron microscopy and cryomicroscopy, confocal laser scanning microscopy). Research carried out in Nantes, is dedicated to the study of proteins and polysaccharides (structure, organization and interactions) in plant organs and agricultural formulations.

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joel.abecassis@supagro.inra.fr
15.30–15.50  Structure-property relations in starch: Characterization and nutrition
Robert Gilbert—University of Queensland

15.50–16.10  Fructans in durum wheat: An opportunity for functional foods
Maria Grazia D’Egidio—CRA Roma

16.10–16.40  Coffee Break

16.40–17.00  (Bio)technical tools to tailor cereal flavour
Raija-Liisa Heiniö—VTT

Consumer Insights and Nutritional Aspects of Innovative Cereal-based Products

Physiology
Chair: Roel Vonk—University Medical Centre Groningen
Reporting: Kaisa Poutanen—VTT
17.00–17.20  In vivo digestive starch characteristics and post-prandial glucose kinetics of wholemeal wheat bread
Marion Priebe—University Medical Centre Groningen
17.20–17.40  The role of novel cellulose dietary fibres in controlling tissue lipid levels in high-fat fed hamsters
Maciej Turowski—The Dow Chemical Company
17.40–18.00  Health benefits of the functional cereal products supplemented with natural source of calcium and vitamin D
Alexey Korolev—Moscow Medical Academy

Technology Track
Better Processes for Better Nutrition
Chair: Klaus Lösche—TTZ Bremerhaven
Reporting: Roberto Ranieri—Barilla
14.30–14.50  New kneading process with oxygen-enriched water
Klaus Lösche—TTZ-Bremerhaven
14.50–15.10  Pre-fermented frozen dough. Impact of pre-fermentation on baking performance
Alain Le-Bail—ENITIAA-GEPEA
15.10–15.30  Controlling oat flake quality to meet consumer needs
Fred Gates—University of Helsinki
15.30–15.50  Technology of drinkable probiotic cereal suspensions (smoothies)
Hannu Salovaara—Avenly Oy Ltd
15.50–16.10  Development of new dry fractionation processes of wheat grain to address consumers’ demand for healthy foods and ingredients
Xavier Rouau—INRA
16.10–16.40  Coffee Break

Bioactive Ingredients
Chair: José Berrios—USDA
Reporting: Peter Ashby—Cereal Partners Worldwide
16.40–17.00  Application of extruded wheat bran for added-value bread production
Loreta Baskinsiene—Kaunas University of Technology
17.00–17.20  A new healthy and functional ingredient
Martijn Noort—TNO Quality of Life
17.20–17.40  Leveraging fibre characteristics to functionally improve food products
Rajen Mehta—SunOpta Ingredients Group
17.40–18.00  Flax: A versatile nutritional ingredient
John Smith—Quaker Tropicana Gatorade
Friday, May 4, 2007

8.00  Registration Open  Espace Antigone 2
9.00–12.30  Exhibits and Posters Viewing  Espace Antigone 2
17.00  Poster and Exhibit Take Down

Science Track  Auditorium Einstein

Cereals: Source of High Quality Nutrients

Regulation and Functional Nutrients
Chair: Robert Gilbert—University of Queensland
Reporting: Christophe Courtin—K.U.Leuven

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<tr>
<th>Time</th>
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<tr>
<td>9.00–9.20</td>
<td>Functional oat fractions for healthy and tasty products</td>
<td>Anu Kaukovirta—Norja-VTT</td>
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<td>9.20–9.40</td>
<td>Insight in the anti-staling properties of a maltogenic amylase during bread making</td>
<td>Pedro Leman—K.U.Leuven</td>
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<td>9.40–10.00</td>
<td>Insight into the impact of varying wheat flour associated xylanase levels in the arabinoxylan population in dough</td>
<td>Emmie Domez—K.U.Leuven</td>
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<td>10.00–10.20</td>
<td>Variation in rheological properties of dough enriched with untreated and treated dietary fiber-rich cereal fractions</td>
<td>Viorel Simac—Institute of Food Bioresources</td>
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<td>10.20–10.40</td>
<td>Addition of bread wheat semolina to flour leads to preservation of starch granular structure during bread making</td>
<td>Fanny Leenhardt—INRA</td>
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<td>10.40–11.10</td>
<td>Coffee Break</td>
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<td>11.10–11.30</td>
<td>How to make a healthy high fibre bread with excellent taste</td>
<td>Daan Van Haaster—WUR</td>
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<td>11.30–11.50</td>
<td>Impact of the new EU-food nutrition-health regulation on cereal R&amp;D</td>
<td>Jan Willem van der Kamp—Healthgrain</td>
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Methodology
Chair: Maria Grazia d’Egidio—CRA Roma
Reporting: Rob Hamer—WCFS

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<td>11.50–12.10</td>
<td>Rapid acoustic screening of deoxynivalenol (DON) in grain</td>
<td>Grazina Juodeikiene—Kaunas University of Technology</td>
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<td>12.10–12.30</td>
<td>Developments in the measurement of dietary fibre, available carbohydrates, and other components affecting food quality</td>
<td>Barry Mc Cleary—Megazyme International</td>
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Cereals: Source of High Quality Nutrients

Technology Track  Antigone 1

Product Quality

Product Texture and Quality
Chair: Bogdan Dobraszczuk—Reading University
Reporting: Mark Bason—Newport Scientific

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<td>Oxygreen® process, a new tool for the improvement of wheat grains and their products</td>
<td>Michel Dubois—Green Technologies</td>
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<td>9.20–9.40</td>
<td>Interfacial properties of dough liquor from lipase modified dough</td>
<td>Henrik Lundqvist—Novozyymes A/S</td>
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<td>9.40–10.00</td>
<td>Water migration and molecular mobility in baked cakes during storage: An NMR investigation</td>
<td>Flore Le Grand—Cemagref</td>
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<td>10.00–10.20</td>
<td>Impact of parboiling on the Maillard reaction in long-grain rice</td>
<td>Lieve Lamberts—K.U.Leuven</td>
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<td>10.20–10.40</td>
<td>Towards a decision support tool for French bread making: Qualitative representation and expert-system shell for mixing</td>
<td>Hubert Chiron—INRA</td>
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<td>Coffee Break</td>
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Product Quality

Shelf Life
Chair: Peter Köhler—Hans Dieter Belitz Institute
Reporting: Alain Le Bail—ENITIAA-GEPEA

11.10–11.30 Antifungal activity of sourdough and potential to reduce the level of calcium propionate in wheat bread
   Fabio Dal Bello—University College Cork
11.30–11.50 Ingredients for improving frozen bakery products—an application which meets consumer and market needs
   Inge Lise Povlsen—Danisco

Product Quality

Toxicology
Chair: Hamit Köksel—Hacettepe University
Reporting: Inge-Lise Povlsen—Danisco

11.50–12.10 Asparagine concentration and acrylamide formation potential in wheat flour as affected by sulphur fertilization
   Peter Koehler—German Research Centre for Food Chemistry
12.10–12.30 Pesticide residues in post harvest treated wheat, barley, and their products
   Umran Uygun—Hacettepe University
12.30–13.30 Lunch – Posters and Exhibits Closed
13.30–17.00 Exhibits and Posters
13.30–14.00 Special Exhibit and Poster Viewing Session

Closing Plenary Session

Auditorium Einstein

14.00–14.10 Presentation of the Puratos Great Taste and Wellness Awards,
   Selected During the C&E Spring Meeting

Invited Lectures:

14.10–14.40 Implications of the new EU legislation regarding health claims
   David Richardson—DPR Nutrition
14.40–15.10 Research policy of the EU-Commission on cereals: Potential links with nutritional and health claims
   Danièle Tissot—DG Research – European Commission
15.10–15.40 Coffee Break
15.40–17.00 Panel Discussions and Concluding Remarks
   Rob Hamer—WCFS
   Roberto Ranieri—Barilla
   Paul Colonna—INRA
   Kaisa Poutanen—VTT
   Jean-Pierre Langlois-Berthelot—Arvalis-Institut du végétal
   Peter Ashby—Cereal Partners Worldwide