

## First International Cereals Conference in Latin America

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The 1st Latin American ICC International Conference, Cereals and Cereals Products: Quality and Safety—New Challenges of World Demand, was organized by the International Association for Cereal Science and Technology (ICC) and several Argentinean organizations, including the National Institute of Agricultural Technology (INTA), the Secretariat of Agriculture, Animal Husbandry, Fisheries and Food (SAGPyA),

and Bolsa de Comercio de Rosario (BCR, Rosario Chamber of Commerce). The conference was held in the BCR Conference Center in Rosario, Argentina, September 23–26, 2007, and was co-chaired by Martha B. Cuniberti and Hilda Buck. Roberto Figueredo chaired the organizing committee and Maria Laura Seghezzo chaired the scientific committee. The technical secretariats were Nelly Salomon and Noemi Fritz.

It was the first time in history that the ICC ([www.icc.or.at](http://www.icc.or.at)) conference took place in South America, specifically Argentina, the fifth largest wheat and the second largest maize exporter in the world grain market. Cuniberti stated that Rosario, the second largest city in Argentina, was chosen as the conference site because it is a first-grade port and a point of convergence for a large quantity of goods that originate in Argentina's central and northern areas as well as in the bordering nations.

On Sunday, September 23, the ICC committee meetings (the governing, executive, and technical), the poster set-up and exhibition preparation, and the evening welcome reception were scheduled. On Monday, the conference started with the opening and welcome addresses, followed by three plenary lectures, followed by seven additional technical sessions, ending on Wednesday, September 26. Since simultaneous translators were available, oral presenters could use either English or Spanish. It was one of the most smoothly executed operations for a multilingual international cereal conference.

### Session 1: Opening Ceremony and Plenary Lectures

The opening ceremony was chaired by Marcos Pereyra Olivari (Argentina), while the plenary lectures were chaired by Roland Poms (Austria). The welcome addresses were delivered by six dignitaries, including Jorge Weskamp, president of BCR; Néstor Oliveri, director of INTA; Concha Collar, ICC president;

Martha Cuniberti, conference president; Roberto Lifschitz, mayor of Rosario; Jorge Obeid, governor of the Santa Fe Province; and Javier de Urquiza, national secretary of SAGPyA. The plenary lectures were delivered by Bill Wilson (United States), who spoke on "Procurement Strategies to Improve Quality Consistency in International Wheat Markets"; Okkyung Kim Chung (United States), who spoke on "Concerted Efforts in Cereal Grain Quality Improvement"; and Concha Collar (Spain), who spoke on "Dough Characteristics: Prediction of Quality and Stability of Wheat Products."



Dignitaries give the welcome addresses during the opening session.

### Session 2: Breeding and Cereal Quality Genetics

Session 2 was co-chaired by Domenico Lafiandra (Italy) and Laura Pflüger (Argentina) and facilitated by Javier Pena (Mexico). Gerard Branlard (France) presented the keynote speech, titled "Proteomics Analysis of Albumins and Globulins from Either Endosperm or Aleurone Layer (Identification and Chromosome Mapping)," followed by six speakers and 29 poster presentations.

This session covered studies on the importance of the proteomics approach for investigating the diversity and function of the numerous proteins expressed in protein bodies, starch granules, or kernel compartments; a tiered approach to screening germplasm in breeding programs based on physical grain, flour properties, and then subsequent steps depending on the end-product use; development of polymerase chain reaction (PCR) primers to easily screen for the *Glu-B1a1* allele in breeding populations to provide proper gluten strength in North American soft red winter (SRW) wheat for cracker (biscuit) manufacturers; the GxE interaction of industrial quality parameters in Argentine bread wheat cultivars; the approaches to increase amylose content in wheat; improving

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the protein quality of sorghum by incorporating genes coding for lysine-rich proteins, referred to as Africa biofortified sorghum or simply as super sorghum; and the progress in breeding high-quality protein (opaque-2) in Mexican corn landraces.

### Session 3: Advances in Cereal Quality Prediction

Finlay MacRitchie (USA) and Maria Ethel Sempé (Argentina) co-chaired session 3, which was facilitated by John Taylor (South Africa). Joel Abecassis (France) presented the keynote lecture, "Predicting the Milling Efficiency of Wheat Grain," followed by six speakers and 27 poster presentations. This session covered studies on predicting milling efficiency by using the relationship between the mechanical properties of the outer layers and the bran size, as well as the enrichment of flours by phytic acid in the aleurone layer, and a new mini-mill developed for the assessment of milling value; Chopin Mixolab being determined as the best evaluator for gluten and starch quality performance in dough, compared with other traditional testing instruments and the most useful information provider in a wheat-breeding program; the extensibility values from an alveograph test as the best estimator for the volume and crumb appearance of hearth bread made with Uruguay's wheat flours; a strong influence of growth-site conditions on sulfur content in grain, which was not easily counteracted by the N-S ratio-combined nutrient applications in the southwest of the Buenos Aires Province; a successful method of rice maceration with the use of 5 µg of trypsin per mg of proteins for obtaining rice starch of low protein content; the effects of high summer temperatures in Germany in 2006 on wheat flour quality with high protein content but weaker gluten; and increasingly available comprehensive Latin American data on wheat quality being complemented in national wheat quality reports.

### Session 4: Safety of Cereal Products

Session 4 was co-chaired by Marina Carcea (Italy) and Sofia Chulze (Argentina), and facilitated by Roland Poms. Jan Willem van der Kamp (the Netherlands) opened this session by presenting the keynote paper, "Optimizing Safety and Health Benefits of Bread—Hot Topics and Long-Term Issues," followed by five speakers and 24 poster presentations. This session covered initiatives for the developing world aimed at combating malnutrition, including several projects such as HARVEST PLUS by CIMMYT, HEALTHGRAIN in Europe, and the U.S.-based Institute for Grains and Health Research (IGHR), which focus at further improving and exploiting health benefits associated with whole meal-based products and ingredients; the *MoniQA* ([www.moniqa.org](http://www.moniqa.org)), EU-funded Network of Excellence, working toward harmonization of analytical methods for monitoring food quality and safety in the food supply; a leading role of ICC in addressing the safety topics on deoxinivalenol (DON), acrylamide, etc., by initiating and coordinating *MoniQA* with partners and associated partners from all over the world; the necessity of an integrated, national program for prevention and control of mycotoxins in the food and feed chains; a need of communication in the field of cereal safety, e.g., mycotoxins—one example coming from the Ibero-American network, initiated by the University of Valencia and National University of La Plata in 2006; the effect of growing conditions including tillage prior to planting on the occurrence and amount of mycotoxins that accumulate on grains; and the protection of maize grains from contamination with *Fusarium* fungi with biological control agents such as bacteria.

### Session 5: End-Use Quality and International Markets

Roberto Garcia (Argentina) chaired and Bob Cracknell (Australia) facilitated session 5. The session started with Mohan Kohli (Mexico), the keynote speaker, presenting a paper titled "Quality in

the Wheat Market: Abstract Definitions vs. Specific Necessities," followed by five speakers and six poster presentations. This session covered subjects on the difficulty of meeting buyers' demands at the international wheat market—since wheat classification or grading systems in the major exporting countries mean little for those interested in identifying characteristics for specific end-uses in the importing countries, it is urgently needed to develop and classify varieties according to end-product utility; Austria's place in leading the way in organic cereal grain production in Europe with 10% of total production for wheat and 25% for rye production in organic farming; the improvement of the thermal properties of cornstarch by the environmental and cropping conditions to help obtain better kernels for the corn-flake industry in Argentina; the Chilean study of flour millers' choices for their wheat quality standards being wet gluten content and alveograph W values; and the solvent retention capacity method being a useful means for predicting bread and cookie baking quality.

### Session 6: New Evaluation Technologies

Session 6 was co-chaired by Okkyung Kim Chung and Maria Laura Seghezzeo (Argentina), and facilitated by Arnaud Dubat (France). Phil Williams (Canada) presented a keynote paper titled "Applications of Electronic Instrumentation in Grain Management and Marketing," followed by five speakers and nine poster presentations. The session was opened by Williams, who introduced the concept of grain grading and pricing grains on the basis of their functionality, where functionality means end-use potential and is



Martha Cuniberti (left), conference president, receives an appreciation certificate from Roland Poms (right), ICC secretariat general, at the gala dinner.



Jan Willem van der Kamp, from the Netherlands, plays violin at the gala dinner.



based on the composition and texture (hardness or softness) of the grain, rather than the external appearance. Advances in the use of electronics have resulted in a generation of instruments that make grain evaluation on the basis of functionality feasible, including the DuPont Accrum digital imaging instrument, the Perten Single Kernel Characterization System, near-infrared reflectance and transmittance spectroscopy (NIRS), NIRS discriminant analysis, and FT-NIR interferometer. Other presentations included the new AOAC approved method for gliadin identification through an enzyme-linked immunosorbent assay (ELISA) kit; determination of protein digestibility in vitro in small samples of sorghum; an interesting ultrasound prototype for estimating dough properties on-line in the cake industry; the use of the alveographic technique for evaluating the rheological characteristics of semolina from durum wheat in Argentina; and the investigation of the effects of the process conditions on the final quality characteristics and texture of cooked pasta.

### Session 7: Cereals' Health Benefits

Alberto León (Argentina) and Ximena Lopez (Chile) co-chaired and Helmut Glattes (Austria) facilitated session 7. The keynote lecture, "Cereals and Health Worldwide: Adapting Cereals to the Social Requirements," was delivered by Cristina Rosell (Spain), followed by five speakers and 21 poster presentations. The session started with a presentation on the three different functions of cereals: cereals as staple food; cereals as carriers of micronutrients; and cereals tailored for specific targeted groups. Van der Kamp reported on the €16 million HEALTHGRAIN project (FOOD-CT-2005-514008), financially supported by the European Commission, aimed at improving well-being and reducing the risk of metabolic syndrome-related diseases, such as heart diseases, obesity, and type 2 diabetes, in Europe by increasing the intake of protective compounds in whole grains or their fractions. Other presentations included studies on the nutritional improvement of bread rolls, marraqueta type in Chile, by using flours containing subproducts from wheat milling plus a commercial concentrate dietary fiber to produce a bread roll with a 25% reduction of calories, a 150% increase in dietary fiber content, and a 50% reduction in sodium level; antioxidant activity and anthocyanin content of nixtamalized flours of blue maize; the effect of fungal phytase addition on the phytate degradation of whole wheat dough; and a comparison between specialty cereals (wheat, purple wheat, einkorn wheat, emmer wheat, and barley) and pseudo-cereals (amaranth, quinoa, and buckwheat) regarding its health-promoting compounds.

### Session 8: New Trends in Cereal Products

Session 8 was co-chaired by José Robutti (Argentina) and Liliana Wehrhahne (Argentina) and facilitated by Sergio Serna Saldivar (Mexico). As the session keynote speaker, Alicia de Francisco (Brazil) presented a talk titled "From Field to Fork," followed by five speakers and 20 poster presentations. The session was opened with the new trends in cereal utilization, including whole-grains, pseudo cereals and related products, low-glycemic index (GI) foods, functional ingredients such as fibers, beta-glucans, resistant starch, and antioxidants, and industrial non-food related uses such as films and alcohol production. Other studies reported on the characterization of amaranth protein concentrates, specifically the amount of phenolic compound, altered by amaranth species and also extraction process; iron-fortified sorghum noodles by addition of white beans to sorghum flour; the improvement of the nutritional value of breads by enriching dough with different particle sizes of nuts (almond, hazelnut, peanut, and walnut); the freezing rates of two freezing systems and their effects on frozen bread-dough quality; and the additives in dough to alleviate variations in wheat dough quality caused by genetic, environmental, and GxE.

### Conference Gala Dinner

This elegant evening event was held at the beautiful Center Hall of BCR. There were several official ceremonies, including the presentation of appreciation plaques to several organizing and technical committees and individuals who greatly contributed to the conference. In addition, the ICC academy awarded Fellow certificates to: Okkyung Kim Chung, Robert Cracknell, Martha Cuniberti (Argentina), Helmut Glattes, and Jan Willem van der Kamp. The formal dinner party was accompanied with a memorable evening of festivities. Romantic and passionate tango dancers and a singer were the highlight of the evening's entertainment, with our own participants dancing, violin-playing, and of course visiting with one another.

### Post-Conference Technical Tour

There was an organized technical tour on Thursday, September 27, which consisted of a guided visit to the Rosario Harbor Elevators and Puerto San Martin, the region known as Up River, by the *Ciudad de Rosario* ship. During the last 20 years, this port, which sits on the banks of the Parana River, has been developed to be the most important in the country, exporting 60% of the grains (cereals, oilseeds), 86% of the oils, and 93% of the sub-products, including protein meals, and specialty food ingredients, such as malt and maize for corn flakes, for a total of 49 million tons per year. During the trip, conference participants passed by one of the major facilities in the port, Terminal VI, and the modern crushing plant for soybeans of the leading firm Cargill at Puerto San Martin, according to Seghezze. The roasted pig lunch served on the ship during the tour was enjoyed by all the participants with huge appetites.

The 1st Latin American ICC International Cereal Conference was a great success, with 430 participants from nearly 30 coun-



The roasted pig to be served at the participants' lunch at the post-convention technical tour. The photo shows five serving staff, Martha Cuniberti (second from right), and Okkyung Chung (right).

tries and six continents. Participants were extremely enthusiastic with the technical programs, including the 47 oral and 140 poster presentations, ICC Corporate Member Session, and the exhibits by 20 sponsors. In addition to the program book and abstract book, the proceedings were published in a CD-ROM version prior to the conference for distribution to the conference participants. The ICC Latin America Region is already planning the second conference, to be held in Chile in a few years. Hopefully many AACC International members will be able to attend it.

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