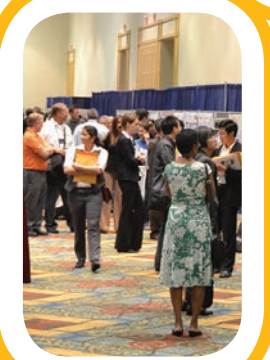
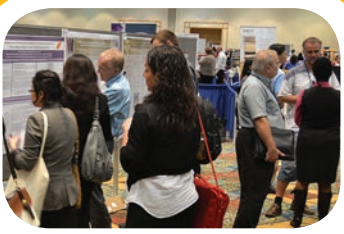


2012: A Year of Innovation



Persistent and Focused on Science

Steven C. Nelson, Executive Vice President AACCI International



When it comes to staying wisely and fruitfully on course leadership makes all the difference. AACCI has been blessed with a legacy of smart and savvy leaders, and this year was no exception. Like travelers exploring unknown territory, organizations and associations rely on navigational systems to guide them; ours come in the form of vision and mission statements, scientific priorities, and strategic imperatives. Each is designed to prevent us from inadvertently wandering down a dead-end road. As a dynamic organization, our vitality lies in our ability to engage our diverse members and innovate as the needs of our members change. We accomplished much in 2012 and our committees and action groups are in high gear! As we take stock of where we are and where we're heading, we can see that we are on track and on course—driven and united in our desire to see AACCI continue to grow and flourish.

Vision

To be the global scientific association for cereal grain science.

Mission

To advance the knowledge and understanding of cereal grain science through research leadership, education, superior technical service, and advocacy.

2012 Activities and Ongoing Strategic Imperatives

1. Generate and disseminate the highest quality science and information on cereal grains and their products

- *Cereal Chemistry* editor-in-chief transition underway; new scope developed; page charges discontinued; and first focus issue in progress
- Annual meeting program focus on scientific initiatives
- USDA-NIFA interactions facilitated at annual meeting
- Hot topic session Arsenic in Grains and Food added to annual meeting program in response to news and media coverage
- Mobile application for accessing annual meeting abstracts and program enhanced
- Additional capabilities for electronic applications in review

2. Drive scientific communication, collaboration, and innovation

- 2012–2013 AACCI science priorities determined and process of aligning member knowledge, resources, and talent to address specific action items is underway; communications plan for disseminating information resulting from these action items in development
- Ongoing communication with academic partners

- White paper on benefits of grain consumption in progress
- Industry Executive Forum memberships being formally developed (General Mills, ADM, and Bay State Milling have signed on)
- AACCI President Debi Rogers traveled to China to develop and encourage scientific collaborations; 23 scientists from China attended the annual meeting; and there is interest in an AACCI-sponsored meeting in China in 2013

3. Facilitate the interface of the many disciplines involved in cereal and grain science

- AACCI currently serving as an “umbrella” organization for the Pacific Northwest Wheat Quality Council
- AACCI working to coordinate technical committee, division, and program committee efforts to increase collaboration
- AACCI identifying specialized scientific organizations for partnership opportunities (e.g., USA Rice, Wheat Foods Council, Wheat Industry Biotech Council)
- AACCI working with Coalition for a Sustainable Agricultural Workforce (CSAW) on development and dissemination of workforce planning and development census

4. Provide professional development opportunities

- More than 70 students received travel awards from the Manhattan Section with funding support from donors
- An AACCI Foundation Warthesen Webinar Series for young professionals is in development
- Creation of an AACCI Job Center targeting positions specific to cereal science community completed
- Mentorship program refocused to include Speed Mentoring event at the annual meeting
- Two premeeting workshops held: Recent Developments on Gluten Detection in Foods and Beverages and Rice Quality Issues: Chalk and Fissure Standardization and Measurement

5. Ensure a vital organization

- Staff transition plan, including development, training, and recruitment is being executed
- AACCI continues to focus on growing revenue programs and enhancing membership value
- AACCI continues to look for opportunities to create greater awareness of the association, including publication of the recent article “*Wheat Belly—An Analysis of Selected Statements and Basic Theses from the Book*,” published in the July-August issue of *Cereal Foods World*
- A public policy plan for AACCI is under consideration

Treasurer's Report for AACC International FY2012

Laura M. Hansen, AACC International Treasurer



To remain strong and vital AACCI must continue to invest in initiatives designed to enhance member value and increase revenue. The fiscal year ending March 31, 2012, was an investment year for AACCI with the implementation of several new and enhanced products and services.

The new AACCI *net* was launched in April with an entirely new platform that offers added features while providing a more cost-effective way to update and expand the site in the future. Several enhancements to the AACCI online *Methods of Analysis*, including videos, calculators, and other tools, were added this year. Improvements to the AACCI Check Sample Program, including expanded sample services and ISO Certification, were also undertaken.

CFW Plexus, AACCI's new online resource, was launched in 2012. *CFW Plexus* features original research and spotlights on topics of interest to the cereal grain science community with content that is sourced from across AACCI and delivered in a variety of formats, including webcasts. AACCI PRESS also expanded its publications to include online and e-book technology, resulting

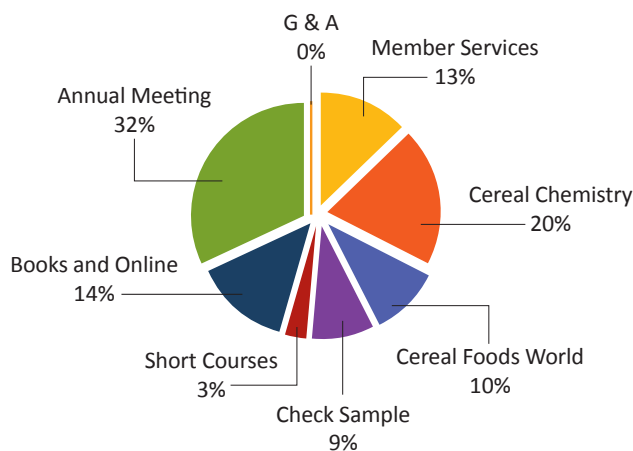
in the publication of an e-book version of *Principles of Cereal Science and Technology* and the online availability of the entire Eagan Press Handbook Series.

For the year ending March 31, 2012, operating expenses exceeded operating revenues, resulting in a \$164,000 net loss. This was \$201,000 less than budgeted and \$355,000 less than the prior year. Operating expenses were \$103,000 under budget but \$355,000 more than the previous year due to the product and service investments outlined above. Operating revenues of \$2.4 million were \$304,000 under budget and \$41,000 less than the prior year.

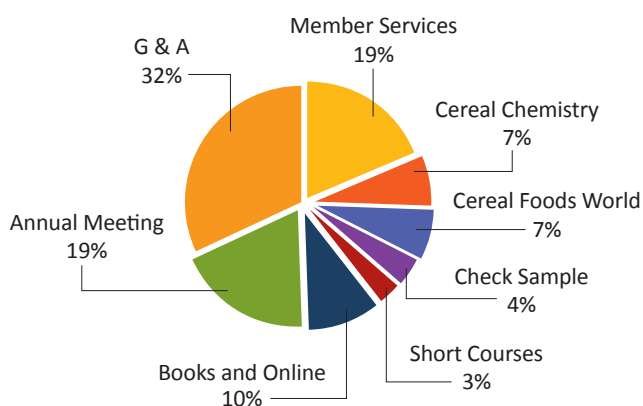
With the completion of these technology investments and product and service enhancements, we anticipate movement toward a more normal revenue outlook for 2013.

I would like to take this opportunity to thank my fellow Finance Committee members Debi Rogers, Arthur Bettge, David Hahn, and Rodney Booth for their hard work this past year. It has been an honor to serve you as Treasurer.

Income



Expenses



Action and Advocacy

"In a world with an ever-increasing population in need of healthy, sustainably produced food, the work we do has never been more important."

– Debi Rogers, AACCI President
Annual Meeting Opening General Session and Awards Ceremony

The AACCI Scientific Advisory Panel has been gathering input from AACCI academic and industry partners and working with AACCI leaders to identify the key issues in which the association has a critical role to play. The result is a list of opportunities and action items that are multidisciplinary in nature and encompass a cross-section of the expertise and specialized knowledge represented by association members. Work has been done on some of the opportunity items, while for others the work is just getting underway.

Opportunity 1: Unifying the Grain Health Benefits Message

Why It's Important

Messages to consumers regarding the health benefits of grain consumption are not always consistent or based on sound science. The industry needs to better leverage partnerships across companies and science-based organizations to ensure consumers receive accurate information.

What AACCI Is Doing to Address the Issue

As the resource on the status of the science on the healthfulness of cereal products and a neutral science partner that can facilitate research cooperation with defined goals, AACCI will develop a base of information on the health benefits associated with grain consumption. Action items:

- Develop an architecture for a database of information on the health benefits of grains and grain-based products.
- Describe the health benefits and characterize the whole grain requirements for each cereal grain type.
- Identify the scientific gaps and develop strategies to address gaps in the science and move research forward.

Opportunity 2: Raising the Profile of Food Processing

Why It's Important

Currently the messages communicated to consumers regarding processed foods are not based on sound science and are often conflicting. There is a general lack of understanding of the value that the agricultural complex has brought to the consumer and the environment (affordable foods, sustainable practices, and safe foods).

What AACCI Is Doing to Address the Issue

AACCI will communicate scientific and technical information documenting the benefits of processing grains and grain-based food products, with emphasis on health and nutrition, sustainability, economics, and safety. Action items:

- Provide information on the benefits of processing related to grains: sustainability, less post-harvest loss, more affordable foods, health and nutrition, sustainability, and safety.
- Develop a white paper including a review of key historical advances.

Opportunity 3: Ensuring Food Safety Worldwide

Why It's Important

The grain industry does not fully leverage the food safety benefits of processing advances. In addition, because the measurement methodology of specific contaminants has improved the science and processes utilized by industry and regulatory bodies need to advance and be broadly accepted. Globally agreed on threshold levels need to be determined and sound, credible information on exposure and tolerance needs to be utilized by government agencies and communicated to the public.

What AACCI Is Doing to Address the Issue

AACCI will develop and distribute informational resources on issues related to the safety of grains and grain-based food products, such as reducing contamination and improving traceability. Action items:

- The Food Safety Systems Task Force will develop strategies to address traceability from the seed to the consumer. A task force will be named to develop a supplier quality manual, and a task force will be named to develop guidance documents on environmental monitoring programs.
- Work with the Methods for Grain & Flour Testing Technical Committee on standard methodology for detection of contaminants related to grains. Rapid detection methods are needed.

Opportunity 4:

Advancing Production and Sustainability to Meet the World's Food Needs

Why It's Important

In general, the benefits of agriculture are not communicated to consumers. Also, to continue the advances made in sustainability, more disease and drought resistant cultivars need to be developed. Breeding work needs to be done in the area of specific traits and nutrients for the benefit of consumers. However, with the advances made, research on any liability associated with GM/non-GM (e.g., high-amylase corn) products, screening, and validating that breeding for positive traits does not create negative secondary consequences, as well as general risk assessments of mass production of certain grain cultivars, should be performed.

What AACCI Is Doing to Address the Issue

To provide scientific knowledge on sustainable agriculture, in particular information on matching production to the world's food needs, AACCI will summarize the current state of biotechnology and define best practices and due diligence models that also consider secondary consequences. Action items:

- Form an interdisciplinary task force to identify ideal cultivars or benefits that could be improved (e.g., global consistency) and assess the benefits to consumers and growers and move forward from there.
- Develop a position paper on AACCI's views on biotechnology traits.
- Plan a roundtable meeting with key life science companies and the AACCI Industry Executive Forum.
- Plan a meeting on Grain Cultivars for the Future across disciplines such as plant pathology, agronomy, breeding, and food/cereal science. The intent of the meeting is to determine future opportunities.

Opportunity 5:

Sharing Our Science and Advocating for More

Why It's Important

AACCI members generate sound science, and AACCI has the ability to compile papers and products based on this science. AACCI task forces, ad hoc committees, and roundtables have the capacity to generate information on the gaps in our current scientific knowledge. AACCI needs to develop a comprehensive strategy to communicate this information to our members, interested groups, and consumers.

What AACCI Is Doing to Address the Issue

As a proponent for science-based decision making, AACCI will be a scientific resource and partner for advocacy groups and other professions. Action items:

- Develop a strategy to supply information/access to advocacy groups.
- Assess AACCI's potential role in public policy efforts as a scientific resource and develop a related strategy.

Lend Your Expertise to One of These Efforts

Join us in implementing these key action items. Contact one of these members.

Unifying the Health Benefits Message



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Raising the Profile of Food Processing



Girish Ganjyal
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Ensuring Food Safety Worldwide



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Advancing Production and Sustainability to Meet the World's Food Needs



Anne Bridges
E-mail: annebridges001@earthlink.net

Sharing Our Science and Advocating for More



David Hahn
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Whole Grains Working Group: The Challenge in Defining Whole Grain Foods

Led by Julie Miller Jones, the Whole Grain Working Group (WGWG) was formed to address science-based issues related to whole grains and whole grain products. This year the group focused its efforts on defining whole grain foods so consumers are able to recognize and select whole grain foods to meet dietary guidance. A unified definition would also level the playing field across the food industry, enabling uniform messaging around whole grain foods.

To date the WGWG has agreed that in order to be called a whole grain food, the food must contain 8 g of whole grain per 30 g serving and that whole grain must be present in amounts equal to or greater than refined grain. Concerns have been identified regarding the unintended consequences of some wordings. For example, some wordings may exclude some whole grain foods that also contain bran—solely because they include bran (a cereal grain component) rather than noncereal grain ingredients such as soy, inulin, or flax. It was also agreed that a definition should not give foods with large serving sizes an advantage or penalize those with small serving sizes.

The WGWG presented four options online and invited comments and considerations during and following the 2012 annual meeting. The compiled comments and input will be evaluated by the WGWG before it makes its final recommendation to the AACCI Board of Directors.

Scientific Advisory Panel: Identifying Key Issues and Trends Involving Cereal Grains

The charter of the AACCI Scientific Advisory Panel (SAP) is to identify and monitor scientific and public interest in issues facing cereal and cereal-related industries worldwide, make recommendations to the AACCI Board of Directors or other groups concerning any response by AACCI, and otherwise strengthen the scientific stature of the association. After consolidating issues from last year's database, eliminating some low-priority items, and adding new items identified in surveys of the membership, SAP compiled a list of 79 scientific issues and trends for 2012. The issues and trends were rated by SAP members for societal relevance, quality of existing science, and quantity of existing science. The ratings were used to prioritize the issues and trends using societal relevance as the primary criteria, followed by quality and then quantity of existing science. The entire database can be viewed on [AACCI.net](#).

On May 18, 2012, SAP Co-chairs Bill Atwell and Christophe Courtin presented the SAP recommendations for action on the top 20 issues to the AACCI Board of Directors:

1. Feeding the World – Increasing Grain Yield and/or Production, Quality/Availability of Farmland (in an international context)
2. Linking Research and Health Claims, Substantiation of Health Claims, Science Behind Health Benefits, Conflicts in Health-Related Science, Lack of Universal Regulations
3. Food Safety – Microbiological Risk Management

4. School Nutrition – Meeting Guidelines, More Whole Grain-Based Foods
5. Food Safety in Global Markets (i.e., adulteration of imported commodities), Safety of Cereal-Based Products
6. Sustainability and Global Warming – Effects on Cereal Crops, Impact of Climate Change, and Issues for Food Security
7. Obesity – Childhood Obesity, Delivering Less Calorie-Dense Foods, and Reduce Calorie Absorption
8. Allergens – Increased Prevalence of Gluten-Based Allergenic Peptides in the Diet
9. Future Cereals Industry Workforce – Not Enough Young People Entering Our Field, Training New Scientists and Technicians in Cereal Science
10. Product Development – Gluten-free Product Development, Use of Transglutaminase
11. Enhancing Grains – Breeding Cereals for Nutrition and Medicinal Properties Versus Yield, Importance of Micronutrients
12. Allergens – Cross-contact in Production and Supply Chain
13. Food Versus Fuel – Ethanol from Cellulose
14. Less Funding for Innovation and Research
15. Consumer Perception – Resistance to GMO
16. Product Development – Whole Grain and High-Fiber Product Development
17. Sustainability – Breeding and Use of Perennial Grasses/Grains
18. Nutrition Claims – Sodium Reduction
19. Toxins – Organic Contaminants (e.g., mycotoxins)
20. Enhancing Grains – Genetics, Genomics for QTL Mapping for Quality Traits, and Identifying Genetic Basis for Quality Traits

The highest priority issues may warrant the most attention, but all issues in the database are important to some segment of our members. The compiled database is a good resource for several committees and groups within AACCI to help shape the annual meeting program and publication efforts, as well as other products and services.

Several sessions at the 2012 annual meeting featured topics related to these top issues and trends, including recent studies on the health benefits of cereals, opportunities and challenges of gluten-free product development, issues faced by new professionals transitioning from school, and implications of salt reduction for baked products. Similarly, *Cereal Foods World* has included articles on food safety issues, the global availability of carbohydrate sources, innovations that support dietary guidelines, and issues in the development of whole grain and high-fiber products. AACCI has continued to support the Coalition of Sustainable Agricultural Workforce program to attract students and train them in the agricultural sciences.

SAP held its meeting during the AACCI Annual Meeting in Hollywood, FL, and finalized its plans for gathering input, updating the timetable, and prioritizing the top issues for 2013. A survey will be sent out to members at the end of 2012, and results will be compiled by mid-January. If you would like to provide additional feedback or input, please forward your comments or suggestions to Jody Grider (jgrider@scisoc.org) by January 13, 2013.

Technical Committee Activities

AACCI's 21 technical committees work to create and validate new methods, develop and produce enhancements that help in the execution of existing methods, organize symposia and science cafes at the annual meeting, and assist in the organization of workshops.

New Methods Completed in 2012

AACCI 32-50.01 Insoluble, Soluble, and Total Dietary Fiber (Codex Definition) by an Enzymatic-Gravimetric Method and Liquid Chromatography

AACCI 10-12.01 Guidelines for Scoring Experimental Bread

AACCI 56-36.01 Firmness of Cooked Pulses

AACCI 14-60.01 Total Carotenoid Content of Cereal Grains and Flours

AACCI 38-50.01 Intact Gluten by Sandwich ELISA

AACCI 38-55.01 Gluten in Fermented Cereal-Based Products by Competitive ELISA

Method Enhancements Completed in 2012

Firmness of Cooked Pulses – PowerPoint Enhancement for AACCI Method 56-36.01

Pre-Annual Meeting Workshops

- Rice Quality Issues: Chalk and Fissure Standardization and Measurement pre-annual meeting workshop
- Recent Developments on Gluten Detection in Foods & Beverages pre-annual meeting workshop

New Committee Chairs in 2012

- Simon Penson, Methods for Grain and Flour Testing Technical Committee
- Tom McKamey, Check Sample Technical Committee
- Mark Bason, Rice Milling & Quality Technical Committee

NIR Committee Name Change

A new name for the current Near Infrared Analysis Technical Committee was proposed and approved. The committee name has been changed to: Spectroscopic Methods Technical Committee

Biotechnology Methods Committee Name Change

A new name for the current Biotechnology Committee was proposed and approved. The committee name has been changed to Molecular Biomarkers for Grain.

Section and Division Activities

The **Cereals&Europe Section** held the 11th European Young Cereal Scientists and Technologist Workshop May 9–11, 2012, at the Universitat Autònoma de Barcelona, UAB, in Spain.

The **Cincinnati Section** held its Winter/Spring meeting in conjunction with the Wheat Quality Council meeting in Kansas City, MO, in February 2012. The Fall meeting was held October 30, 2012, during the AACCI Annual Meeting.

The **Carbohydrate Division** business meeting was held October 1, 2012, during the AACCI Annual Meeting.

The **Downunder Section** held a meeting during the AACCI Annual Meeting. Simon Penson (Campden BRI, UK) served as guest speaker.

The **Education Division** participated in the AACCI Young Scientist Award and Best Student Paper Award and co-sponsored the Speed Mentoring Social at the 2012 AACCI Annual Meeting.

The **Milling & Baking Division** held its Spring Technical Conference in San Diego in May 2012 with close to 50 attendees. The division also awarded two scholarships for the 2012–2013 school year. The George K. Minor Undergraduate Scholarship was awarded to Juhui Jeong (Kansas State University). The M. Rella Dwyer Graduate Fellowship was given to Tom Jondiko (Texas A&M University).

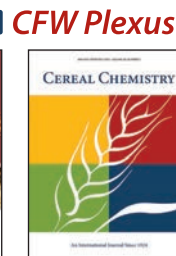
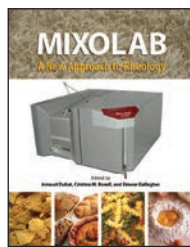
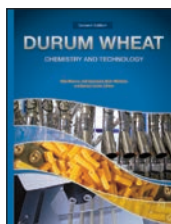
The **Northern California Section** participated in the San Francisco Bay Area Science Fair in March 2012 and issued awards for outstanding cereal science-related exhibits. Sophie R. Epstein (grade 11, Redwood High School, Larkspur, CA) received an award for “The Effect of Baking Ingredients on Cookie Texture,” Katherine R. Miclau (grade 8, French American International School, San Francisco, CA) received an award for “Temperatures Effect on Egg Whites Volume and Stability,” and Alec R. Thilmony (grade 7, Portola Middle School, El Cerrito, CA) received an award for “Yeast Grows the Most in Sugar Water.”

The **Northwest Section** held several meetings throughout the year, including the Northwest Section William F. Geddes Memorial Lectureship, which was presented to Col. David Schnakenburg, on May 4, 2012. Col. Schnakenburg delivered the address “Military Nutrition: Past, Present, and Future” to an audience of academic and industry professionals.

The **Nutrition Division** sponsored the following sessions at the 2012 AACCI Annual Meeting: Formulating Grain-Based Food for Glucose Control; Gluten Free: Opportunities and Challenges Across the Supply Chain; Whole Grains: Where Are We and Where Are We Going?; Leveraging innovation, Cost Management, and Sustainability for Profitability; and The New Generation of Professionals: Opportunities and Challenges in Transitioning from School to Work.

The **Protein Division** presented a travel award to the 2012 AACCI Annual Meeting to Hyma Gajula (Kansas State University) along with an award for the best protein chemistry paper presented by a student at the AACCI Annual Meeting. The division also sponsored the symposium Protein Quality in Product Development: Regulatory Considerations.

The **Student Division** hosted the Product Development Competition during the 2012 AACCI Annual Meeting. This year's winning entry was the UnBeetable Burger by Ohio State University.



New AACCI Website

Launched in April 2012, the new AACCI website is one of the most significant technological undertakings ever initiated by AACCI. The new site includes tools and features that make it possible to aggregate cereal grain science knowledge online and to provide opportunities for interaction and outreach within the cereal grain science community.

New Books, Online Books, and E-Books

Publishing key references in cereal grain science is the hallmark of AACCI International PRESS. *Durum Wheat: Chemistry and Technology, Second Edition*, edited by Michael J. Sissons, Marina Carcea, Brian Marchylo, and Joel Abecassis, is the most extensive and comprehensive reference on durum wheat chemistry and technology available. This ambitious update to the first edition covers more diverse and interesting topics in a new expanded format with 46 contributors who are each highly experienced and recognized as authorities on durum wheat.

Quality handbooks are a key component of AACCI International PRESS's publication efforts, and *Mixolab: A New Approach to Rheology*, edited by Arnaud Dubat, Cristina M. Rosell, and Eimear Gallagher, is no exception. Operators, breeders, millers, researchers, formulators, and bakers will find answers to their questions, along with guidelines for maximizing the use of the Mixolab for various applications, research, and production.

Atlas of Stored-Product Insects and Mites, by David W. Hagstrum, Tomasz Klejdysz, Bhadriraju Subramanyam, and Jan Nawrot, includes the most comprehensive collection of stored-product insect pictures ever published. Common names, taxonomic classifications, geographical distributions, and facilities and commodities infested are included for each of the insect species described.

The entire AACCI International PRESS Handbook series is now available online. *Principles of Cereal Science and Technology* is an e-book option for students for the coming semester, with additional e-books for mobile devices also underway.

More Opportunities to Publish Original Research

This past year saw the implementation of AACCI's new publications strategy with the addition of *CFW Plexus* and the continuation of the higher acceptance standards for *Cereal Chemistry* that were originally developed in 2011. Closing in on Structure-Function Relationships is a topic area that will be an ongoing series of *Cereal Chemistry* focus issues. The transition from current *Cereal Chemistry* Editor-in-Chief Carl Hoseney (who is retiring at the end of the year) to incoming Editor-in-Chief Craig Morris is also underway. Craig will oversee several changes to the journal, including an expanded scope and the elimination of the traditional page-charge structure.

Cereal Chemistry

No page charges, rising impact factor, and expanded scope

New Features

- Elimination of page charges with an all-time high ISI Impact Factor
- Expanded scope includes high-quality research papers on the underlying genetic mechanisms of grain composition, processing and utilization of grains, oilseeds, and specialty crops
- Papers related to grains and their relationships to human and animal health or nutrition

CFW Plexus

No page charges and a variety of publication formats

CFW Plexus is an online informational resource that publishes original peer-reviewed research articles of an applied nature in food chemistry, nutrition, processing, regulatory, product development, quality assurance, analytical procedures, food safety, and other technical areas.

Special Features

- There are no page charges associated with publishing in *CFW Plexus*
- A variety of publication formats are available for new scientific and technical content, ranging from original peer-reviewed research papers to webcasts
- Original research published in *CFW Plexus* is available for viewing by all AACCI members (in addition to *CFW Plexus* subscribers) for four months following publication, providing expanded coverage for authors

AACCI Annual Meeting Delivers the Latest Science

The annual meeting technical program included 282 posters, 12 technical sessions, 3 poster sessions, and 3 hot topics, as well as 12 symposia and 6 Science Cafés targeted to AACCI's key scientific initiatives.

Biotechnology & Sustainability



Symposium

Enzymes in Cereal Science: From Improving Dough & Product Quality to Improving Bioavailability of Functional Compounds

Whole Grains: Where Are We and Where Are We Going?



Science Café

Current Status and Development Trends of Asian Products

Exploring the Differences Between Conventional and Modern Biotechnology—A Focus on Grains

Chemistry & Interactions



Symposium

Lipids in Baking: Minor Components with Major Impact

Enzymes in Cereal Science: From Improving Dough & Product Quality to Improving Bioavailability of Functional Compounds

Protein & Starch Changes Occurring During Various Cold-Forming and Dehydration Processing of Pasta, Noodle, & Pretzel Products

Starch Modification



Science Café

Current Status and Development Trends of Asian Products

Is It Sweet Enough? A Dialogue on Sugar Reduction

Engineering & Processing



Symposium

Healthy Food Manufacturing: Process Challenges & Solutions for Salt Reduction, Fat Reduction, and Fiber Enhancement

Lipids in Baking: Minor Components with Major Impact

Protein & Starch Changes Occurring During Various Cold-Forming and Dehydration Processing of Pasta, Noodle, & Pretzel Products

Whole Grains: Where Are We and Where Are We Going?



Science Café

Statistical Tools Supporting Food Safety, Regulatory, and Processing

Food Safety & Regulatory



Symposium

Food Allergy Thresholds and Risk Assessment: Potential Stakeholder Benefits

Gluten Free: Opportunities and Challenges Across the Supply Chain

Whole Grains: Where Are We and Where Are We Going?



Science Café

Statistical Tools Supporting Food Safety, Regulatory, and Processing

Health & Nutrition



Symposium

Chemistry and Nutrition of Pulses and Minor Cereals

Formulating Grain-Based Food for Glucose Control

Enzymes in Cereal Science: From Improving Dough & Product Quality to Improving Bioavailability of Functional Compounds

Gluten Free: Opportunities and Challenges Across the Supply Chain

Healthy Food Manufacturing: Process Challenges & Solutions for Salt Reduction, Fat Reduction, and Fiber Enhancement

Whole Grains: Where Are We and Where Are We Going?



Science Café

Current Status and Development Trends of Asian Products

Is It Sweet Enough? A Dialogue on Sugar Reduction

Protein Quality in Product Development: Regulatory Considerations

Ingredients & Innovations



Symposium

Addressing Texture Challenges in Baked Products

Lipids in Baking: Minor Components with Major Impact



Science Café

Is It Sweet Enough? A Dialogue on Sugar Reduction

Leveraging Innovation, Cost Management, and Sustainability for Profitability



Special Session

The New Generation of Professionals: Opportunities and Challenges in Transitioning from School to Work

Quality & Analytical Methods



Symposium

Lipids in Baking: Minor Components with Major Impact



Science Café

Exploring the Differences Between Conventional and Modern Biotechnology—A Focus on Grains

Statistical Tools Supporting Food Safety, Regulatory, and Processing

The posters presented at the annual meeting covered the following topics:

Analytical Methods – Chemistry: 29 posters

Biotech: 11 posters

Non-starch Carbohydrates: 7 posters

Protein Chemistry & Dough Properties: 19 posters

Starch Physico-chemical Properties: 19 posters

Starch Structure: 12 posters

Chemistry – General: 15 posters

Chemistry & Quality: 20 posters

Engineering & Processing – Industrial Uses: 10 posters

Engineering Food from Grain: 20 posters

Engineering for Wheat Foods: 15 posters

Food Safety: 6 posters

Health & Nutrition: 26 posters

Ingredients & Costs: 22 posters

Process Optimization: 6 posters

Agronomic Studies of Cereals: 17 posters

2012 AACCI Annual Meeting

More than 1,000 attend the annual meeting in Hollywood, Florida.



AACCI President Debi Rogers welcomes attendees to the 2012 meeting.



Speakers and presenters at the meeting represented more than 280 companies, 85 universities, and 31 countries.



Several hundred gathered on Sunday afternoon for the Opening General Session Reception.



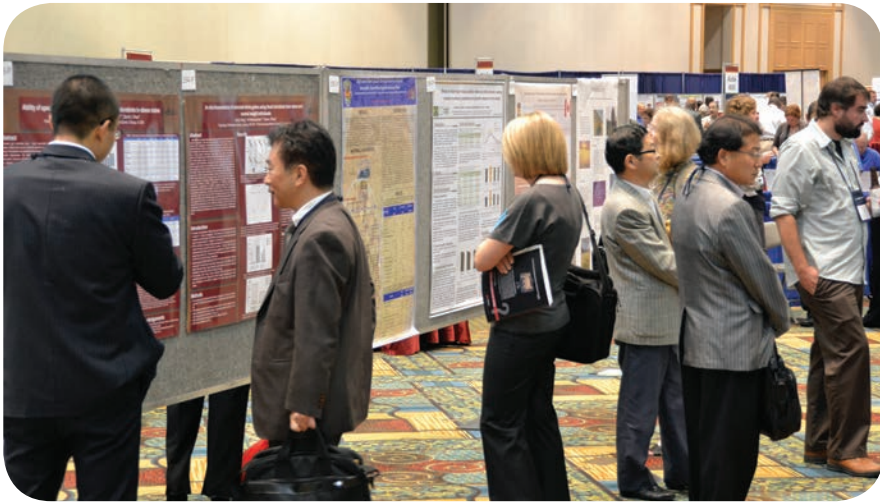
Recent Developments on Gluten Detection in Foods & Beverages was one of two pre-meeting workshops held on Sunday afternoon.



Books were the topic of conversation at the AACCI PRESS booth.



The Best Student Research Paper Competition finalists were all smiles.



More than 200 posters were on display.



PosterTalk sessions, like this one on Grain Analysis and Processing, were held throughout the meeting.



Rarinthorn Thammakulkrajang shows off the UnBeetable Burger, which won her and teammate Teerarat Likitwattanasade first place in the Student Product Development Competition.



Exhibitors held several drawings for prizes that included iPads and gift cards.



Mike Sissons thinks outside the box. His was one of many t-shirts given away during the meeting as part of AACCI's member recruitment promotion.



The Speed Mentoring event gave attendees the opportunity to meet with experienced colleagues to discuss research or career issues.



President-Elect David Hahn is congratulated by his daughter and wife following the Closing Session.

Annual Meeting Exhibition

The exhibition included more than 120 exhibitors, a Grand Opening Exhibition on Sunday evening, complimentary beer and poster viewing on Monday, and a complimentary lunch on Tuesday. Exhibit-sponsored drawings for prizes that included items like iPads made for happy attendees.

**AACC International Corporate Member*

AB Mauri Food Inc.
 ADM Milling Co.*
 ADM/Matsutani, LLC*
 AIB International*
 ANKOM Technology*
 Arla Foods Ingredients Inc.*
 Baker Perkins*
 Bay State Milling Co.*
 BENEIO Inc.*
 Bepex International LLC*
 Best Cooking Pulses Inc.*
 Best Vantage Inc.*
 BI Nutraceuticals
 Blue Diamond Growers (Almond Board)
 Brabender GmbH & Co. KG*
 Briess Malt & Ingredients Co.*
 Brolite Products Inc.*
 Brookfield Engineering Laboratories Inc.*
 Bruker Optics
 Bühler Inc.*
 Bunge
 Butter Buds Food Ingredients*
 C.W. Brabender Instruments Inc.*
 Cablevey Conveyors
 Cain Food Industries Inc.
 Calibre Control International Ltd.*
 California Natural Products*
 Campden BRI*
 Canadian International Grains Institute*
 Caravan Ingredients Inc.*
 Carl Zeiss Microscopy, LLC
 Carmi Flavor & Fragrance
 CE Elantech Inc.
 Charm Sciences Inc.*
 Chopin Technologies*
 Church & Dwight Co. Inc.*
 Clextral Inc.
 CPM Wolverine Proctor/CPM Century
 Extrusion*
 Dakota Specialty Milling Inc.*
 David Michael & Co.*
 Delavau
 Domino Specialty Ingredients
 DSM Food Specialties USA Inc.*
 DuPont Nutrition & Health*
 Elementar Americas
 EnviroLogix Inc.
 Enzyme Development Corp.*
 Eurofins GeneScan
 Farmer Direct Foods
 Firmenich Inc.
 FMC BioPolymer
 FONA International Inc.*



Fortitech Inc.*
 FOSS North America Inc.*
 Givaudan Flavors Corp.
 Glanbia Nutritionals*
 GNT USA Inc.
 Gold Coast Ingredients Inc.*
 Grain Millers Inc.*
 Grain Processing Corp.
 Great Plains Analytical Laboratory*
 Hesco Inc.*/Dakota Organic Products
 ICC/Moniqa/Healthgrain
 ICL Performance Products LP*
 InfraReady Products Ltd.*
 Ingredion Inc.*
 Innophos, Inc.*
 International Fiber Corp.
 International Flavors & Fragrances
 J. Rettenmaier USA LP*
 Kansas State University (Dept. of Grain
 Science)
 Kudos Blends Ltd.
 Lab Synergy
 Lallemand Baking Solutions*
 Malt Products Corp.*
 Mane Inc.*
 Manildra Group USA
 McCormick & Co. Inc.*
 Medallion Labs
 Megazyme International Ireland Ltd.*
 Merlin Development Inc.*
 MGP Ingredients*
 Mid-America Food Sales, Ltd.*
 Mother Murphy's Laboratories
 National Manufacturing Co.* (Division of
 TMCO)

Navas Instruments LLC*
 Nexira
 NP Analytical Laboratories*
 Oat Ingredients LLC*
 Palsgaard Inc.*
 Parker Products
 Penford Food Ingredients Co.*
 Perten Instruments AB*
 Perten Instruments Inc.*
 Prayon Inc.
 QualiTech Inc.*
 QualySense AG*
 R-Biopharm Inc.*
 Research Products Co.*
 Riviana Foods Inc.*
 Romer Labs Inc.*
 Sensient Colors LLC*
 Sensient Flavors Inc.
 Sensus America Inc.*
 Siemer Specialty Ingredients
 Sosland Publishing
 SPEX SamplePrep
 SunOpta Ingredients Group*
 Symrise Inc.*
 Tate & Lyle*
 Texture Technologies Corp.*
 The Mennel Milling Co.*
 The Wright Group*
 Thymly Products*
 TIC Gums Inc.*
 TNO Nutrition & Food Research Institute
 Tree Top, Inc.
 Unity Scientific
 Viterra Inc.*
 Wenger Manufacturing Inc.*

AACCI 2012 Awards

William F. Geddes Memorial Award



Created in 1961, the William F. Geddes Memorial Award honors the zeal and unselfish industry of an individual member, emphasizing the importance of their contributions to the work of the association. This year's award winner is **Maureen Olewnik**. Maureen has been a member of AACCI since 1981 and has served in a variety of volunteer

and leadership capacities within the association, including as president and chair of the board and as a Milling & Baking Division board member. She has served as Associate Editor for *Cereal Chemistry* and currently serves on the AACCI Food Safety Systems Task Force. Maureen is vice president of audit and technical services at AIB International.

AACC International Fellows

Established in 1985 by the AACCI Board of Directors, the Fellows program honors association members who have made distinguished contributions to the field of cereal science and technology in research, industrial achievement, leadership, education, administration, communication, or regulatory affairs. This year, the association honors two members with the Fellow Award: **Barbara Heidolph** and **Jay-lin Jane**.



Barbara Heidolph serves as principal in technical service for ICL Performance Products LP, which provides technical support, conducts applications research, and helps organizations identify growth opportunities. She has research experience with bakery, beverage, dairy, and meat and is a recognized expert in leavening and phosphate technology. She has

been a member of AACCI since 1986 and served as president in 2001–2002 and as chair of the board in 2002–2003. Barbara is the author of several journal and encyclopedia articles, as well as reference books, and has been granted six patents. She frequently speaks at and leads various seminars and symposia.



Jay-lin Jane is a Charles F. Curtiss Distinguished Professor in the Department of Food Science and Human Nutrition at Iowa State University. She received her B.S. degree from National Chung-Hsing University, her M.S. degree from Texas Woman's University, her Ph.D. degree from Iowa State University, and her postdoctoral training at Kansas State University. Jay-lin is

the recipient of numerous awards, including the AACCI Alsberg-French-Schoch Award. She is the past chair of the Carbohydrate Division and the Alsberg-French-Schoch Award Committee among others.

Edith Christensen Award for Outstanding Contributions in Analytical Methods



The Edith Christensen Award for Outstanding Contributions in Analytical Methods recognizes scientific and technical contributions that have advanced the grain science field and honors those who have demonstrated leadership in methods activity within AACCI. This year's Edith Christensen Awardee is **Terry Nelsen**.

Terry has served as statistical consultant to the AACCI Approved Methods Committee for more than 25 years. He is a member of the Statistical Advisory Committee, a long-time member of the Check Sample Committee, and has served on several AACCI Technical Committees. He has organized and presented numerous statistical symposia at AACCI meetings. Although retired from the USDA-ARS, he stays active with AACCI, does some statistical consulting, and enjoys life on a small farm in northwestern Illinois.

Young Scientist Research Award



The Young Scientist Research Award is presented to an individual for outstanding contributions in basic and applied research to cereal science with the expectation that contributions will continue. This award recognizes research relevant to the broad aims and interests of AACCI. Congratulations to **Girish Ganjyal** who is this year's recipient. Ganjyal is a principal

scientist at PepsiCo. He has been working in the areas of extrusion, food processing, and food ingredient research for the past nine years. He serves as an adjunct faculty member at Kansas State University and the University of Nebraska-Lincoln. He has delivered numerous invited lectures on extrusion processing at various universities and workshops. He is a very active AACCI member and is currently an associate editor for *Cereal Chemistry*.

Excellence in Teaching Award



The AACCI Excellence in Teaching Award is presented to a member who has made considerable contributions to the field of cereal science and technology through teaching. This year's recipient is **Andrew Ross**. Andrew is an associate professor of crop and food sciences at Oregon State University. Over the course of his career Andrew has taught or cotaught 10

college-level food or cereal science-related courses. He was an associate editor of *Cereal Chemistry* and is currently an associate editor for the *Journal of the Science of Food and Agriculture*. He is also the recipient of the 2011 Oregon State University College of Agricultural Sciences R.M. Wade Award for Excellence in Teaching.

Texture Technologies Quality Research Award

The Texture Technologies Quality Research Award is new this year. A Best Presentation Award and a Best Paper Award will be given annually to authors who write and present high-quality research that broadly involves instrumental texture analysis. The objective of the awards is to increase awareness among professors and students of the importance of publishing impactful research in sufficient, high-quality detail that allows fellow researchers to replicate and build on the work.

The awards include recognition for both AACCI published research and oral or poster presentations. Selection for the 2012 Best Paper Award is still under review and will be awarded for the first time at the 2013 AACCI Annual Meeting. The 2012 Best Presentation Award winners are presenting author **Juan de Dios Figueroa Cárdenas** and first author **Zorba Josué Hernández Estrada**, along with coauthors **Patricia Rayas-Duarte** and **Roberto J. Peña** for their oral presentation "Creep Test on Wheat Kernels: Influence of Glutenins and Their Relationship to Sedimentation Volume and Rheological Properties."



Juan de Dios Figueroa Cárdenas works in the area of bio-organic materials at CINVESTAV-IPN (Center for Advanced Studies and Research of the National Polytechnic Institute) in Querétaro, Mexico. He has published 160 scientific articles, including 4 books, 10 chapters in books, and 21 patents.



Zorba Josué Hernández Estrada is a Ph.D. student in materials science at CINVESTAV-IPN, Unidad Querétaro, Research Center of Advanced Studies of the National Polytechnic Institute, Querétaro, Mexico. His research is focused on the viscoelastic characterization of grain and wheat dough and its relation to functional quality.

Division Awards

Carbohydrate Division

The Carbohydrate Division/Megazyme Best Paper Award is given by the division for the best carbohydrate paper presented by a student during the previous year's annual meeting. For 2011, the first place winner was **Udhaya Kannan** (University of Saskatchewan, Canada) for "Expression Analysis of Selected Raffinose Family Oligosaccharide Biosynthetic Genes in Developing Lentil Seeds." Second place winner was **Anna Källman** (Swedish University of Agricultural Sciences, Sweden) for "C-Chain Distribution in Barley Amylopectin Clusters." The third place winner was **Amandeep Kaur** (Purdue University, USA), for "Effects of Variable Rate Fermenting Fibers on Luminal and Mucosa-Associated Microbiota in Different Segments of the Large Intestine."

Engineering & Processing Division



The Stanley Watson Award is named in honor of Stanley Watson, a pioneer in corn wet-milling who started his research at the USDA during the early 1940s. Watson made substantial contributions in the improvement of the wet-milling process. The award recognizes outstanding members who, through the application of engineering principles, have made

significant contributions in the area of cereal/grain processing. This year's recipient is **Syed S. H. Rizvi**. Syed is the International Professor of Food Process Engineering at the Cornell Institute of Food Science. He has a Ph.D. degree from Ohio State University, a master of engineering degree from the University of Toronto, and a B.Tech. degree from Panjab University, India. He teaches courses on the engineering and processing aspects of foods. His research group developed and pioneered the supercritical fluid extrusion process for making new generations of extruded products. He has published more than 170 technical papers, coauthored and/or edited 8 books, serves on several editorial boards and holds 7 patents. He served as a Jefferson Science Fellow and senior science adviser in the U.S. Department of State in 2007–2008.

Protein Division



The Walter Bushuk Graduate Research Award in Cereal Protein Chemistry recognizes Ph.D. students who have made outstanding contributions in basic and/or applied research in cereal protein chemistry. This award recognizes research relevant to the broad aims of AACCI. The research can be either fundamental/basic or applied. The 2012 award was presented

to **Mehtap Fevzioglu**. Mehtap's research focuses on functionalizing maize protein (zein) in dough systems through coprotein addition. Her major interests include investigation of structure-function relationships using fundamental rheological techniques and FTIR spectroscopy. Mehtap received her B.S. (2004) and M.S. (2008) degrees in food engineering from Hacettepe University, Turkey. She is pursuing her Ph.D. degree in the field of biological and food process engineering at Purdue University under the coadvisement of Osvaldo H. Campanella and Bruce R. Hamaker.

Rheology Division



The George Scott Blair Lecture Award is presented to a scientist who has shown exceptional ability in research involving rheology and texture as related to cereal-based products. This year the award was presented to **Martin Scanlon**. Martin is the acting associate dean of research, Faculty of Agriculture, at the University of Manitoba. After obtaining degrees from

the University of Leeds in England and postdoctoral fellowships at the Canadian Grain Commission and the University of Manitoba, Martin was head of the Milling Section at FMBRA in Chorleywood. At the University of Manitoba his research has focused on the mechanical properties of food materials,

particularly cereal-based materials (he is the author of more than 190 publications). Martin is an associate editor for *Cereal Chemistry* and a member of the AACCI Publications Panel. He has also served in various capacities within the Rheology Division and as technical chair of symposia on rheology, processing, and foaming in food products at AACCI Annual Meetings.

The Isydore Hlynka Best Student Paper Award acknowledges the best rheology paper presented by a student at the AACCI Annual Meeting and is awarded the following year. **Sandra Mandato** (INRA, France) received the award this year for her presentation of "Couscous Process Engineering: Toward a Better Understanding of the Contributions of the Mechanical Input During Agglomeration" at the 2011 AACCI Annual Meeting. Sandra gave a short presentation on her work and was presented with her award during the Rheology Division Luncheon at the 2012 AACCI Annual Meeting.

AACCI Foundation Awards

Undergraduate Scholarships and Graduate Fellowships

Since its inception in 1989, the AACCI Foundation has focused on providing undergraduate scholarships and graduate fellowships to students excelling in studies relevant to grain-based food science and technology. For the 2012–2013 school year, the AACCI Scholarship and Fellowship Committee awarded nine student scholarships and fellowships totaling \$21,500 in funding from various Foundation endowment and scholarship funds. Thank you to everyone who has supported the efforts of the AACCI Foundation. Graduate Fellowship awardees include Yongfeng Ai (Iowa State University, USA), Aron Cory (University of Saskatchewan, Canada); Hyma Gajula (Kansas State University, USA), Tom Jondiko (Texas A&M University, USA), Moses Khamis (Kansas State University, USA), Swathi Sree Kodavali (Kansas State University, USA), and Rachel Kylo (University of Minnesota, USA). Undergraduate Scholarships awardees include Juhui Jeong (Kansas State University, USA) and Marie-Julie Richer Roy (California State University, Los Angeles, USA).

Cecil F. Pinney Travel Award



Lisa Casper



Larisa Cato

The Cecil F. Pinney Travel Award provides professionals who are establishing a career in grain science and technology with funds to attend the AACCI Annual

Meeting. For 2012, two recipients were presented with the award: **Lisa Casper**, product development consultant at the Food Development Centre in Canada, and **Larisa Cato**, research officer/cereal chemist at the Department of Agriculture and Food in Western Australia.

Young Professional Awards

Best Student Research Paper Competition

The Best Student Research Paper Competition is held each year at the annual meeting and provides an opportunity for students to interact with the AACCI community at an early stage in their career. The competition recognizes the best research conducted and presented by students and challenges them to demonstrate superior presentation skills. Finalists are selected from a pool of submitted papers to compete at the meeting. Congratulations to the following 2012 winners and finalists:

Best Student Research Paper Competition Winners

First Place: Madhuvanti Kale, Purdue University

Second Place: Frederico Barros, Texas A&M University

Third Place: Katharina Konitzer, Technical University of Munich

Best Student Research Paper Competition Finalists

Lauren Brewer, Kansas State University

Liesbeth Derde, Catholic University of Leuven, Belgium

Mihiri Mendis, North Dakota State University

Student Product Development Competition

Organized by the AACCI Student Division, the Student Product Development Competition provides an opportunity for students to demonstrate innovation and ingenuity by creating a new food product containing at least one cereal product as the main ingredient. This year's competition judges included Jeff Casper (Cargill Inc.), D'Anne Hayman (Kellogg Co.), Barbara Heidolph (ICL Performance Products LP), Marc Johnson (Texture Tech Corp.), Thomas Luallen (Starquest F.O.O.D. Consulting LLC), and Glen Weaver (ConAgra Foods Inc.). Congratulations to the 2012 winners and finalists!

First Place: Ohio State University

Team Members: Rarinthorn Thammakulkrajang and Teerarat Likitwattanasade

Product: UnBeetable Burger

Second Place: Kansas State University

Team Members: Oscar Ramos, Swathi Sree Kodavali, Moses Khamis, and Anubha Garg

Product: Instant Sorghum Noodle

Third Place: Iowa State University

Team Members: Michael Reed, Justin Banach, Samuel Moore, Eric Testroet, Justin Kaiser, Charlwit Kulchaiyawat, and Yee Lung Lai

Product: Adventure Bites

Finalist: University of Pretoria

Team Members: Constance Chiremba

Product: Sogymmie Cookies

Finalist: Texas A&M University

Team Members: Kristen Dunn, Katie Michaelson, and Shima Agah

Product: Sunny Snaps

Student Travel Awards

The AACCI Annual Meeting provides the perfect environment in which to inspire young professionals to develop a life-long career in cereal grain science. Thanks to the efforts of the AACCI Manhattan Section and the contributions of generous donors, 77 students received \$300 each to aid in paying their travel expenses for this year's annual meeting.

ARC Grain Crops Institute
Constance Chiremba

CINVESTAV
Zorba J. Hernandez

**German Research Center
for Food Chemistry**
Kathrin Kuenkamp

Iowa State University
Yongfeng Ai
Justin C. Banach
Eric Testroet

**Istanbul Technical
University**
Zeynep Tacer Caba

ITEMS
Rocio Alejandra Chavez-
Santoscoy

Jiangnan University
Juan Li

Kansas State University
Juhui Jeong
Moses Khamis
Swathi Sree Kodavali
Oscar Ramos

**Katholieke University
Leuven**
Karolien Decamps
Koen Jansens
Vinay Jayaram

Korea University
DongHwa Cho
Hee-Young Kim
Hankyul Yoon

Michigan State University
Ya Liu
George Nyombaire

**North Dakota State
University**
Marina Dobrydina
Gerardo Gracia-Gonzalez
Kristin L. Whitney



Ohio State University
Rarinthorn Thammakulkrajang

Oklahoma State University
Pavalee Chompoorat

Purdue University
Mehtap Fevzioglu
Lisa M. Lamothe

**South Dakota State
University**
Julie Y. Kindelspire

**Technische University
Munchen**
Mario Jekle
Katharina Konitzer

Texas A&M University
Shima Agah
Kristen L. Dunn
Tom O. Jondiko
Victor M. Taleon Alban
Yunus E. Tuncil
Liyi Yang

**University Autonoma de
Sinaloa**
Maria L. Guzman Uriarte
Mar de Jesus Heiras Palazuelos
Alvaro Montoya-Rodriguez
Janitzio X. Perales Sánchez
Nancy Y. Salazar Salas
Perla Marysol Uriarte Aceves

**University degli Studi
di Milano**
Alessandra Marti

University of Alberta
Sabaratnam Naguleswaran

University of Arkansas
Emily Oluwaseun Arijaje
Nikhil N. Basutkar

University of Groningen
Salomeh Ahmadi-Abhari

University of Guelph
George A. Annor
Simarata Dhillon
Vivian Gawuga
Danusha N. Kalinga
Komeine KM Nantanga
Saba Shafqat
Varatharajan Vamadevan
Shane B. Walker
Ryan West

University of Idaho
Jung Sun Hong

University of Illinois
Ravi K. Challa
Ming-Hsu Chen
Haibo Huang
Benjamin M. Plumier
Divya Ramchandran
Yingying Zheng

University of Manchester
Ruth M. Bell
Silvia Patricia Galindez-Najera

University of Missouri
Rawin Cheasagul

University of Nebraska
Andres Doblado-Maldonado
Nyambe Lisulo Mkandawire
Junyi Yang

University of Queensland
Shang Chu

**University of
Saskatchewan**
Aron T. Cory
Manu P. Gangola

USDA ARS
Alecia M. Kiszonas

Wageningen University
Diana Londono

**Washington State
University**
Hyunwook Choi
Eun Young Park

AACCI Analytical Accuracy Awards

The AACCI Analytical Accuracy awards are based on 2011 check sample results. All subscribers to the various AACCI check samples that include a proficiency rating option are eligible, provided they have met the requirements for submission of results for the year involved. Formal entry for the award competition is not necessary. The same considerations apply to the Analytical Accuracy awards as to other achievement awards: the results speak only to the performance of the awardee's analyst or laboratory and not to that of many others who might be equally qualified.

Check Sample A—Hard Wheat Flour, Monthly

Bay State Milling Company, Mooresville, NC, U.S.A.

Check Sample B—Hard Wheat Flour, Bimonthly

United Flour Mill Co Ltd, Thailand

Check Sample C—Soft Wheat Flour

Mennel Milling Co of Va, Roanoke, VA, U.S.A.

Check Sample D—Feed Analyses

Analytical Feed and Food Laboratories, Fresno, CA, U.S.A.
FFM Berhad, Malaysia

Check Sample DF—Dietary Fiber

Agriculture & Agri-Food Canada, Canada

Check Sample HL and HS—Farinograph

McKee Foods Corporation, Collegedale, TN, U.S.A.
Agrifood Technology, Australia

Check Sample I—Amylograph

Bay State Milling Company, Mooresville, NC, U.S.A.

Check Sample J—Mixograph

Agriculture & Agri-Food Canada, Canada

Check Sample K—Fat and Fatty Acids

Covance Laboratories, Madison, WI, U.S.A.

Check Sample MBA—Microbiological Analyses (Including Pathogens)

ADM Milling Company, Keokuk, IA, U.S.A.
Advanced Testing Lab, Inc., Cincinnati, OH, U.S.A.
Grain Processing Corporation, Washington, IN, U.S.A.

Check Sample MBB—Microbiological Analyses

AFB International, O'Fallon, MO, U.S.A.

Check Sample SA—HPLC Sugar Analysis

Shur-Gain Nutreco, Quebec, Canada

Check Sample VMP—Vitamin Analyses

Silliker Canada Co., Markham, Canada

Check Sample VMP—Mineral Analyses

Covance Laboratories, Madison, WI, U.S.A.

Check Sample VMP—Proximate and Vitamin Analyses

Silliker Canada Co., Markham, Canada

Check Sample VMP—Proximate and Mineral Analyses

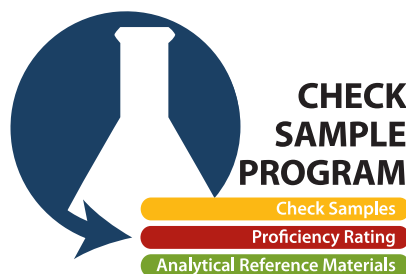
Land O'Lakes Inc., St. Paul, MN, U.S.A.

Check Sample VMP—Vitamins, Minerals, and Proximate Analyses

Covance Laboratories, Madison, WI, U.S.A.
Silliker Canada Co., Markham, Canada

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More information at www.aaccnet.org

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