Back to Basics—The 56th Soft Wheat Research Review Conference

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USDA, ARS, Soft Wheat Quality Laboratory (SWQL) was founded in 1937 to support improving the quality and consistency of eastern U.S. soft wheat. The SWQL and the AACC International Cincinnati Section have organized a Soft Wheat Research Review Conference every year in Wooster, OH, U.S.A. The conference has been held since 1953, and this year the 56th conference was held on March 11. The day before the conference, there was a half-day Methods Workshop hosted by the AACC Intl. Cincinnati Section.

About 60 people attended the Methods Workshop. Art Bettge (USDA, ARS, Western Wheat Quality Lab [WWQL]) presented information supporting the Soft Wheat Methods Committee’s decision to approve the revised AACC Intl. Method 10-52: Micro Method (Sugar-Snap Cookie). He showed the history of the method and the revision procedures, which included a mini-collaborative and a collaborative. The revised cookie-baking method represents an advance, in both the utility of the method and the returning standardization of methodology to laboratories using this method. Dianne Gannon (Toledo Mill, Kraft Foods Inc., U.S.A.) summarized a falling number collaborative. Last harvest in Michigan, U.S.A., discrepancies between visual sprouting assessment and the Hagberg falling number values caused the local elevator and grain industry to review the uniformity of methods and techniques for assessing falling number. Terry Nelsen (retired from USDA, ARS, Peoria, IL, U.S.A.) gave a brief review of chemical analytical methods, including basic terminology, gave reasons for variation and performance attributes of a method, and showed some results for moisture, protein, ash, and falling number of AACC Intl. check samples. Following those three presentations, there were three break-out sessions: cookie method, falling number, and proximate analysis. Each session consisted of hands-on opportunities and discussion, and workshop attendees selected a preferred session.

The cookie method session demonstrated the effect of water level in a cookie formula on dough texture and cookie geometry. Also, there was an interactive discussion on the effect of cookie-baking equipment and accessories on cookie-baking results. The falling number session identified a need in the industry to reinforce the use of the standard AACC Intl. methodology (approved method 56-81B), particularly sample amounts, grinder type, particle size of sample, and shaking procedure. Results will vary significantly with deviations from the approved method. The proximate analysis session dealt with moisture, ash, and protein analyses. Attendees shared their experiences and discussed instrumental differences and NIR calibration. Before adjourning the Methods Workshop, attendees summarized the conclusions of each break-out group. That evening there was an AACC Intl. Cincinnati Section dinner meeting with a social hour at a local restaurant.

On March 11, 2009, about 110 people from the milling and baking industry and the state and federal wheat research programs in the eastern United States attended the Soft Wheat Research Review Conference. The topics of the conference were diversified related to soft wheat research. Steve Slack, director at the Ohio Agriculture Research and Development Center (OARDC), gave a welcome address and commended the continuation of its successful partnership with Ohio State University (OSU). Terri Volpe (Diagnostics, Kennelon, NJ, U.S.A.) gave an introductory keynote speech entitled “Soft wheat baked products: Back to the basics,” and presented the history of flour performance related to soft wheat baked products and key factors to control flour performance in the process. As a universal trend, people’s interest in functional food is increasing, and Liangli Yu (University of Maryland, U.S.A.) shared her research results on antioxidant activities of wheat and demonstrated value-added utilization of wheat as a functional food. Pierce Paul (OSU) updated the research results on the effect of Fusarium head blight on yield and its association with deoxynivalenol. By combining the results of hundreds of different studies in many states using meta-analysis, Paul demonstrated the need for coordinated control of the disease with host-plant resistance, fungicides, and crop rotation.

Feedback from the previous Soft Wheat Research Review Conference requested a session on “Plant Breeding 101” to help better understand wheat breeding. Jamie Sherman (Montana State

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State University, U.S.A.) introduced the Wheat Coordinated Agricultural Project (CAP) and a learning resource related to wheat breeding through the website http://maswheat.ucdavis.edu/Education/index.htm, which has many useful educational tools available to the general public. SWQL is the primary laboratory in the eastern United States for evaluating the quality of new wheat cultivars and breeding lines. Steve Harrison, a wheat breeder from Louisiana State University, U.S.A., reviewed the multistate public wheat breeding cooperative, Southeastern University Grains (SUNGRAINS). SUNGRAINS’ program history, operations, and database can be found at www.agronomy.lsu.edu/SUNGRAINS. As the last speaker in the morning session, Souza, research leader of SWQL, explained how SWQL evaluates breeder samples, Wheat Quality Council samples, and U.S. Wheat Associated Overseas Varietal Analysis samples, and reported the results found in the new database (www.ars.usda.gov/main/site_main.htm?modecode=36-07-05-00). He also showed the recommended markers for flour milling quality identified from the Wheat CAP.

During the buffet luncheon, the AACC Intl. Cincinnati Section announced the best collaborators for overall analysis and cookie baking with AACC Intl. check samples carried out every month.

For 2008, Siemer Milling Company and Mennel Milling Company won the best overall analysis and the best cookie-baking performance, respectively. In order to promote a benefit for the conference, poster presentations were included this year. About 10 posters from academia and industry were presented. Attendees had a chance to look at the posters during each break and lunch hour.

Starting the afternoon section, Kweon (SWQL) shared the progress on the chemically leavened cracker bench-top baking method. She showed the development of a diagnostic formula for a cracker-baking method and the relation of solvent retention capacity (SRC) pattern or gluten performance with cracker-baking performance. Mary Guttieri (OSU) gave a presentation on structure and content of arabinoxylan in soft wheat. Her results demonstrated the contribution of arabinoxylan to wire-cut cookie-baking performance, which highly substituted arabinoxylan appears to be desirable for larger cookie diameter, and suggested the significant role for arabinogalactan peptide. Betge shared the research results on oxidative gelation of arabinoxylan and its influence on processing and end-use in soft wheat flour. Oxidative cross-linking of arabinoxylans and proteins increases batter and dough viscosity resulting in decreased flour quality for a wide range of soft wheat products from pancake and cake quality. Deirdre Ortiz (Kellogg Company) addressed the industrial perspective on soft wheat application in ready-to-eat cereal, including its history and wheat quality requirement. She also showed definition changes in dietary fiber and the recent situation in which these changes within the industry have often made industry members feel frustrated in regard to developing products. Souza presented the multiple regression analysis for finding prediction models for cookie quality using the data of eastern U.S. soft wheat varieties, the Wheat Quality Evaluation Council samples, and U.S. Wheat Associated Overseas Varietal Analysis samples. The models that included alveograph and SRC values showed better prediction for cookie quality and demonstrated the need of multiple quality measures.

Following the conference, there was a social hour and banquet dinner at Wooster Inn. About 60 people attended the banquet and celebrated the successful finale of the conference. The next conference is planned for March 9–10, 2010, in Wooster.

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