

Grain Quality Newsletter

News and Highlights from NC-213: Marketing and Delivery of Quality Grains and BioProcess Coproducts.

Volume 28:3

NC-213 The U.S. Quality Grains Research Consortium



The Andersons Research Grant Program: Team Competition Winner Announced

Since the beginning of the NC-151 Committee in 1978, The Andersons' Agricultural Research Fund has provided research funding for worthy grant proposals. A large measure of the success of the NC-151/NC-213 Committee over its 25 year existence is due to the research funds made available on a recurring basis by the The Andersons Agricultural Research Fund. In 2000, the Team Competition was introduced to foster collaboration between researchers, institutions, and industry. Additionally, the goal of the Andersons Research Team Competition is to develop new approaches and technologies to maintain or improve the quality of cereals and oilseeds from harvest to delivery, while preserving the environment and maintaining consumer safety. This program is focused on facilitating multidisciplinary, multistate, and multiagency collaborative research to address critical cereal and oilseed research issues.

The winning team for this year is lead by Dr. Mark Casada, USDA-ARS, GMPRC, Manhattan, KS with "Incidence and Spread of Insects from Bucket Elevator Leg Boots."



Announcing: NC-213 Annual Meeting, February 18–20, 2009

Embassy Suites, Kansas City International Airport (KCI)
7640 NW Tiffany Springs Parkway
Kansas City, MO 64153
Telephone: 816-891-7788

The NC-213 Annual Meeting/Technical Sessions Program is approaching. The meeting is scheduled for February 2009, to be held in Kansas City, MO. We will be enjoying a joint banquet with the Wheat Quality Council. NC-213's current Executive Committee is excited to offer a program that will include many informative presentations.

Dr. Stephen Kells, Assistant Professor—Department of Entomology, University of Minnesota, along with the entire NC-213 Executive Committee recently met to create the meeting format. In addition, there was discussion on industry panel members, overall program agenda, and agenda topics. This year's meeting will be held alongside Wheat Quality Council's Annual Meeting; NC-213 Executive Committee members will be working on ways that both groups can better interact.

Here is a list of some of the presentations for this year's Annual Meeting:

Mark Casada, Ph.D., USDA/ARS, Manhattan, Kansas: "Storage and Handling."

Charlene Wolf-Hall, Ph.D., North Dakota State University: "Multiplex, Quantitative, Real-Time PCR for Rapid Detection, Identification, and Quantification of Mycotoxigenic *Fusarium* spp. in Durum Wheat." Andersons funded research grant.

Dirk Maier, Ph.D., Kansas State University: "Investigation of Methods to Improve the Flowability of Distillers Dried Grains with Solubles (DDGS) during Processing, Handling, Storage, and Transport." Andersons funded research grant.

Richard Stroshine, Ph.D., Purdue University: "Physical and Chemical Properties of Shelled Corn Related to Conditioning and Processing." Andersons funded research grant.

Dirk Maier, Ph.D., and Dale Moog, Ph.D., Kansas State University: "Challenges in Creating a Perfect Seal for the Application of Nitrogen Modified Atmosphere inside Shipping Containers."

Dirk Maier, Ph.D., Kansas State University; Carlos Campabadal, Ph.D., and Charles Woloshuk, Ph.D., Purdue University: "Semi Continuous-Flow Ozonation Treatment of Grain—A Progress Report."

Leland McKinney, Ph.D., Kansas State University: "Evaluation of Flushing Procedures to Prevent Drug Carryover During Medicated Feed Manufacturing" and "Effect of Glycerol on Pellet Mill Production Efficiency."

Lan Xu, Ph.D., Texas A&M University: "Use of Hyperspectral Imaging in Analysis of Bonemeal Contamination of Feed Samples and of Digestibility of Steam-Rolled Corn Flakes."



The Grain Quality Newsletter is published and distributed at no charge to NC-213 (formerly NC-151) participants and supporters of research on "Marketing and Delivery of Quality Grains and BioProcess Coproducts."

Send your contributions, comments, suggestions, and subscription requests to:



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News from USDA/ARS Grain Marketing and Production Research Center, Manhattan, KS

NC-213 Participants Share Their Research . . .

Non-Destructive Prediction of Protein, Starch, and Moisture for Individual Maize Kernels, Using Near Infrared Reflectance Spectroscopy

Starch, protein, and moisture are major constituents of maize kernels and comprise approximately 80% of kernel mass. To select kernels with desirable composition traits for breeding, geneticists and breeders need seed composition information. Standard lab methods are destructive, which prohibit planting selected seeds that have the desired compositions. A non-destructive, near-infrared reflectance (NIR) spectroscopic instrument was used in this research to classify individual maize kernels. The NIR instrument was used to determine starch, protein, and moisture content of individual maize seeds. The NIR instrument collects both seed weight and spectral data at a rate of 4–6 s/kernel and NIR spectra alone at up to 10 s/kernels. These results give significant improvements over previous single-kernel NIR systems. The calibrations reported here make the NIR instrument a valuable and practical tool for high throughput measurement of the major chemical constituents in single maize kernels.

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Application of Acetate Buffer in pH Adjustment of Mash and Its Influence on Fuel Ethanol Fermentation

To support bio-industrial use of sorghum such as ethanol production, one research need is to identify sorghum hybrids with improved ethanol yields and efficiencies. In order to accomplish this, methods are needed to screen a relatively large and diverse set of samples from the huge pool of sorghum breeding lines; evaluate their performance in a bench-scale “dry-grind” conversion of sorghum to ethanol; and identify key factors affecting ethanol yield and conversion efficiency. To save time and improve small-scale mashing procedures, an acetate buffer was quantitatively pipetted to liquefied mashes.

Ethanol yields of 18 sorghum hybrids improved significantly (2.0–5.9% relative increases, 3.9% on average) by changing the method for pH adjustment from traditional HCl to the acetate buffer. Furthermore, ethanol yields obtained using the two methods were highly correlated, indicating the acetate buffer did not influence resolution of the procedure used to differentiate grain samples varying in fermentation quality.

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2008 Annual Progress Reports from Participating Stations take on a new look!

New CRIS Reporting Format to be used

For this year’s progress reports, we are initiating a new format that was discussed during last year’s NC-213 Annual Meeting. The new format will be changed to reflect CRIS reports as much as possible. In particular, all of the CRIS report headings should be included. Why is this change being made? For a few years now, researchers have reported that it would be easier to create one report, and in many cases the CRIS report is completed before the NC-213 progress report. Much of the basic information is the same. We hope that this change will make the process easier. As in the past, these reports will still need to be submitted to the office of the NC-213 Administrative Advisor/Coordinator, Dr. Ravlin. Reports for this year should be sent by Wednesday, December 31, 2008. Information to be included in progress reports is listed below:

Title	Publications
Investigator Names (Last Names and Initials)	Participants
Outputs	Target Audiences
Outcomes/Impacts	Funding Sources

NC-213 Web Site To Receive a Face-Lift

In an effort to make the NC-213 web site easier to navigate and more user-friendly, it is being totally redesigned. The site will have the branding of The Ohio State University College of Food, Agricultural, and Environmental Sciences. The site will be updated with easy to read “tabs” along the top of the screen. These “tabs” will have pertinent titles (“Learn About NC-213”, “Current News”, “Meeting Information”, “Grain Quality Newsletter”, “Executive Committee,” etc.). By establishing tabs at the top of the screen, visitors will not have to sort through text or scroll down to reach a destination. The site will also include the front cover of the latest report of progress: users will simply click on the cover and be taken to the “report of progress” page.

A new feature to the web site will be the ability to submit a proposal via the site. In addition, proposal reviewers will be able to submit a review. Current requests for proposals will also be available.

Once completed, we will release an official announcement. We are anxious for the finished web site, and we eagerly await your feedback about it once it is complete. In the meantime, please think about information that you would like to share from your institution, as there will be a place to feature your organization’s input on the new site!



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