

# Grain Quality Newsletter

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

Volume 32:3

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

## Calendar Items of Interest

- February 12–13, 2013: NC-213 Annual Meeting/Technical Sessions. Embassy Suites KCI. This year's event will begin with a Technical Sessions at 1 p.m. on the 12th. We will be joining the Wheat Quality Council for a combined lunch. Complete details will soon be available.
- Andersons Research Grant Program—Team Competition. Awarded proposals will be announced soon.

### International Congresses, Conferences, Symposiums, and Expos

- November 20–23, 2012: "2012 European Federation of Food Science and Technology, EFFoST Annual Meeting." Montpellier, France. Web: [www.fffostconference.com/](http://www.fffostconference.com/)
- December 2–6, 2012: "5th International Conference and Exhibition on Nutraceuticals & Functional Foods." Courtyard King Kamehameha's Kona Beach Hotel. Kailua-Kona, Hawaii, USA. Contact: ISNFF. E-mail: [isnffsecretary@gmail.com](mailto:isnffsecretary@gmail.com), Web: <http://isnff.org>, [http://isnff.org/files/Kona\\_-\\_Info\\_for\\_Exhibitors-1.pdf](http://isnff.org/files/Kona_-_Info_for_Exhibitors-1.pdf)
- December 5–8, 2012: "23rd Annual IAOM Mideast and Africa District Conference and Expo." Abu Dhabi National Exhibitions Centre (ADNEC). Abu Dhabi, UAE. Contact: Ms. Eva Mulyana, Conference Manager. E-mail: [info@iaom-mea.com](mailto:info@iaom-mea.com), Web: [www.iaom-mea.com](http://www.iaom-mea.com) or Ms. Shannon Henson, Director of Meetings and Exhibits. E-mail: [shannon.henson@iaom.info](mailto:shannon.henson@iaom.info), [info@iaom.info](mailto:info@iaom.info), Web: [www.iaom.info](http://www.iaom.info)
- February 13–16, 2013: "Biofach 2011, World Organic Trade Fair." Nurnberg, Germany. Web: [www.biofach.de](http://www.biofach.de), [www.ask-biofach.de](http://www.ask-biofach.de)
- February 26–March 1, 2013: "4th MoniQA International Conference." Budapest, Hungary. Contact: ICC-International Association for Cereal Science and Technology. Marxergasse 2, A-1030 Vienna, Austria. E-mail: [office@icc.or.at](mailto:office@icc.or.at), Web: [www.icc.or.at](http://www.icc.or.at), <http://budapest2013.moniqa.org/>
- March 14–17, 2013: "IBATECH ANKARA 2013. 6th International Trade Fair for Bakery, Patisserie Machinery, Ice Cream, Chocolate and Technologies." ATO Uluslar arası Kongre ve Fuar Merkezi/Congresium Ankara. Eskişehir Yolu, Söğütözü, Ankara, Turkey. Contact: Ares Fuarçılık Ltd. Sti. E-mail: [info@messe-stuttgart.com.tr](mailto:info@messe-stuttgart.com.tr), Web: [www.ibatech.com.tr](http://www.ibatech.com.tr)
- March 17–20, 2013: "IFE13, The International Food & Drink Event." ExCel, London. UK. Web: [www.ife.co.uk](http://www.ife.co.uk)
- April 4–7, 2013: "5th International Flour, Semolina, Rice, Corn, Bulghur, Feed Milling Machinery and Pulse, Pasta, Biscuit Technologies Exhibition." Istanbul Expo Center. Yesilköy, Istanbul, Turkey. Contact: PARANTEZ Uluslararası Fuar Yapım Tic. Ltd. Sti. Gülbag Mah. Cemal Sururi Sok. Halim Meriç İş Merkezi No: 15/35 Mecidiyeköy, Istanbul, Turkey. Tel: +90 (212) 347 3164 (Pbx), Fax: +90 (212) 212 0204, E-mail: [info@parantezgroup.com](mailto:info@parantezgroup.com), Web: [www.parantezgroup.com](http://www.parantezgroup.com)

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



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## NC-213 Annual Meeting—Mark Your Calendar Now!

The NC-213 Executive Committee, led by Carol Jones, Oklahoma State University, is excited to announce that this year's NC-213 Annual Meeting will be held February 12–13, 2013, at the Embassy Suites, KCI. Here is a "snapshot" of the meeting's program:

Tuesday, February 12, 2013	
1:00 p.m.–5:00 p.m.	NC-213 Technical Session Presentations, Panel Discussions, and Special Presentations. Boxed lunches will be available for purchase.
7:00 p.m.	NC-213 Dinner with Business Meeting.
Wednesday, February 13, 2013	
8:00 a.m.	NC-213 Technical Session Presentations, Panel Discussions and Special Presentations.
11:45 a.m.–1:30 p.m.	Lunch with the Wheat Quality Council. Presentation of The Andersons Cereals & Oilseeds Award of Excellence and The Andersons Early-In-Career Award. (Keynote address will be provided by the Wheat Quality Council.)
1:30 p.m.–3:00 p.m.	NC-213 Technical Session Presentations, Panel Discussions, and Special Presentations.

\*Please note: The NC-213 Executive Committee will be holding their annual executive meeting prior to this annual meeting.

There are still slots available for presentations. Please send your title and name of presenter(s) to Bill Koshar at [koshar.3@osu.edu](mailto:koshar.3@osu.edu).

## The Andersons Early-in-Career and The Andersons Cereals and Oilseeds Award of Excellence: The Time Is Now to Nominate

It is once again time to submit nominations for The Andersons Early-in-Career Award and The Andersons Cereals and Oilseeds Award of Excellence. These two awards have become a great way to recognize outstanding achievements by our NC-213 colleagues, individuals from industry, and agencies with whom we collaborate. These awards are presented at our annual meetings and include a plaque along with a cash award. Please begin to think about who you would like to nominate for this year's awards.

### The Andersons Early-In-Career Award

The Andersons Early-in-Career Award recognizes individuals early in their careers whose work has significantly contributed to improvements in science, innovation, technology implementation, policy formation, and/or education related to quality of cereals and oilseeds from processing to consumption, and who show outstanding promise of continuing those contributions into the future.

### The Andersons Cereals and Oilseeds Award of Excellence

Individuals must demonstrate a well-documented history of superior contributions to science and/or education related to cereals and oilseeds. These individuals can be associated with a university, private industry, or a state or federal agency. Although it is desirable, they do not need to be a member of NC-213.

Please contact Bill Koshar at [koshar.3@osu.edu](mailto:koshar.3@osu.edu) with any questions.

## Research at North Dakota State University



Dr. Charlene Wolf-Hall's laboratory at North Dakota State University is currently studying the occurrence of ochratoxin A (OTA) and the prevalence of ochratoxigenic fungi in wheat and barley harvested in 2011 and 2012. This work, which is funded by the USDA-NIFA, is part of a larger collaborative project involving multiple research institutions including the Idaho State University (Dojin Ryu, PI), University of Pittsburgh (Felicia Wu), University of Nebraska-Lincoln (Andreia Bianchini, Jayne Stratton), Illinois Institute of Technology-NCFST (Jack Cappozzo), FDA-HHS (Lauren Jackson), and the USDA-ARS (Jeffrey Palumbo). Ochratoxin A is produced by several *Aspergillus* and *Penicillium* species, which have been found to contaminate agricultural commodities in both temperate and tropical regions around the world. This potent toxin has been detected in a wide variety of raw and processed foods including cereal grains, coffee, wine, beer, dried fruits, cocoa, nuts, spices, pork, poultry, milk, fruit juices, and infant formula. In addition, OTA has been detected in human milk suggesting that infants may be at risk of OTA exposure from breastfeeding. Most surveys examining OTA in food have been conducted in Europe where OTA is regulated. At this time OTA is not regulated in food in the United States. However, the FDA has acknowledged the need for current information on the incidence and levels of OTA for use in considering regulatory control measures for the toxin. The strong grain export market as well as steadily rising volumes and varieties of imported food highlight the urgent need to evaluate the safety of the U.S. food supply with regard to OTA contamination. This project aims to determine the OTA concentrations in grain directly after harvest as well as in several other foods and beverages in the American market, assess the risk of foodborne OTA exposure to consumers, and recommend strategies to reduce OTA exposure from the food supply. Graduate student Julie Kuruc will be presenting NDSU's first year results at the upcoming NC-213 meeting in Kansas City, Missouri.

## Corn Wet Milling Short Course, University of Illinois

This course is designed for those wanting a fundamental understanding of the technology and science associated with the corn wet milling process. The course will cover topics on the whole kernel through finished starch products, discuss industry trends and provide laboratory demonstrations. The course is designed for a broad audience to serve representatives from corn wet milling and allied industries, and is taught by faculty having a range of expertise from industry, academia, and government research areas. The dates of the Corn Wet Milling Short Course are January 14–15, 2013. In the near future, the website can be used to register: <https://ecommerce.aces.illinois.edu/wetMilling/> (note: case sensitive).

### Fees for the Short Course:

Advanced: \$995 (until Nov. 15, 2012)  
Regular: \$1,395 (after Nov. 15, 2012)

For more information, please contact individuals at the University of Illinois: Mary Schultze (217-333-5423) or Kent Rausch (217-265-0697)

[krausch@illinois.edu](mailto:krausch@illinois.edu).

### USDA Agencies in Kansas Celebrate 150 Year Anniversary

On April 10, 2012, the Center for Grain and Animal Health Research (CGAHR) hosted a celebration of the 150th anniversary of the creation of the United States Department of Agriculture (USDA). President Lincoln signed legislation creating “the People’s Department” in May 1862. The CGAHR is part of the Agricultural Research Service (ARS), one of seven USDA agencies in Kansas that organized the celebration. More than 300 people turned out to hear USDA Secretary Tom Vilsack, Senator Pat Roberts, Congresswoman Lynn Jenkins, and Kansas State University President Kirk Schulz speak at the event. Also, the events included a ribbon-cutting dedication of the new Wind Erosion Laboratory, where the event was held.

### Grants

**Frank Arthur** set up a trust agreement between ARS and ProvisionGard Technologies to determine the residual efficacy of ProvisionGard to control stored product insects.

### Meetings/Conferences

**Frank Arthur** and **Jim Campbell** met with **Dr. Gerald Ducette** and other potential collaborators at MRI Global in Kansas City, MO, on February 8 to discuss collaboration on our research with aerosol insecticides. Frank presented the talk “Research with aerosol insecticides to control stored product insects: Simulated field studies.” Jim presented the talk “Research with aerosol insecticides to control stored product insects: Field studies.”

**Frank Arthur** and **Jim Campbell** attended the 2012 Nebraska Urban Pest Management Conference in Lincoln, NE, February 14–15. Jim presented two talks, “Pheromones for detection and mating disruption of stored grain pests” and “Biology and habits of red flour beetles and lesser grain borers.” Frank presented the talk “Additive effect of insect growth regulators and insecticides against stored grain pests.”

**Frank Arthur** participated in the 17th Grain Elevator and Processing Society/International Association of Operative Millers Conference in Angola, IN, on March 28. He presented two talks, “Insecticides in stored grain and mills” and “IPM in stored grain and milling.”

**Frank Arthur**, **Jim Campbell**, and **Karrie Buckman** met with collaborators at Arkansas State University in Jonesboro, AR, and with local rice mill personnel April 15–19 to initiate research for a new grant from USDA-NIFA Methyl Bromide Transitions Program.

**Frank Arthur**, **Jim Campbell**, **Karrie Buckman**, and **Jim Throne** attended the annual meeting of the North Central Branch of the Entomological Society in Lincoln, NE, June 3–6. Frank presented the talk “Research with industry on developing new insecticide products.” Jim Campbell presented the talk “Research on how to evaluate treatment efficacy in food facilities.” Karrie presented the talk “Understanding what pheromone trapping data tells us about pest populations.” Jim Throne presented the talk “Emerging pests within the food industry.”

**Michael Tilley** attended the Tortilla Industry Alliance meeting in Anaheim, CA, May 10–11.

**Tom Herald**, **Scott Bean**, **Deidre Blackwell**, **Prini Gadgil** and **Brennan Smith** attended the International Food Technologist meeting in Las Vegas, NV, June 26–29.

### Research

#### Differential Accumulation of Deoxynivalenol in Two Winter Wheat Cultivars Varying in FHB Phenotype Response under Field Conditions

**Authors:** *N.J. Hernandez, P.S. Baenziger, K.M. Eskridge, K.H.S. Peiris, F.E. Dowell, S.D. Harris, S.N. Wegulo*

**Submitted to:** *Canadian Journal of Plant Pathology*

Fusarium head blight (FHB), or scab, is a destructive disease of small grain cereals. FHB also produces the mycotoxin deoxynivalenol (DON), which accumulates in and lowers the value and quality of grain. Field experiments were conducted from 2007 to 2009 to determine if two winter wheat cultivars accumulated DON differently. We also modeled the relationship between FHB severity and DON accumulation. The moderately resistant cultivar ‘Harry’ consistently accumulated more DON than the susceptible cultivar ‘2137’. The relationship between FHB severity and DON was linear and positive for both cultivars in all three years. Environment had a significant effect on DON accumulation in both cultivars, and this effect was attributed to differences in rainfall amount and duration in the months of May and June. DON accumulation was highest in 2008 when there was steady, above-average rainfall in May and June. FDK was highest in 2008 and was higher in ‘Harry’ than in ‘2137’. The results from this study suggest that a winter wheat cultivar with a moderately resistant FHB phenotype can be susceptible to FDK and DON accumulation. Based on these results, there is a need to standardize the criteria for characterizing wheat cultivars as resistant or susceptible to FHB.

Contact *Floyd Dowell*, telephone: 785-776-2753, e-mail: [Floyd.Dowell@ars.usda.gov](mailto:Floyd.Dowell@ars.usda.gov)

#### Detecting the Antimalarial Artemisinin in Plant Extracts Using Near-Infrared Spectroscopy

**Authors:** *K.M. Dowell, D. Wong, X. Wu, F.E. Dowell*

**Submitted to:** *American Journal of Tropical Medicine and Hygiene*

Medicinal plants have been used for thousands of years to cure many diseases, including malaria. The antimalarial artemisinin is produced by the plant *Artemisia annua* L. and can be used to cure malaria. Artemisinin is extracted from these plants through a simple tea preparation. The artemisinin content of the tea varies depending on how much of the active ingredient was present in the plant and how much artemisinin was extracted in the tea. However, there is currently no rapid means of measuring the artemisinin content of the tea. We studied the use of near-infrared spectroscopy (NIRS) to detect artemisinin in tea extracts. Our results showed that NIRS can be used to rapidly predict the artemisinin content in tea, and the scanning procedure is simple and quick. Hundreds of samples can be prepared and scanned per day with relatively little training, and the process requires no consumables. This rapid and simple technique could be used in medical clinics to determine whether tea being prepared for patients contains enough artemisinin to be effective. This technology could also be used to study how the growing conditions of the plant affect its production of artemisinin and how different tea preparation methods affect the amount of artemisinin extracted from the plant.

Contact *Floyd Dowell*, telephone: 785-776-2753, e-mail: [Floyd.Dowell@ars.usda.gov](mailto:Floyd.Dowell@ars.usda.gov)

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