

Grain Quality Newsletter

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

Volume 34:2

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

Save the Date! NC-213 Annual Meeting—2015 February 18–19, 2015

Save the date already? Yes! Before we know it fall will be here and then the holidays and then ... the NC-213 Annual Meeting—2015 will be held February 18–19, 2015, at the Embassy Suites KCI. Once again, we will be joining Ben Hancock and the Wheat Quality Council for a banquet.

Along with securing presenters for our technical sessions and our annual industry panel discussion, we have other NC-213 activities that will take place:

- The Andersons Research Grant Program—Team Competition with a submission due date of September 5, 2014, 5:00 p.m. Eastern Time (see accompanying article)
- Completing the program agenda for the annual meeting. The Executive Committee is thinking of adding a poster showing/competition.
- The Annual Report of Progress from Participating Stations.
- The Andersons Research Award of Excellence and the Andersons Early-in-Career Research Award of Excellence.
- Yearly Executive Committee elections.

Questions? Please contact Bill Koshar, NC-213 Administrative Support.

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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Issued July 2014

NC-213 Administrative Advisor/Coordinator—Changing of the Guard

As of July 1, 2014, Bill Ravlin, The Ohio State University, NC-213 Administrative Advisor/Coordinator will retire. Bill has held this role since 1998. In his role of Administrative Advisor/Coordinator, Bill has overseen all of the functions and opportunities of NC-213. He has guided NC-213 along the years by overseeing the Five-Year Workplans, the two grant programs: Andersons Research Grant Program Team and Regular Competitions, the Mid-Term Reviews, and making it possible for NC-213 researchers and economists the opportunity to meet to discuss funding opportunities. Bill has also overseen the Executive Committee and Industry Advisory Committee in their missions. He has overseen the Quarterly Newsletters, NC-213 website and the NC-213 one pagers, three mechanisms that are used to share NC-213 knowledge and research with industry and learning institutions. Bill also created the yearly Andersons Cereals and Oilseeds Award of Excellence, an award to recognize individuals or teams that have made superior contributions to science and/or education related to cereals and oilseeds. Dr. Steven A. Slack, The Ohio State University, will assume the role of Administrative Advisor/Coordinator. He is anxious to get acquainted with NC-213 researchers and work with the group to continue research in the areas of cereals and oilseeds.

Join us as we bid "farewell" to Bill and welcome Steve Slack!



Steve Slack



Bill Ravlin

The Andersons Grant Research Program Continues a Long-Standing Tradition with Current Request for Proposals

NC-213 has been fortunate to host for many years The Andersons Research Grant Competition. This competition, supported by The Andersons endowment, has led to many fine discoveries and has leveraged additional funding from private industry, states and the federal government; it is a hallmark of NC-213. The current request for proposals is now available and this year we have the Team Competition. The current RFP with details (complete with guidelines, funding limits and due date) is available via the NC-213 website. Good luck!



The Andersons Research Grant Program: Team Competition

Request for Proposals

Submission Deadline:
Friday, September 5, 2014
(No later than 5:00PM Eastern Time.)

Photo courtesy of: The Andersons, Inc., Corporate Communications

6/1/2014 NC-213: Marketing and Delivery of Quality Grains and BioProcess Coproducts

Short Course on Bulk Solids Handling

Place: International Grains Program, Kansas State University, Manhattan, KS

Date: October 27–30, 2014

K-State's Bulk Solids Handling, Storage and Flow Course benefits individuals who are responsible for handling and processing bulk solids in the grain feed, biofuels, food, pharmaceutical and chemical industries.

The course focuses on handling, transportation and storage technologies and methods, and common bulk solids flow problems. Participants will learn about the science and engineering of bulk solids from K-State and industry experts in practical classroom and hands-on sessions. Bulk solids handling and flow equipment located in the state of the art Hal Ross Flour Mill and O.H. Kruse Feed Technology Innovation Center and the newest powder measurement technology available in the Bulk Solids and Particle Technology Research Laboratory will be utilized for teaching. The course will also include an on-site visit to a bulk solids handling equipment manufacturer.

For more information, go to the IGP website at www.grains.k-state.edu/igp/

To register for this course, visit our new online registration website at www.igpevents.grains.ksu.edu.

Visit the NC-213 website at: www.nc213.org



CGAHR (Center for Grain and Animal Health Research) Update

Latest Research Results

Title: Mineral content in grains of seven food-grade sorghum hybrids grown in a Mediterranean environment

Abstract: Sorghum is a major crop used for food, feed and industrial purposes worldwide. The objective of this study was to determine the mineral content in grains of seven white food-grade sorghum hybrids bred and adapted for growth in the central United States and grown in a Mediterranean area of Southern Italy. The seven hybrids were analyzed for grain, ash and for both grain macro- and micro-nutrient minerals content. Either nutritionally essential macro-elements content, i.e., K, Na, Mg, Ca and P, or essential micro-elements content such as Al, Fe, Mn, Ni and Zn, or trace elements content such as Ag, Ba, Cd, Cr, Co, I, Mo, Se, Pb, Sn and V, were investigated. The analysis of essential elements was performed by mass spectrometry using a mix solution of internal isotopes standard. Significant variations in the content of the essential elements were found among the seven white sorghum hybrids examined. These results are discussed in the context of the importance of minerals in human nutrition and of the opportunity to select the best white sorghum varieties from the point of view of mineral content.

Title: Effect of diet and refugia on development of *Dermestes maculatus* DeGeer reared in a laboratory

Authors: Emily A. Fontenot, Frank H. Arthur, Kris L. Hartzler

Abstract: The hide beetle, *Dermestes maculatus* DeGeer, is a Dermestid beetle that can infest a wide variety of stored products, including pet foods, animal feeds, dried foods, and grain products with high protein content. Although there is published information concerning the biology and habits of *D. maculatus*, there are few studies that examine these factors in terms of mass rearing for maintenance of laboratory cultures. Multiple experiments with factors such as diet type and amount, container size, refugia type, and amount and effect of larval density were examined to assess methodologies that could be utilized in mass rearing. Protein-rich diet sources such as commercial pet food, nutrition drink mix, and bone meal provided adequate nutrition for *D. maculatus* and supported development from egg to adult. Cannibalism by larvae and adults, especially on the pupae, was common but could be minimized by providing refugia for larvae to utilize as pupation sites. At greater larval

densities, cork and wood refugia increased survival to the adult stage by nearly 50% by reducing cannibalization. Results show that *D. maculatus* can be mass reared successfully in the laboratory, but the diet must have adequate protein content, and precautions must be taken to reduce cannibalism.

Title: Oviposition of *Dermestes maculatus* DeGeer, the hide beetle, as affected by biological and environmental conditions

Authors: Emily A. Fontenot, Frank H. Arthur, Kris Hartzler

Abstract: Experiments were conducted to document the oviposition behaviors and preferences of the female hide beetle, *Dermestes maculatus* DeGeer, in order to optimize collection of eggs and neonate larvae for biological assays. Factors evaluated were type of oviposition substrate, preference for and type of preconditioned diet, sex ratio and light/dark conditions. We determined that synthetic fur was a suitable medium for oviposition and for collecting progeny. Fur type and position were not important factors in oviposition preference (average progeny production ranged from 27.9 ± 6.4 to 42.4 ± 6.4); however, the use of paper as a cover and no cover treatments were statistically different from the fur treatments and resulted in average progeny productions of 5.2 ± 1.1 and 3.4 ± 0.7 , respectively. Diet preconditioned by the colony was a statistically significant ($P < .001$) factor for oviposition preference compared with unconditioned diet and inhibited oviposition. The type of preconditioning was also an important factor ($P = 0.004$); we examined four treatments: no conditioning, conditioning by larvae, conditioning by adult males, and conditioning by adult females. The mean progeny production for the control (no conditioning) was 52.9 ± 13.6 , which was not significantly different from the larval conditioning treatment (48.1 ± 5.9). Both adult conditioned treatments were statistically different for progeny production, adult male (22.3 ± 2.9) and adult female (8.2 ± 2.5). In regard to progeny production, oviposition was greatest with only one male. Mixed results were obtained in light versus dark conditions and further experiments regarding the effects of day length on oviposition would be useful for optimizing oviposition of *D. maculatus*.

To learn more about CGAHR, please visit:

www.ars.usda.gov/npa/cgahr

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Food Security Symposium

Kansas State University to hold the third International Grain Quality and Food Security Conference.

MANHATTAN, Kan.—In collaboration with NC-213 U.S. Quality Grain Research Consortium, Kansas State University will host the 2015 International Grain Quality and Food Security Conference August 3–6, 2015. The opportunity to hold the conference at Kansas State is exciting because of the new vision, mission and goals of the Global Food Initiative, Dirk Maier, Department of Grain Science and Industry head, says.

Participants and presenters will include scientists, engineers, economists and professionals from all aspects of the agricultural and food industry. Maier says it is very important to attend this conference since it is a platform to discuss current challenges and deliberate future preparedness on grain quality and food security issues. Individuals including producers, researchers, suppliers, grain inspection services and more will be attending and learning how to prepare for the challenge of feeding 9 billion people by 2050.

“The goal of the conference is to provide a global symposium on the technical, scientific and economic opportunities and challenges involved in global grain-based food, feed, fiber and fuel supply chains to assure food security through physical and economic access,” says Kingsly Ambrose, assistant professor in grain science.

Discussions will be centered around the current research-based knowledge all things related to the agricultural and food industry. Topics include characterization of quality and safety attributes of

cereals, oilseeds and bioprocess coproducts; developing efficient operating and management systems; and quantifying and disseminating the impact of market-chain technologies on providing high value, food-safe and biosecure grains for global markets and bioprocess industries.

“There will be defined discussion on efficient operating and management systems,” Ambrose says. “This will also be a great venue for networking among professionals and will provide an opportunity to undergraduate and graduate students to interact and learn from industry and academic professionals.”

The importance of feeding a global population has been stressed and Kansas State University is ready to tackle this task, says Hulya Dogan, Ross endowed associate professor in grain science.

Formal training and other professional development activities in the areas of post-harvest protection, food security, food defense and food safety are of critical importance to keep the United States globally competitive in food production and protection,” Dogan says.

A detailed announcement on the submission of abstracts, important dates and program updates will be announced soon. For further information on the conference, sponsoring, and table top exhibits contact Kingsly Ambrose at the Department of Grain Science and Industry by email kingsly@ksu.edu or by phone at 785-532-4091.

Story by: Casey Drodody

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