

Grain Quality Newsletter

News and Highlights from NC-213: Management of Grain Quality and Security in World Markets.

Volume 26:1

Visit the NC-213 web site at: <http://www.oardc.ohio-state.edu/nc213>



Calendar items of interest ...

Upcoming deadlines and events

- **NC-213 Annual Report for the North Central Regional Association of Agricultural Experiment Station Director's Office** is due April 1, 2006. This is the annual report filed on-line through the National Information Management and Support System (NIMSS). Please contact the Administrative Advisor's office or visit the NC-213 web site for more details.
- **NC-213 Annual Meeting 2007:** Our next Annual Meeting will take place on February 21-22, 2007, in Kansas City, Missouri, at the Embassy Suites KCI. We will be meeting with the Wheat Quality Council (their meeting dates are February 20, 21, and 22) and enjoy a joint banquet on the evening of Wednesday, February 21, 2007. More information to follow.
- **Anderson Research Awards:** Tentative dates for the next round of Anderson Research Awards are summer of 2007 for Regular Competition and spring of 2007 for Team Competition.

The Grain Quality Newsletter is published and distributed at no charge to NC-213 (formerly NC-151) participants and supporters of research on "Management of Grain Quality and Security in World Markets."

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



F. William Ravlin
Grain Quality Newsletter
The Ohio State University
OARDC
1680 Madison Avenue
Wooster, OH 44691-4096
e-mail: ravlin.1@osu.edu

Wicklow Receives Andersons 2006 Award of Excellence

Dr. Don Wicklow, Lead Scientist, Mycotoxin Research Unit, received the 2006 Andersons Cereals and Oilseeds Award of Excellence for his research to improve grain quality, his professional involvement, his leadership in strengthening the reputation of NC-213, and his efforts to make U.S. grains top-quality products.

Wicklow is affiliated with the Mycotoxin Research Unit, USDA, ARS, National Center for Agricultural Utilization Research, Peoria, Illinois. The award was presented during the NC-213 Annual Meeting and Winter Technical Session held February 28–March 1, 2006, in Nashville.

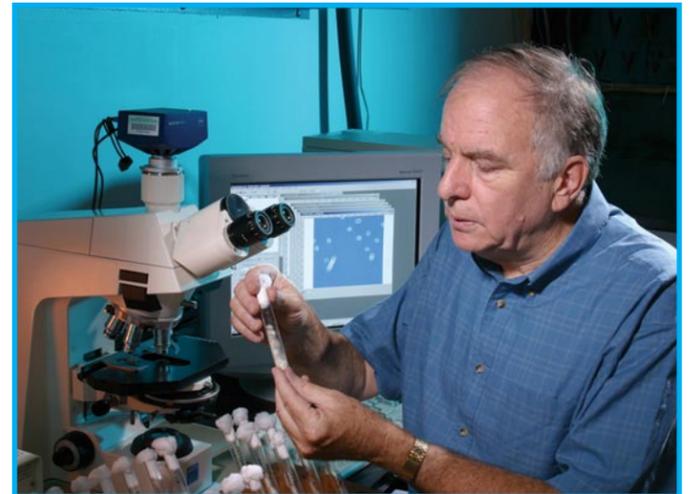
The awarding of the 2006 Andersons Cereals and Oilseeds Award of Excellence provides highly deserved recognition for Wicklow's many significant contributions to the science of marketing and delivery of quality cereals and oilseeds and to the education of grain industry professionals.

In addition, Wicklow has a strong record of professional accomplishment and has contributed significantly to the improved understanding of fungal ecology in field and stored-grain environments. His primary focus has been on the integrated control of *Aspergillus flavus* and aflatoxin in the Midwest Corn Belt.

Aspergillus flavus and aflatoxin are difficult problems because:

- Knowledge about the preharvest disease cycle of toxigenic molds such as *Aspergillus* and *Penicillium* is limited.
- Ecological interactions are numerous and complex.
- New approaches and scientific methodologies are still needed to address problems such as aflatoxin. Examples of these approaches include DNA fingerprinting and eliminating habitat or vector-specific sources of aflatoxin-producing strains in corn production systems.

Wicklow has published more than 151 papers in refereed journals, 24 book chapters, and three books



and was issued 12 patents. He has presented 51 papers at national and international meetings. While he has received considerable support from USDA, ARS, Wicklow has also gained funding for his research from the National Science Foundation, USDA Competitive Grants, and the Biotechnology Research and Development Corporation.

This year's awardee has been a participating and contributing member of NC-213 (formerly NC-151) for more than 20 years. He has rotated through all of the NC-213 offices and served as an Objective Chair for many years.

In addition, Wicklow was elected Councilor for Ecology and Pathology for the Mycological Society of America; has been invited to serve on the National Advisory Subcommittee for Ecological Sciences for the National Science Foundation; and has served on the Advisory Committee for Biological Control of Plant Diseases for the National Research Council. He was elected to Fellowship in the American Academy of Microbiology and was elected to Centenary Fellowship (Honorary Life Member) in the British Mycological Society.

9th International Working Conference on Stored Product Protection Set for Sao Paulo, Brazil

The aim of the 9th International Working Conference on Stored Product Protection is to promote exchange in science and technology among several global producing countries. The conference (the 9th IWCSPP) will be held from October 15 to October 18, 2006, at the Royal Palm Plaza Hotel Resort, Campinas, São Paulo, Brazil (www.embrapa.br/9thIWCSPP).

Organization of the 9th IWCSPP is under the leadership of the Local Organizing Committee. The event is promoted by the Ministry of Agriculture, Livestock, and Food Supply, Embrapa and Conab. It is run by the Brazilian Post-Harvest Association (ABRAPOS), supported by the research sector, universities, consultants, chemical industries, silo manufacturers, storage industries, and farmers.

Call for Papers: You can submit your work as a poster or an oral presentation; follow the instructions for

submitting abstract and conference papers. The deadline for submitting the abstract is May 31, 2006, and for conference papers, it is July 31, 2006.

The Scientific and Technical Sessions are Stored Grain Losses; Microorganisms, Mycotoxins, and Other Biological Contaminants; New Chemicals and Food Residues; Quality in Grain Drying; Biology, Behavior, and Pest Detection on Stored Grain; Fumigation and Control Atmospheres; Alternative Methods to Chemical Control; Pest Resistance to Pesticides and Control Measures; Psocids, Mites, and Other Contaminants; and a General Session on Stored Grain Protection.

For information on registration and submission of work, visit the web site at: www.embrapa.br/9thIWCSPP.

NC-213 Engineers, Scientists, Economists Share Their Research...

SKCS Camera Addition Provides Accurate Kernel Size Information

Wheat kernel size and shape are important quality factors. Knowing kernel sizes and shapes can provide valuable information for adjusting mills to obtain the maximum flour yields. Wheat shipments having kernels of uniform size are preferred over shipments that have a wide variation in kernel sizes due to the higher potential flour extractions that are possible from kernels of more uniform size.

Measuring kernel size is tedious and time consuming. As a result, variability in wheat kernel size is not available for most shipments. The Perten Single Kernel Characterization System (SKCS 4100) is an automated instrument that measures several single kernel parameters including weight, moisture content, hardness, and diameter. Of all of these measurements, kernel diameter is the least accurate.

A low-cost color camera was attached to a SKCS 4100 and, using image data combined with other SKCS data, errors in estimating kernel length and diameter were reduced by 56% and 66% respectively. Analytical speed of the current system is 2 kernels per second, making it possible to obtain accurate size information on a representative 300-kernel sample from any wheat shipment in 2.5 minutes.

Thomas Pearson: 785-776-2729; e-mail: thomas.pearson@gmprc.ksu.edu

New Method Developed for Measuring, Extracting Healthful Compound from Soybeans

Many different forms of soy meal and other preparations are found in a wide variety of foods and the compound, genistein, from soybeans is present in almost all of them. Genistein has been shown to mimic the effects of the female hormone, estrogen, and could have beneficial uses in the treatment of heart disease and cancer.

We developed a new method for extracting the genistein from food substances using solvents under pressure and heat. Levels extracted from a wide variety of foods were comparable to those obtained using older slower methods. This extraction process is rapid, can be automated, can be used to measure the levels of genistein in foods, and could be scaled up for commercial extractions of this important substance.

Scott Bean, 785-776-2725; e-mail: scott.bean@gmprc.ksu.edu

We Can Analyze That Kernel in 1/10th of a Second

When producing new varieties, seed development requires the evaluation of hundreds of seed lines over multiple years to produce only a handful of commercial varieties or hybrids each year. Single-kernel near infrared (SKNIR) measurement has been used to improve and accelerate this process by being able to measure and sort seeds for desirable characteristics. We have designed and tested a new SKNIR system that can measure seed characteristics for corn and soybeans at 10 kernels per second.

In this instrument, spectra are collected as kernels move along the length of a glass tube. Results show that this instrument is capable of accurate predictions of kernel protein and moisture contents at these speeds. Thus, this instrument has excellent potential for reducing the number of years and costs associated with the development of new corn hybrids and soybean lines that carry specific quality traits.

Paul Armstrong, 785-776-2728, e-mail: paul.armstrong@gmprc.ksu.edu

Watch Out for High Relative Humidity When Aerating Grain!

Grain aeration has been used as an inexpensive method to improve storage conditions and lower the risk of insect infestations. However, our studies have shown that this may

be difficult to do immediately after harvest as part of an integrated pest management strategy in much of the hard-winter-wheat-growing region due to the significant impact of high nighttime relative humidity. We evaluated 50 years worth of historical weather data from mid-July through early August in Kansas, Oklahoma, Texas, eastern New Mexico, and eastern Colorado.

Our calculations showed that, when the complicating effect of high humidity was combined with high temperatures, the average number of hours available for effective grain cooling decreased by an average of 68% for 12% moisture wheat and by 88% for 10% moisture wheat when compared with calculations based on ambient temperatures alone.

Mark Casada, 785-776-2758; e-mail: mark.casada@gmprc.ksu.edu

GMPCRC Seeks Research Leader for Grain Quality and Structure Research Unit (GQSRU)

After over 31 years of faithful service, Dr. Okkyung Kim Chung (Okky) has decided to retire and spend more time spoiling her grandchildren.

As a result, the Grain Quality and Structure Research Unit (GQSRU) is seeking a supervisory research chemist, food technologist, or biologist with leadership skills and extensive research experience in cereal chemistry to assume the duties of Research Leader of GQSRU. The announcement number is ARS-X5W-0408, and applications must be postmarked, e-mailed, or faxed by December 19, 2006. Applicants must be U.S. citizens.

For copies of vacancy announcements and/or application materials, please call 310-504-1482.

For additional information regarding employment opportunities, please visit: <http://www.afm.ars.usda.gov/hrd/obs/apply.htm>.

Reprinted from the GMPCRC Research Kernels, October 2005 and January 2006 Issues. Used with permission.

2 Proposals Receive Awards from Anderson Research Grant Program

Two proposals received awards in the September 2005 Anderson Research Grant Program, which was the Regular Competition. They are:

- *Investigation of Methods to Improve the Flowability of Distillers Dried Grains with Solubles (DDGS) during Processing, Handling, Storage and Transport*, submitted by Dr. Klein Ileleji, Purdue University. This is Klein's first funded regular competition grant proposal. Klein is an assistant professor of agricultural engineering, in the Department of Agricultural and Biological Engineering.
- *Physical and Chemical Properties of Shelled Corn Related to Conditioning and Processing*, submitted by Dr. Richard Stroshine, Purdue University. This is Richard's eighth funded regular competition grant proposal (1978, 1980, 1982, 1984, 1986, 1990, 2001). Richard is a professor of ag engineering in the Department of Agricultural and Biological Engineering.



Dr. Klein Ileleji



Dr. Richard Stroshine

The competition drew five proposals. Awarded proposals are to receive \$20,000 per year for two years (total \$40,000).

Congratulations to the winners!

NC-213 Annual Meeting in Review

At this year's NC-213 Annual Meeting/Winter Technical Session, NC-213 members had the opportunity to attend all or part of the 77th Annual Technical Conference and Trade Show of the Grain Elevator and Processing Society (GEAPS), which was held at the Nashville Convention Center.

The NC-213 Executive Committee elected for the coming year is as follows: Chair: Dr. Michael D. Montross, Biosystems and Agricultural Engineering, University of Kentucky; Vice Chair: Dr. Charlene Wolf-Hall, Associate Professor, Department of Veterinary and Microbiological Sciences, Great Plains Institute of Food Safety, North Dakota State University; Secretary: Dr. Stephen Kells, Assistant Professor, Department of Entomology, University of Minnesota; and Past Chair, Dr. David S. Jackson, Professor and Extension Food Scientist, Department of Food Science and Technology, University of Nebraska-Lincoln.

Some 50 NC-213 participants and individuals from industry attended the NC-213 Annual Meeting and Winter Technical Session which was held February 28–March 1, 2006, at the Renaissance Nashville Hotel in Nashville, Tenn.