NC-213 objectives

- To characterize quality and safety attributes of cereals, oilseeds, and their processed products, and to develop related measurement systems.
- To develop efficient operating and management systems that maintain quality, capture value, and preserve food safety in the farm-to-user supply chain.
- To be a multi-institutional framework for the creation of measurable impacts generated by improvements in the supply chain that maintain quality, increase value, and protect food safety/security.

Research community

NC-213 research is conducted by representatives from universities and laboratories including:

- University of Idaho
- University of Illinois
- Purdue University
- Iowa State University
- Kansas State University
- University of Kentucky
- Michigan State University
- Mississippi State University
- University of Missouri
- Montana State University
- University of Nebraska
- North Dakota State University
- The Ohio State University
- Oklahoma State University
- Texas AgriLife Research
- University of Wisconsin
- USDA, ARS, CGAHR, Manhattan, Kansas

NC-213 has a very strong industry influence with representatives from grain handling, marketing, and processing companies, allied service suppliers, and equipment manufacturers. In addition, an Industry Advisory Board provides NC-213 researchers with input on issues influencing global grain industries and help to identify market-based research needs.

AREAS OF RESEARCH

- NC-213 researchers such as engineers, entomologists, plant pathologists, grain/food scientists and economists investigate methods to measure grain quality attributes.
- Technologies and practices to protect grain from insect and fungal pests.
- Processing practices to insure the quality and safety of various food, energy and biobased products.
- Quality management and assurance systems for identity preservation/traceability.
- Yield and quality issues of biofuel and bioproduct industries.
Making an impact

NC-213 researchers and scientists have made impacts such as:

- Development of analytical screening methods for fermentable starch in corn and composition of feed by-products. Both properties are important in biofuel production and the development of rapid screening methods through NIR provide decision-making data to biofuel production facilities.
- Determined that Near Infrared Spectroscopy (NIRS) is a rapid nondestructive technique that is able to measure organic substances in minutes. Changes in agronomic practices, such as delayed planting or increased N fertility, can have an annual industry impact of $2–4 million on ethanol, based on compositional changes that drive ethanol yield changes.
- Developed new varieties of corn for organic systems that have increased levels of methionine, lysine and cysteine. This program was created to develop a NIRS measurement of amino acids in corn, which in the past has been hampered by the high correlation between the total protein content and the typical amino acid level.
- Quality management, risk analysis, traceability and identity preservation systems were developed to ensure food protection and security.
- Discovered that with the adoption of color image sorting technology, a low-cost sorting device for wheat could be built using a standard personal computer and color camera. Special programming techniques can be used for a high throughput while keeping cost low. Accuracy is 15–20% higher than traditional sorters.
- Created a system that measures insect infestation of wheat kernels using electrical conductance. The system is cost effective and can inspect a 1 kg sample in less than one minute. A partnership was formed with private industry to produce and market commercial versions of the system. The technology is currently being adopted by a major food manufacturing company.

RECOGNIZING EXCELLENCE IN RESEARCH

Since 2011, NC-213 has recognized 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.

Since 1999, NC-213 has recognized individuals or teams that have made superior contributions to science and/or education related to cereals and oilseeds by awarding them The Andersons Cereals and Oilseeds Award of Excellence. Recipients of the award can be associated with a university, private industry, or a state or federal agency. The winner of this award is announced during the annual NC-213 meeting.

NC-213 has and will continue to have a significant impact on improving the efficiency of the U.S. grain industry and capturing value along the cereals, oilseeds, and coproduct value chains.

To learn more about NC-213, visit www.oardc.ohio-state.edu/nc213