

Northern Crops Institute

Spring Update

Spring 2009

Northern Crops Institute supports regional agriculture and value-added processing by conducting educational and technical programs that expand and maintain domestic and international markets for northern-grown crops.

Dual-Purpose Pilot-Scale Flour Mill Will Benefit Entire Region South Dakota and North Dakota Wheat Commissions Contribute Funds for Mill Renovation

When it comes to wheat production, our four-state region is recognized worldwide as among the best, both in wheat quality and quantity. North Dakota, Minnesota, Montana, and South Dakota rank one, two, three and four respectively for Hard Red Spring (HRS) wheat production. North Dakota and Montana are first and second in Durum production.

A key part of the promotion and marketing of this high quality wheat is providing samples of flour for evaluation. A number of these projects require larger amounts of flour than can be produced on a laboratory-scale mill. A pilot-scale mill is used to produce flour in larger quantities and of a quality that closely matches flour from a commercial flour mill. However, there are currently no operational pilot-scale flour mills in the region.

Northern Crops Institute (NCI) has set in motion a plan to change that situation.

“A couple of years ago, we identified the need for a pilot-scale flour mill to help with our efforts to promote northern-grown wheat through our educational programs and technical services,” says Brian Sorenson, NCI Director.

“We formed a milling committee within our Northern Crops Council (NCC) to determine the direction that we should go to meet the pilot-scale milling needs of our region. The committee recommended we investigate using the existing NCI pilot durum mill, which was built in 1991,” he continued.

This past fall, milling engineers from Buhler, Inc., Plymouth, Minn., evaluated NCI’s pilot durum mill and determined that it could successfully be converted into a dual-purpose mill (or swing mill) by utilizing the existing building and much of the current equipment, thereby greatly reducing the overall cost of the project. An important part of the equation is that this new swing mill will retain the capability to mill durum into high-quality durum semolina.

At the Fall 2008 Northern Crops Council meeting in Pierre, S.D., the NCC authorized two of the four phases of the project, once sufficient financial support is secured.

The first phase is the conversion of the milling equipment, which includes a new design of the mill flow and new equipment for tempering the grain and improving milling efficiency.

Phases 2, 3 and 4 deal with improved cleaning operations, packaging and flour ingredient mixing, respectively.

The project became a reality when the South Dakota Wheat Commission identified this project as having excellent potential to fill their needs for larger scale milling. They then contributed a significant amount of funding to get the project started.

“The South Dakota Wheat Commission has seriously considered building its own small flour mill for the purpose of market development and promotion of hard white and high

selenium wheat, as well as evaluation of new varieties,” states Laird Larson, a South Dakota wheat producer and member of the South Dakota Wheat Commission. Larson currently serves as chair of the NCC.

“After learning of the potential of NCI’s swing mill project, it only made sense to partner with NCI to accomplish our goals. Sharing the cost of construction and time on the mill should be an advantage to all four states in our region

and will result in better utilization of the equipment,” Larson concludes.

The North Dakota Wheat Commission quickly followed suit with a substantial gift. David Clough, an NCC member and producer from Fessenden, N.D., explains, “As a North Dakota Wheat Commissioner, I feel that the renovation of the NCI mill will help provide more consistent and timely results of milled crops. In the past, NCI had to send the samples out of the region for milling, where we lose control on timing and mill results. With the conversion of NCI’s mill to a swing mill with a larger capacity, it will help with variety analyses and product development for both durum and wheat.”

“This unique full-service, state-of-the art, pilot-scale mill will benefit the entire region,” says Sorenson. “We welcome support for this project from other commodity groups and companies who wish to partner with NCI,” he concludes.

Funding is secured for phase 1 of the project. Additional funds are still needed to complete the other phases of the project. If you are interested in getting involved in this project, please contact Brian Sorenson at 701-231-7736.



Photo by S.D. Wheat Commission

Laird Larson (left), NCC Chair, and Brian Sorenson (right), NCI Director, discuss the plans for the new swing mill during the Northern Crops Council’s meeting in Pierre, S.D.

2009 Short Courses

Visit www.northern-crops.com for registration forms and more information.

April 14-16 Pasta Production and Technology

Provides fundamental and applied aspects of manufacturing extruded and sheeted pasta products. Raw material quality criteria, specifications, and processing variables and their impact on final pasta product quality are presented in detail. Participants will have an opportunity to do actual hands-on pilot-scale pasta processing and tour a regional pasta plant. Course Fee: \$900

April 28-30 Flaxseed: Adding Functional Food Value

Highlights nutritional benefits of flaxseed, flaxseed quality, milling of flaxseed, storage stability and utilization of milled flaxseed in bread, pasta, noodle and extruded snack products and sensory properties in food systems. Course lectures will be supplemented by hands-on experience in laboratories. Course Fee: \$750

May 11-15 Advanced Grain Procurement Strategies

Addresses risk management tools and marketing strategies that assist buyers in competing in international grain business. Participants will learn advanced techniques in commodity merchandising through lectures by authorities on futures market theory. Course Fee: \$1,100

May 19-21 Basics of Wheat and Flour Quality

Examines the importance of quality and how differences influence milling and baking performance. Lectures and laboratory demonstrations will emphasize the evaluation of wheat and flour quality and its impact on baked products. Course Fee: \$700

June 2-4 Exploring Whole Wheat Foods

Provides insight into processing, sourcing and functionality of whole wheat ingredients. Course lectures will be supplemented by hands-on experience in NCI's analytical and processing laboratories. Course Fee: \$800

June 8-12 Dairy Feed Manufacturing Technology

(By invitation only). Sponsored by USSEC-ASA.

June 16-18 Baking with Sunflower

Focuses on quality, milling, ingredient specifications and hands-on aspects of baking applications with NuSun and High Oleic sunflower chips, SunButter, roasted sunflower kernels and sunflower oil. Course Fee: \$800

July 20-24 Pasta: Raw Materials and Processing Technology (International)

Highlights raw materials and processes used in the production of traditional dried pasta. Hands-on pasta processing. Tours of area pasta manufacturing plant and supermarkets. Course Fee: \$1,100.

July 27-31 DDGS: Nutrition, Use, and Feed Manufacturing

Focuses on understanding and using DDGS in animal nutrition and feed manufacturing. Faculty will discuss the latest trends in DDGS use in animal feed. Demonstrations of techniques to improve pelleting characteristics of DDGS alone, in combination with complementary ingredients, and in mixed feeds. Course Fee: \$1,100

Aug. 10-14 Baking With Soy (International)

New Dates!

Highlights use of soy ingredients in baking applications by elaborating physical dough properties, baked product quality, technical specifications of soy ingredients, and regulations and health claim issues in U.S. Hands-on baking. Course Fee: \$1,000

Aug. 18-20 Co-Products in Animal Feed Manufacturing

Highlights regional feed grains and their use in animal feed. Nutritional and physical attributes of the co-products, positive and negative characteristics. Demonstration of techniques to manage co-products, size reduction, mixing and pelleting. Course Fee: \$700

Sept. 8-11 Baking with Durum and HRS Wheat (Int'l)

Examines baking applications of Hard Red Spring wheat and explores the use of Durum in non-pasta products. Course lectures will be supplemented in the NCI's analytical, baking and processing laboratories. Course Fee: \$800

Sept. 21-30 Grain Procurement Management for Importers

Focuses on the mechanics of grain merchandising. Designed for individuals who are responsible for purchasing grain. Grain merchandisers guide you through the full complexity of the international grain markets. Class visits a country elevator, Minneapolis Grain Exchange, an export grain terminal, and a barge facility. Course Fee: \$1,400

Oct. 5-9 Quality and Utilization of Food Grade Soybeans

Examines breeding and variety selection, quality attributes, nutritional benefits, and food applications. In addition to traditional foods produced from soybeans, other applications such as baked and extruded products will be explored. Course lectures will be supplemented in laboratories. Course Fee: \$1,000

Oct. 20-22 Pulse Quality and Utilization

Highlights pulse breeding, nutritional benefits of pulses, sourcing pulses, pulse quality evaluation, milling of pulses, utilization of pulses in food systems (bread, pasta, soup, extruded snacks and canned products). Lectures are supplemented by hands-on experience in laboratories. Course Fee: \$800

Tulbek Is Part of Trade Mission To Turkey

Mehmet Tulbek, NCI Technical Director, participated in a 21-member North Dakota trade delegation to his homeland of Turkey in November.

The agribusiness representatives met with food company executives and major importers of peas, beans, lentils, confectionary sunflowers and other foods. Tulbek provided technical expertise during the trip and represented North Dakota State University in recruiting undergraduate students.

While in Turkey, Tulbek also met with Pankobirlik Sugarbeet Cooperative officials. Tulbek presented information on soymeal, DDGS and canola meal co-product quality of northern grown crops. "There is major demand for high quality meal by the dairy, beef cattle and poultry sectors in Turkey," says Tulbek.



Tulbek (second row, center right) with North Dakota Trade Office team members at U.S. Consul General Sharon Wiener's reception in Istanbul.

2008 Pulse Quality Survey Conducted at NCI and Presented at NPGA Pulse Days

Thunyporn Jeradechachai, NCI Crop Quality Specialist, presented the results of the Pulse Quality Survey 2008 at NPGA Pulse Days at Minot, N.D. The survey was conducted at NCI and funded by Northern Pulse Growers Association (NPGA).



Jeradechachai

"This work is important for the promotion of northern pulse industry. Unfortunately, there has not been a lot of information available regarding the pulse quality grown in this region until last year when the survey was initiated," says Jeradechachai.

"The 2008 crop was quite similar to 2007 in quality. However, since some areas suffered drought, we observed low moisture values in some dry peas grown in western North Dakota," says Mehmet Tulbek, NCI Technical Director.

Copies of the 2008 survey can be obtained from Northern Pulse Growers Association, 701-222-0128.



Koch (second from right) spoke at the Poultry Nutrition and Feed Technology Workshop in Foshan, China.

Koch Speaks at ASA Feed Seminars in China

Kim Koch, Ph.D., NCI Feedmill Manager, traveled to China to speak at feed seminars in Nanning, Foshan, Jinan and Beijing in November. Koch also visited feed mills and poultry production sites. The seminars were sponsored by the American Soybean Association. Koch presented on Feed Manufacturing Technology: Particle Size Reduction, Mixing, and Pelleting. "The programs were very well attended, averaging 80 participants," according to Koch.

The purpose of the seminars was to increase awareness of manufacturing technologies, in conjunction with enzyme and amino acid additions, and to educate about soybean quality attributes and effects on animal performance.

NCI Adds New Equipment

In order to continue to increase our technical service capabilities, new equipment is regularly added to our laboratories. The newest additions are:

- **TA.XT2 Texture Analyzer** for evaluation of bread and pasta products.
- **A two-deck Baking Oven** by Hobart for use in baking applications, such as pan bread, European-style hearth breads and Mediterranean-style flat breads.
- **A Ravioli and Laminated-type Noodle pilot-scale Pasta Machine** by Emiliomiti Komby. It will process fresh and frozen products.
- **Oilseed Extractor** by Gerhardt Soxtherm for evaluating oil and antioxidant levels of northern-grown cereals & oilseeds.

Tulbek Presents Pulse Seminars in SE Asia

Mehmet Tulbek traveled to Indonesia and Philippines to speak at pulse seminars in Jakarta and Manila in February and March. Tulbek also visited specialty crop milling and food processing companies in Jakarta. The seminars are organized by USA Dry Pea and Lentil Council and US Dry Bean Council. They are designed to help establish a pulse milling and end-product-use industry in SE Asia and to educate industry officials on pulse end-use applications.

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Offering Technical Services and Educational Opportunities

Educational Courses in:

- Barley and malt quality
- Bread baking
- Corn and DDGS quality and use
- Extrusion technology
- Feed manufacturing
- Flaxseed utilization
- Grain procurement strategies
- HRS and Durum wheat milling
- Pasta manufacturing
- Pulse crop utilization
- Soybean and Sunflower utilization
- Wheat flour quality
- Whole grain foods

Technical Services in:

- Product and Process Development
- Ingredient Testing
- Proprietary Atmosphere
- Hands-on Experiences
- On-Site Consulting (International and U.S.)
- Fully-equipped Laboratories
 - Baking
 - Pasta Processing
 - Twin-screw Extrusion Processing
 - Analytical
 - Commodity Grading
- Grain Milling and Processing Center
- Feed Production Center

Pilot-Scale Processing in:

- Baking
- Extrusion
- Post-Extrusion
- Feed Manufacturing
- Industrial
- Milling



Connecting in the Global Marketplace

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