

Northern Crops Institute

Summer Update

2015

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.

Twin-Screw Extruder System Receives Upgrade to Align with Industry



Extruder Upgrades Include:

- Updated the extrusion barrel to steam and cold water
- Added loss-in-weight feeder
- Will add Buhler dryer system



The NCI twin-screw extruder underwent a major upgrade during the past year that added a loss-in-weight feeder and changed the heating style to steam and cold water so that it is comparable to industry.

Rilie Morgan, NCI's Processing Specialist, demonstrates the extruder's new control panel.

In the past year, the twin-screw extruder underwent a major upgrade that added a loss-in-weight feeder and changed the heating style to one that is comparable to industry. The next phase of the project is the addition of a fluid bed dryer.

Northharvest Bean Growers Association, the North Dakota Corn Growers Association, and the Northern Pulse Growers Association are providing major funding for the project. Buhler Company gave NCI significant financial discounts to make the project feasible.

"The addition of the dryer and the upgrade of the twin-screw extruder will allow us to expand our extrusion services, not only in food products but also in pet food and aquaculture," says NCI Director Mark Weber. "We are moving more into the extrusion world, where there is great potential for utilization of the crops produced in our four-state region."

David Hahn, Ph.D., former NCI Director of Technical Services and Business Development and now at Dakota Growers Pasta, says, "We updated the extrusion barrel to what industry currently uses for heating and cooling—steam and cold water—which is much more responsive for temperature changes. The new control package gives the operator better representative controls."

"The addition of the loss-in-weight feeder gives better control of raw materials going in. With the old system, you set a speed on the feed screw and you measured how much would go in. Now when we change ingredients, we know precisely what our feed rate is," he concludes.

The next phase of the project is the addition of a fluid bed dryer from Buhler. When any extruded product comes off the extruder, it is not at its final moisture. It needs to dry into a stable product configuration, and NCI did not have the ability to do that in a continuous process. By adding the fluid bed dryer to the process, the staff will be able to dry the output from the extruder. This will allow them to look at the process from start to finish and then get some parameters on how the product dries, thus offering a complete process. Installation is scheduled to begin in August.

Some changes were also made to make cleanup easier. A curtain that contains the area was added for an easier wash-down. Mixers were moved down to the mill, so that all the dusty operations are in one place. It's easier now to keep things clean in the extrusion lab.

A few projects, such as expanded snacks and chips, have been completed since the extruder upgrade was done. The response from customers has been good.

Africans Learn More About How Soy Aids in Fight Against Malnutrition



Monica McCranie, (center front, black shirt), a producer from Claremont, S.D., and her husband, Mike, (back row, blue shirt), visited the Baking with Soy course to meet the participants and learn more about NCI's work. Monica serves on the South Dakota Soybean Research and Promotion Council board and the WISHH Board, (World Initiative for Soy in Human Health).

Six bakers and managers from Africa attended the Baking with Soy from Farm to Plate course at NCI in June. The course was sponsored by the American Soybean Association WISHH Program, St. Louis, Missouri; North Dakota Soybean Council; Minnesota Soybean Research and Promotion Council; and the South Dakota Soybean Research and Promotion Council. The nutritional benefits of soy protein in baked products were highlighted at the course, which was attended by participants from Burkina Faso, Cote d'Ivoire, Senegal, and Uganda.

WISHH, The World Initiative for Soy in Human Health, brings the nutritional benefits of U.S. soy protein to people in developing countries. Soybeans have great potential for human food use because of their high level of protein and their functional and nutritional properties. One of the most promising uses of soybeans is in bakery products. For example, the addition of soy flour to bread products can raise protein content, balance essential amino acids, and increase bread's nutritional value.

Cyrus Guluddene and his brother, Isaac Sebakijje, both work for the SESACO Company in Uganda. Cyrus attended the Baking with Soy course in June. Isaac took the course in 2013. SESACO is a food processing company that works with soybeans, millet, maize, pulses, groundnuts and oil crops.

Cyrus explains his concern for the people of Uganda, "Around 90% of Ugandan children are malnourished due to poor feeding. Soybeans bring high protein to our foods

hence helping us to fight malnutrition in our country. Though soybeans are nutritious to our bodies, many Ugandans have deliberately refused to use soybeans. This makes our work difficult in marketing U.S. valued soy products (DSF—defatted soy flour). Many bakeries are a little tied to the old ways of baking without soy, so we need to be persistent."

"We have had some success at bringing some big and medium bakeries on board and they are using DSF in their baked products. DSF is not only nutritious but also increases shelf life, improves the quality of the bread, and produces extra loaves meaning more profits. More profits mean development of the bakery and the country as well."

"We give our thanks to the U.S. Department of Agriculture, the American Soybean Association (ASA), WISHH, NDSU, and Northern Crops Institute for really helping us fight malnutrition and poverty in Uganda. After WISHH came into our country, we haven't been the same. When we see the changes you have helped us make, we give thanks," he concludes.

Rachel Carlson, NCI Food Technologist, and Natsuki Fujiwara, NCI Food Scientist, coordinated and taught the course.

The group was accompanied by Chris Slempe, WISHH St. Louis, and Mamadou Bousso, WISHH Senegal.

Lecture topics included wheat and wheat flour characteristics, and functional benefits of soy flour in baked



Baking with Soy course participants prepare to make soy-enhanced baguettes during the course.

products. The participants spent a significant time in the NCI Baking Laboratory doing hands-on baking to learn more about techniques in handling the soy flour. They made mandazi (African donuts), scones, white bread, multigrain bread, whole wheat bread, croissants, brioche, baguettes, hamburger buns, and cookies.

The course concluded with a visit to Culinex, the Arthur



Cyrus Guluddene (right), and his brother, Isaac Ssebakiije, (in wall photo), both attended the Baking with Soy courses. They work for the SESACO Company in Uganda.

(ND) Elevator and the Kevin Skunes farm near Arthur, N.D.

Their trip continued to Inver Grove Heights, MN, where they visited CHS, and then to Mankato, MN, to hear presentations at Minnesota Soybean Research and Promotion Council headquarters. They also visited the Friesen's Bakery, Mankato; Wayne Knewtson's farm near Good Thunder, MN; and SunOpta in Hope, MN.

Soy Flour Procurement Seminar Offered for Myanmar, Guatemala, and Thailand

Northern Crops Institute hosted a three-day seminar for eight representatives of major food companies and trade associations in Myanmar, Guatemala and Thailand. During the seminar, they learned more about purchasing soy and met several North Dakota soybean producers and processors.

The trade team was organized by the WISHH Program of the American Soybean Association, and funded by the U.S. Department of Agriculture and the North Dakota Soybean Council. WISHH, The World Initiative for Soy in Human Health, brings the nutritional benefits of U.S. soy protein to people in developing countries. Soybeans have great potential for human food use because of their high level of protein and their functional and nutritional properties.

"Bringing this trade team to North Dakota is an important next step in building the relationships we need for our soy," said Art Wosick, who serves as a director of the North Dakota Soybean Council as well as on the WISHH Program Committee.

Speakers at the seminar included Kendall Nichols, North Dakota Soybean Council, who discussed U.S. and North Dakota soybean production; Bob Sinner, SB&B Foods, Inc., who talked on building relationships in a value-added market; and William Wilson, Ph.D., Department

of Agribusiness and Applied Economics, North Dakota State University, who explained cash and futures price relationships in soybean pricing. Mike Krueger, The Money Farm, spoke on the interpretation of fundamental factors to analyze the soybean market; and Natsuki Fujiwara, NCI Food Scientist, who discussed functional benefits of soy flour.

The group also toured the Alton Grain Terminal, Hillsboro, N.D.; the Joel Thorsrud Farm, Hillsboro, N.D.; Brushvale Seed, Breckenridge, Minn.; and SB&B Foods, Inc., Casselton, N.D.



Pasta Makers Learn More About Blending Wheat for Pasta Production

Pasta makers from Nigeria and Peru attended the U.S. Wheat Classes in Pasta Production Course at NCI June 15-19, 2015. The course was co-sponsored by the U.S. Wheat Associates.

This customized course was designed to assist pasta processors who blend wheats to meet their pasta specifications.

Course topics included an overview of U.S. wheat classes, 2015 U.S. wheat supply and price outlook, wheat quality evaluation, physical and rheological quality tests for flour and semolina, impact of protein and starch on pasta quality, commercial pasta production, quality assurance, functional and alternative pasta ingredients, food safety, and possible causes and solutions of pasta defects. Hands-on pasta processing and cooking quality evaluations supplemented course lectures. The group finished out their course with a tour of Abbianno Pasta Company, a specialty commercial pasta plant in Casselton, N. D.

Speakers for the course were: Rachel Carlson, NCI Food Technologist; Natsuki Fujiwara, NCI Food Scientist; David Hahn, Ph.D., Director, Quality and R&D, Dakota Growers Pasta Company (formerly NCI Director of Technical Services and Business Development); Rilie Morgan, NCI Processing Specialist; and Erica Olson, Marketing Specialist, North Dakota Wheat Commission.



Pasta course participants show off the pasta they made during the course.

Singapore Seminar Focuses on Commodity Risk Management

NCI offered a Commodity Risk Management Seminar in Singapore April 27-29, 2015. It was co-sponsored by Minnesota Soybean Research and Promotion Council; North Dakota Soybean Council; South Dakota Soybean Research and Promotion Council; U.S. Soybean Export Council; United Soybean Board; American Soybean Association; and the U.S. Department of Agriculture.

This seminar was designed to help participants understand why risk management is essential to business success when experiencing commodity price and margin volatility. Risk management is crucial in avoiding costly and potentially devastating consequences, but most importantly, it enables companies to protect their profits.

Speakers included Frayne Olson, Ph.D., North Dakota State University, Fargo, N.D.; Jay O'Neil, International Grains Program, Kansas State University, Manhattan, Kan.; and Sue Goll, Sue Goll Commodities Consulting, Naperville, Ill.

Seminar topics included: world grain situation and outlook; relationship between cash markets and futures; introduction to risk management; using fundamental analysis to predict future prices; basis trading and hedging; futures spreads; using technical analysis to predict future prices; introduction to options; integrating options as a procurement strategy; contract strategies; management controls and accounting.



Southeast Asia Commodity Risk Management Seminar
April 27 - 29, 2015
Singapore

Twenty-five procurement executives attended NCI's Commodity Risk Management Seminar in Singapore April 27-29, 2015.

Thank You to the Outgoing NCC Members for Their Service to NCI Peltier and Kessel Elected NCC Chair and Vice Chair at June Meeting

NCI Director Mark Weber (left) thanked the two outgoing NCC board members for their service on the Northern Crops Council (NCC) and presented each with an engraved clock at the June 23, 2015 meeting. Karolyn Zurn, (center), completed two terms on the Council where she represented the Minnesota Soybean Growers Association, and served as Chair for two years. She is a producer from Callaway, Minn. Milo “Buzz” Mattelin, (right), a producer from Culbertson, Mont., represented the Montana Wheat and Barley Committee for two terms.

At the meeting, Keith Peltier was elected the new NCC Chair and will be serving his second three-year term on the NCC as an industry representative. Peltier is President of Proseed.

Greg Kessel, a producer from Belfield, N.D., was elected Vice Chair. He represents the North Dakota Barley Council.

New members on the Northern Crops Council are Randy Hinebauch, a producer from Chinook, Mont., representing the Montana Wheat and Barley Committee, and Drew Parsley, a producer from Warroad, Minn., representing the Minnesota Soybean Research and Promotion Council.

Dwight Mork, a producer from Bellingham, Minn., was re-elected to fill a second three-year term on the NCC. He represents the Minnesota Corn Research and Promotion Council.

North Dakota Legislature Approves Permanent NCC Seat for ND Mill

The 2015 North Dakota Legislature approved a change to the North Dakota Century Code that assigns a permanent seat on the Northern Crops Council (NCC) to a representative of the North Dakota Mill. Vance Taylor, President and General Manager of the North Dakota Mill, or his designee, will serve in this capacity.



Taylor

NCI Director Mark Weber explained the request this way, “North Dakota Mill’s industry leadership and technical expertise is invaluable to NCI. We have a demonstration pilot-scale flour mill located at our facility

but we lack the necessary experience to fully utilize the mill to its fullest capabilities and efficiencies. With the North Dakota Mill serving as a permanent NCC member, we will have the right strategic plan in place to enable us to properly assist the milling and baking industry worldwide in both educational and technical support.”

Weber reports that the North Dakota Industrial Commission also lent its support for this action.



NCI Director Mark Weber thanks Karolyn Zurn and Buzz Mattelin for their years of service on the Northern Crops Council.

Welcome to Zhisheng (Zach) Liu NCI’s New Processing Technician

Zhisheng (Zach) Liu, Ph.D., joined the NCI staff in March as a Processing Technician. His main duties include conducting pilot-scale processing for product development and demonstrations for domestic and foreign promotion of northern grown crops utilization, maintaining the processing equipment and assisting with general NCI programming.



Liu

Zach earned his Ph.D. in Food Science from the China Agricultural University, and his M.S. in Food Engineering and B.S. in Cereal Science from Jiangnan University, China. He comes to NCI with more than 10 years of experience in food research and development, five years of teaching experience, and more than two years of experience in food industry.

Hahn Leaves for Dakota Growers Pasta

David Hahn, Ph.D., NCI Director of Technical Services and Business Development, resigned from Northern Crops Institute to join Dakota Growers Pasta in June. His new position is Director of Quality Assurance, Research and Development at Dakota Growers Pasta. Staff from the quality and research divisions at both New Hope, Minn., and Carrington, N.D., will report to Hahn.

He plans to continue to be involved at NCI, especially during the pasta courses.



Hahn

Sally Backman Retires After 25 Years at NDSU and NCI

We say goodbye to Sally Backman after 17 years of dedicated service to the Northern Crops Institute. She has earned a well-deserved retirement for her selfless efforts here at NCI and is ready for her next phase of life with her husband, Nels. Very soon she will become a Grandma and she is very excited! What I admire most about Sally is that not only is she conscientious in her work but she is very kind, courteous, and humble. Her semi-annual reports were excellent and I received many compliments about her publications from legislators and commodity groups. She has served in many capacities at the NCI including office manager, bookkeeper, and for the past 13 years as Public Relations and Communications Specialist. Sally is a native of Lake Park, Minn., and following her degree from Concordia College, Moorhead, Minn., she served as Assistant Director of Communications at Concordia, and later administrative assistant at two churches before she joined the School of Education at North Dakota State University. She earned her Master's Degree at NDSU in 1995. In 1998 she joined the NCI, serving under former NCI Director Pat Berglund. Congratulations to you, Sally, and on behalf of all of the NCI team, we wish you the very best! Mark F. Weber, Director

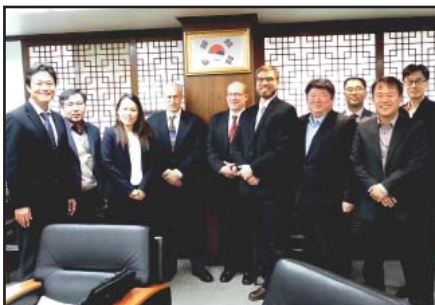


Backman



Koch in Vietnam for USSEC Feed Technology Workshop — NCI Feed Manager Kim Koch, Ph.D., spoke at the 21st Southeast Asian Feed Technology and Nutrition Workshop in Vietnam in May. He was a breakout session leader in feed manufacturing technology. He also led discussions with USSEC Country Directors on how NCI can have a greater presence and influence in the Asia Pacific region, particularly in S.E. Asia. Southeast Asia is a growth market for soybeans and soybean meal ranking as the U.S.'s 5th and 3rd, respectively, largest export customer worldwide, according to USSEC's website.

Hahn in Philippines for Pasta Plant Consultations and Seminar — David Hahn, former NCI Director of Technical Services and Business Development, traveled to Manila in March to assess the expanding Philippine pasta industry and provide technical service to its largest producers on behalf of U.S. Wheat Associates (USW). Hahn spent a week in the Philippines visiting plants and giving a full-day seminar on production and quality control methods. Joe Sowers, USW/Manila Assistant Regional Vice President, joined Hahn to give a presentation on Southeast Asian wheat import trends and the global supply and demand situation. Local pasta producers reported that Hahn provided solutions that helped them successfully resolve technical challenges.



Fujiwara Joins Regional Wheat Reps in Korea and Japan — Natsuki Fujiwara, NCI Food Scientist, traveled in March with Jim Peterson, North Dakota Wheat Commission; Collin Watters, Montana Wheat and Barley Committee; and Dr. Luther Talbert, Spring Wheat Breeder at Montana State University, to Korea and Japan to visit key milling and baking companies, and trade officials. During the visits, the team expressed appreciation for the consistent customer base, discussed current wheat marketing and quality issues and learned about market trends. Fujiwara provided customers with an overview of food and wheat product trends in the U.S. market, and provided technical expertise on wheat quality issues.

Koch Participates in USGC Needs Assessment in Thailand and Vietnam

— Kim Koch, Ph.D., was part of the Market Impact Mission for the U.S. Grains Council where they explored market opportunities for dairy and aquaculture in Southeast Asia. The June trip was a survey of programmatic needs in Vietnam and Thailand. Also affiliated with the mission were Dr. Jerry Shurson, University of MN; Randy Ives of Gavilon, LLC; and Kevin Roepke, USGC S.E. Asia Regional Director. One company they visited had \$280 million in profit last year, exporting to over 100 countries.

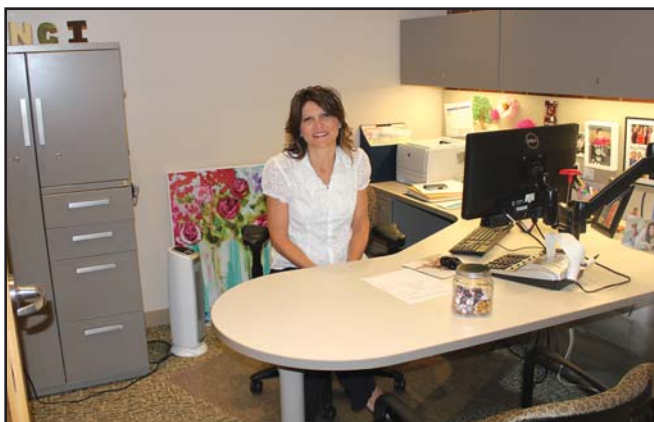




The new Northern Crops Learning Center has samples of 28 crops that are produced in the four-state region, as well as a digital presentation on the crops.

NCI Lobby Gets a Facelift

Visitors to NCI will notice a big change in our Lobby, which has been renovated and redecorated. New lighting made a huge change to the setting. The crop showcases were replaced with the Northern Crops Learning Center, featuring video programming and a “real” crop display. New furniture, graphics, and digital signage complete the room.



Janel Brooks, NCI Account Technician, has one of the two new offices that were created in the Lobby area.



Linda Briggs, NCI Office Manager, has an enlarged space in NCI's main office where she has an improved view into the Lobby.



North Dakota State University
 Northern Crops Institute
 NDSU Dept. 7400
 P.O. Box 6050
 Fargo, ND 58108-6050

ADDRESS SERVICE REQUESTED

Non-Profit Org.
 U.S. Postage
 PAID
 Permit No. 818
 Fargo, ND

2015 Summer Update

Offering Technical Services and Educational Opportunities

Educational Courses:

- Value-Enhanced Uses
- Grain Standards and Inspection
- Procurement, Risk Management
- Quality, Processing, and Milling
- Extrusion Technology
- Pasta Processing
- Feed Milling and Manufacturing
- Customized Seminars

Pilot-Scale Processing:

- Milling
- Baking
- Extrusion
- Post-extrusion
- Pasta Processing
- Oilseed Cold Pressing
- Feed
- Industrial

NCI can provide:

- Up-to-date Information
- Fully-equipped Labs
- Hands-on Experiences
- Confidential Environment
- Network of Resources
- Reasonable Fees
- Purchase of Ingredients

Connecting in the Global Marketplace

NCI Staff

Mark Weber, Director
 John Crabtree, Assistant Director
 Sally Backman, PR/Communications Specialist
 Linda Briggs, Office Manager
 Janel Brooks, Account Technician
 Rachel Carlson, Food Technologist
 Natsuki Fujiwara, Food Scientist
 Kim Koch, Ph.D., Feed Production Center Manager
 Zhisheng (Zach) Liu, Ph.D., Processing Technician
 Rilie Morgan, Processing Specialist

Contact Us At:

Northern Crops Institute
 NDSU Dept. 7400
 P.O. Box 6050
 Fargo, ND 58108-6050
 Phone: (701) 231-7736
 FAX: (701) 231-7235
 E-mail: nci@ndsu.edu

**Sally Backman
 Update Editor**

NDSU is an Equal Opportunity Institution. This publication will be made available in alternative formats upon request [701-231-7736].

www.northern-crops.com