

CONNECTING IN THE GLOBAL MARKETPLACE

Northern Crops Institute

# 2022 ANNUAL UPDATE

The 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.





LEADERSHIP

# DIRECTOR'S REPORT



**Mark Jirik**  
Director

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The Northern Crops Institute is in a time of transition, with the new Peltier Complex taking shape, planning going forward to improvements and renovations at the NCI Feed Center, and new and exciting programs in the works.

One of the lessons I learned over my career is to always to honor the past, but work for the future.

In a larger sense, NCI has always been in a time of transition. Born in the farm crisis of the late 1970's and early 1980's, the region had to find a way and gain its footing. Our founders, people of vision like Bud Sinner, Mel Meyer, and others that saw the need for NCI had a vision for what could be.

We recently learned of the passing of one of our founders, NCI's first director, Brendan Donnelly. I've never had the pleasure of meeting Brendan, but the stories are legendary. He had a vision for the potential for NCI, but also for the region as a whole.

As we plan and strive to build our capabilities, programs, and innovative ways to fulfill our mission at our new home at the Peltier Complex, it is important for us to remember and honor the past. The true foundation of NCI isn't in brick and stone, it is built of knowledge, passion, respect, relationships and the vision of the last forty plus years.

Thanks to all of you that helped make the last year possible, and thank you for all of the good work you did in building that firm foundation for the future!

-Mark Jirik, Director

# NCC CHAIR'S REPORT



**Jim Bahm**  
NCC Chair

I'm thankful for the opportunity to be chair of the Northern Crops Council for the last year.

As chair of the NCC, I've had the chance to participate in a few in-person programs this year. From the pasta program, to a board leadership course, it has been great seeing people and participants from around the country and the region we serve.

There is also a lot of excitement for the new Peltier Complex as well. I had the chance to participate in the ground breaking ceremony, and have seen the pictures and designs. It is going to be great. The level of support the Peltier Complex is getting from the region has been great. The building will be a place to research, educate, and showcase all the crops grown in the four state region.

Finally, thank you to all the members of the Northern Crops Council for their help, input, and leadership. It has been great seeing so many of you. Thank you to all of our friends and supporters in Minnesota, Montana, North Dakota and South Dakota. It takes all of us to make the Northern Crops Institute as great as it is!

-Jim Bahm, NCC Chair



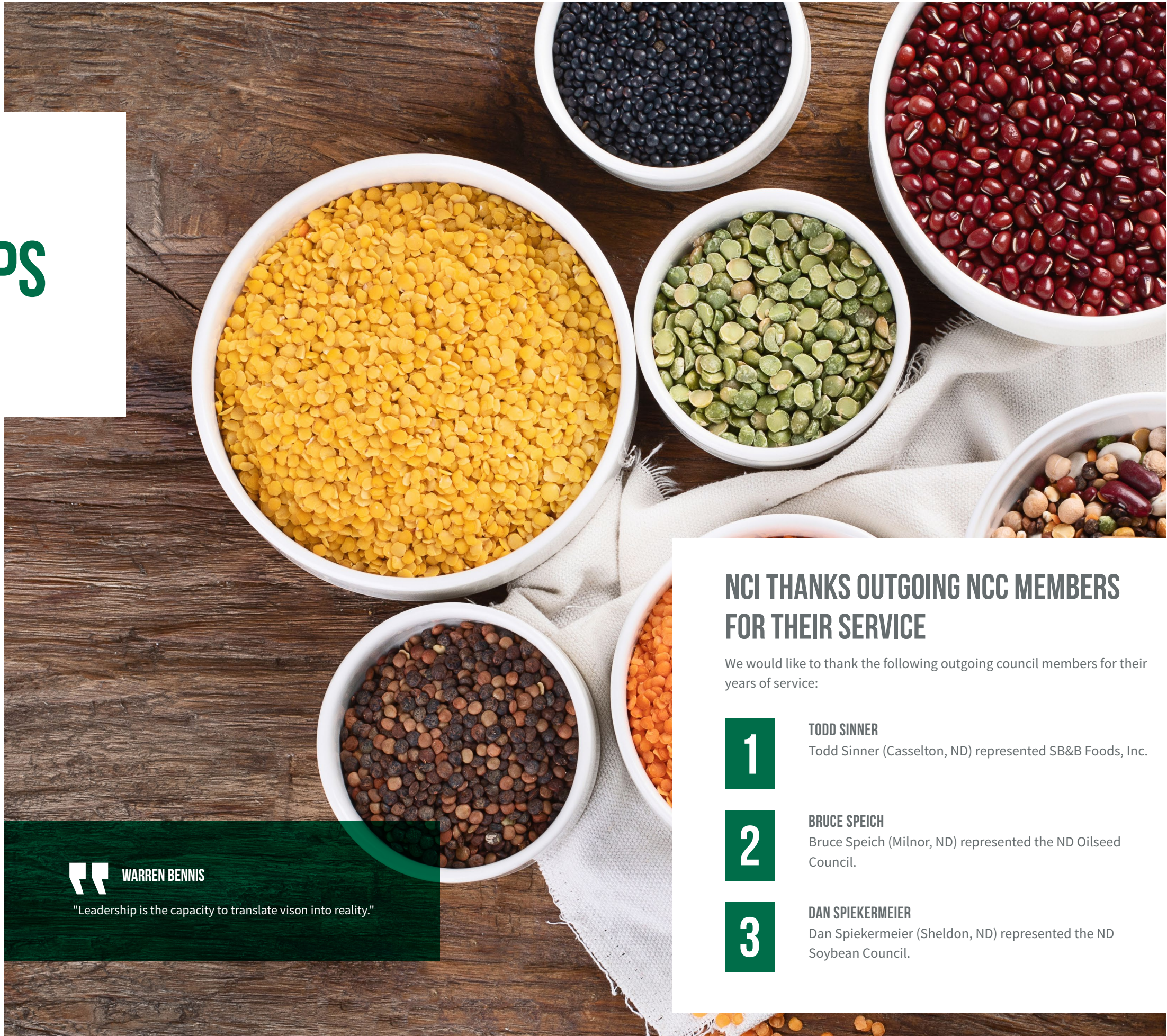
**EDUCATION IS THE MOST POWERFUL WEAPON WE CAN USE TO CHANGE THE WORLD.**

- Nelson Mandela

# 2022 NORTHERN CROPS COUNCIL (NCC)

The Northern Crops Council is the governing body for the Northern Crops Institute. They dedicate their time and talent to making sure NCI is focused on our mission and properly utilizing the time and resources of the institute. It's members consist of:

- Jim Bahm, Chair** | ND Wheat Commission
- Aaron Kjelland, Alternate to Chair**
- Tim Dufault, Vice Chair** | MN Wheat Research & Promotion Council
- Terry Angvick** | MT Wheat & Barley Committee
- Milo Braaten** | ND Soybean Council
- Tregg Cronin** | SD Wheat Commission
- Kris Folland** | MN Soybean Research & Promotion Council
- Doug Goehring** | ND Department of Agriculture
- Kevin Haas** | Northern Pulse Growers Association
- Jiwon Kim** | ND Trade Office
- Greg Lardy** | North Dakota State University
- Peter Matthaei** | Dakota Specialty Milling
- Tony Schneider** | ND Barley Council
- John Swanson** | MN Corn Research & Promotion Council
- Matt Swenson** | ND Oilseed Council
- Vance Taylor** | North Dakota Mill
- Terry Wehlander** | ND Corn Council
- Chris Wiegert** | Healthy Food Ingredients



## NCI THANKS OUTGOING NCC MEMBERS FOR THEIR SERVICE

We would like to thank the following outgoing council members for their years of service:

- 1** **TODD SINNER**  
Todd Sinner (Casselton, ND) represented SB&B Foods, Inc.
- 2** **BRUCE SPEICH**  
Bruce Speich (Milnor, ND) represented the ND Oilseed Council.
- 3** **DAN SPIEKERMEIER**  
Dan Spiekermeier (Sheldon, ND) represented the ND Soybean Council.



**WARREN BENNIS**

"Leadership is the capacity to translate vision into reality."

ON-DEMAND COURSES

# ON-DEMAND COURSES



Our first on-demand course, Barley to Beer, launched in November. On-demand courses can be started and finished anywhere, any time by anyone, and allow attendees to work at their own pace. They are being delivered through our new, user-friendly learning management system, Brightspace. On-demand courses are convenient and cost-effective ways of delivering introductory-level material.



**BARLEY TO BEER**  
On-Demand Course

This course provides participants with information on how to successfully choose high quality malting barley, as well as a basic understanding of the malting process and the brewing of beer, through networked lectures and video tours.

This course will be an engaging mix of lectures from university experts, industry professionals, video tours, and opportunities for Q&A sessions. This course is perfect for craft brewers, craft maltsters, researchers, on-boarding brewery employees and anyone looking to learn more about barley and beer!

Registration fee: \$100  
Register online at <https://courses.northern-crops.com/>

EDUCATIONAL COURSES

# EDUCATIONAL COURSES



The NCI programs staff was busy in 2022 offering an expanded array of programs in traditional and new formats. As the pandemic wound down, NCI brought back our popular in-person courses while continuing to offer courses online. We've learned that our course participants want both virtual and in-person options, and that each type of course serves a different audience. Our 2022 courses included:



**HEALTHY SOLUTIONS FOR FOOD BARLEY USES**  
February 1-10, 2022

This online course brought together 62 participants from Cambodia, Philippines, South Korea, Thailand, and the United States to learn more about the use of barley as a food ingredient. The course highlighted the advantages of including barley in food products. Topics such as the health benefits of food grade barley, U.S. and International food trends, procurement, and assistance in making market place connections.

## 2023 ON-DEMAND COURSE SCHEDULE

**1** **BARLEY TO BEER**  
Launched November 2022

**2** **DEVELOPING INNOVATIONS WITH DURUM: BEYOND PASTA**  
May 2023

**3** **SOURDOUGH BAKING COURSE**  
May 2023

**4** **FEED MILLING 101**  
June 2023

**5** **STONE MILLING BASICS**  
August 2023



**PASTA PRODUCTION AND TECHNOLOGY**  
April 26-28, 2022

We offered this course as a hybrid, with 18 in-person and 4 online participants. The previous two years, the course was offered online only, so it was great to have people come to NCI to participate. This course is typically attended by domestic pasta manufacturers and food companies purchasing pasta as an ingredient in food products. As part of the course, we traveled to Grand Forks, ND to tour the North Dakota State Mill to see Durum milled into semolina and Hard Red Spring wheat milled into flour. Participants learned from industry experts and were involved in hands-on pasta processing and quality testing.

## EDUCATIONAL COURSES



### FOOD SAFETY - PREVENTIVE CONTROLS FOR HUMAN FOOD

May 11-13, 2022

The Food Safety Modernization Act (FSMA) Final Rule for Preventive Controls for Human Foods requires that each facility have a written food safety plan and a hazard analysis prepared by a Preventive Controls Qualified Individual (PCQI). This course provided necessary training and a certificate in order to meet the requirements for an individual to be recognized as a PCQI for their company's food safety program. We had a very engaged group of participants, with excellent questions and comments to help everyone increase their learning.

NCI NORTHERN CROPS INSTITUTE  
HUMAN FOOD SAFETY - PCQI TRAINING  
May 11-13, 2022 | 11 Participants  
USA



### CUSTOM GRAIN PROCUREMENT COURSE FOR MEXICO & CENTRAL AMERICA

June 13-17, 2022

This was a custom course requested by U.S. Wheat Associates, Mexico, Central American, and Caribbean Region to provide wheat procurement training for participants from their region. The course was simultaneously translated into Spanish for 11 participants from Dominican Republic, Haiti, Mexico, Panama, Trinidad and Tobago. We also toured a CHS Export Terminal on Lake Superior.

NCI NORTHERN CROPS INSTITUTE  
GRAIN PROCUREMENT FOR IMPORTERS: MEXICO & LATIN AMERICA  
June 13-17, 2022 | 10 Participants  
Haiti | Dominican Republic | Trinidad and Tobago | Panama | Mexico



### FOOD SAFETY: PREVENTIVE CONTROLS FOR ANIMAL FOOD

May 16-18, 2022

The Preventive Controls for Animal Food is intended to ensure safe manufacturing, processing, packing, and holding of animal food products in the United States. Through successful completion of this course, participants met training requirements for a Preventive Controls Qualified Individual (PCQI) and learned the concepts needed to build a Food Safety Plan.

NCI NORTHERN CROPS INSTITUTE  
ANIMAL FOOD SAFETY - PCQI TRAINING  
May 16-18, 2022 | 8 Participants  
USA



### PASTA FROM MULTIPLE WHEAT CLASSES COURSE

July 11-15, 2022

NCI conducted this course for 21 participants from Chile, Colombia, Dominican Republic, Ecuador, Guatemala, Haiti, Honduras, Mozambique, Nigeria, Peru, South Africa, Trinidad & Tobago, and Venezuela that were sponsored by U.S. Wheat Associates. The course emphasized the use of different wheat classes in the manufacturing of pasta. While Durum produces the highest quality pasta, there are regions of the world where other wheats are used, due to ingredient costs, tradition and the availability of Durum grain, Durum semolina and Durum flour. We helped the participants see first-hand the functional properties of Durum, Hard Red Spring, Hard Red Winter, Soft Red Winter and Hard White and how they impact the quality of the pasta produced. We also toured ND State Mill and Abbiamo Pasta Company in Casselton, ND.

NCI NORTHERN CROPS INSTITUTE  
PASTA PRODUCTION FROM MULTIPLE U.S. WHEAT CLASSES  
July 11-15, 2022 | 20 Participants  
USA | South Africa | Mozambique | Nigeria | Dominican Republic | Guatemala | Honduras  
Haiti | Trinidad & Tobago | Venezuela | Ecuador | Peru | Colombia | Chile | Mexico



### FOOD GRADE SOYBEAN PROCUREMENT

June 6-10, 2022

This course was attended by 21 participants, with 11 sponsored by ASA/WISHH from Cambodia and Myanmar, and 9 sponsored by SSGA from Indonesia, Malaysia, Philippines, and Vietnam. Participants of this course focused on the many aspects of sourcing and purchasing high quality, food grade and identity preserved (IP) soybeans for food products, such as tofu, soymilk, miso, natto, tempeh, high protein beverages, desserts and many others. This course provided training on the important steps in the origination and contracting process. The participants visited a farm to see food grade soybeans being planted and toured two local food grade soybean processing and packaging facilities. The course included lectures from university professors and commodity traders on the contracting process and the risk management tools available to buyers of food grade soybeans.

NCI NORTHERN CROPS INSTITUTE  
FOOD GRADE SOYBEAN PROCUREMENT  
June 6-10, 2022 | 23 Participants  
USA | Myanmar | Cambodia | Malaysia | Vietnam | Indonesia | The Philippines



### INTSOY: INTRODUCTION TO SOYBEAN

August 8-12, 2022

This course provided an overview of the many aspects of the soy industry from planting through processing into animal and human food products. We hosted 19 participants from Cambodia, El Salvador, Guatemala, Ghana, Kenya, Uganda, Dominican Republic, and USA. Participants learned from lectures and lab demonstrations (soy milk and tofu) at the NCI. We toured Buhler's Technical Center in Minneapolis, toured the Lichtsinn Soybean Farm near Dumont, Minnesota, SB&B Foods in Casselton, ND, Prairie AquaTech, SDSU Dairy Processing Plant and SDSU Swine Education and Research Unit in Brookings, SD. Mr. Kim Nill of MN Soybean joined us for the final day providing three presentations on many aspects of soybean production and processing.

NCI NORTHERN CROPS INSTITUTE  
INTSOY: Introduction to Soybean  
August 8-12, 2022 | 19 Participants  
USA | El Salvador | Guatemala | Ghana | Kenya | Uganda | Cambodia | Dominican Republic

## EDUCATIONAL COURSES



### WISHH BAKING WITH SOY August 15-19, 2022

During this course, NCI hosted 11 participants from Ghana, Kenya and Uganda who were sponsored by the World Initiative for Soy in Human Health (WISHH). Participants learned from Ms. Rachel Carlson, NCI Food Scientist making pan breads, flat breads, pastries, and other products with 3 to 5% soy flour added to standard wheat flour. The hands-on baking helped them see the impact of soy flour on water absorption, dough mixing, dough handling, and final product quality. Soy flour also provides increased protein content and nutrition, as well as an economic benefit through increased absorption leading to more products per bag of wheat flour.



### CONTRACTING FOR WHEAT VALUE - USW SOUTH EAST ASIA October 3-5, 2022

During this course, NCI hosted six participants from Thailand, Vietnam and the Philippines that were sponsored by U.S. Wheat Associates to help the participants understand the value of wheat from the U.S. in the flour produced in their flour mills. Mr. Roy Chung from U.S. Wheat Associates and Ms. Rachel Carlson from NCI baked pan breads, cakes and cookies to see how their flours baked compared to commercial flour from the U.S. The participants also learned about testing flour quality using traditional dough testing instruments, but also learned about the use of Solvent Retention Capacity (SRC) as a better indicator of the potential of their flours in different wheat-based products.



### ADVANCED U.S. GRAINS & CO-PRODUCTS PROCUREMENT TRAINING August 29 - September 2, 2022

This course brought 15 members of the animal feed industry in the Philippines to the Upper Midwest to gain a better understanding of the co-products produced during the production of ethanol. These topics included procurement, transportation, risk management, healthy feed rations, processing, economics of feed rations, and storage and handling.



### PLANT BASED TEXTURIZED PROTEIN PRODUCTS October 17-20, 2022

This course was held as an in-person course at NCI. It brought together people from India, Bangladesh, Costa Rica, and the United States. This course was a combination of in-person presentations, virtual presentations, hands on demonstrations by processing equipment companies, and an overview of the Plant Based Texturized Protein Industry from a world-wide perspective. The participants heard presentations on the state of the protein sources in this region which included soybeans, pulse crops, and wheat gluten. They also took part in hands on demonstrations of extrusion and drying of texturized proteins, as well as extrusion of fibrous products.



### GRAIN PROCUREMENT MANAGEMENT FOR IMPORTERS September 12-21, 2022

NCI hosted 33 participants from Egypt, Indonesia, Israel, Italy, Kenya, South Korea, Morocco, Nigeria, Philippines, Senegal, Tunisia, Turkey, and USA that were sponsored by U.S. Grains Council, U.S. Wheat Associates and U.S. Soybean Export Council. The course focused on the mechanics of grain merchandising, and was designed to educate individuals who are responsible for purchasing grain. Academic and commodity trade authorities lecture on cash and futures markets, and grain merchandisers guide participants through the full complexity of the international grain markets. The course provided an overview of the U.S. grain handling and marketing system and the risk management tools available to assist buyers in purchasing U.S. grain that meets their quality needs at the best value. This course was led by Dr. Bill Wilson, Ph.D., Dr. Frayne Olson and Dr. David Bullock of NDSU, plus many experts of the domestic and international grain trade. The group traveled to the Duluth, Minnesota area to meet with the Duluth Seaway Port Authority and tour the CHS Export Grain Terminal, and then to Minneapolis to meet with experts in the grain trade, and tour the CHS barge loading facility.



### QUALITY FEED PELLET PRODUCTION COURSE November 1-10, 2022

This online course brought together 13 participants from Denmark, South Korea, Germany, Chile, the Philippines, Canada, and the U.S.A. This course provided the participants with the latest technical information for a better understanding of today's pellet manufacturing industry and the role different ingredients play in the pelleting process.

## EDUCATIONAL COURSES



### **SORGHUM FOOD PRODUCT DEVELOPMENT COURSE** November 14-16, 2022

This course provided an industry overview, nutritional overview, discussion of trends, and report on the benefits and challenges in the sorghum food industry. There was hands-on product development in the extrusion lab, baking demonstrations of products in baking lab, and procurement considerations with suppliers.



### **ETHANOL PROCUREMENT FOR IMPORTERS COURSE** November 28 – December 16, 2022

This course brought together USGC Staff, stakeholders, and importers from the ethanol industry across the Council's offices in China, Middle East & Africa, Southeast Asia, Latin America and Washington, DC to cover sessions addressing the U.S. ethanol industry, a lifecycle analysis of ethanol, market outlook and trade, product handling, and U.S. Policy and Sustainability. There were 27 participants taking part in this course.



### **GRAIN INDUSTRY EMERGING LEADER PROGRAM: MERCHANDISING TO LEADERSHIP** December 6-8, 2022

This in-person course provided an overview of grain merchandising as it applies to grain elevator management. The major topics covered included a better understanding of the cash and futures markets, learning merchandising strategies, hearing from industry professionals about their experiences in grain trading, and learning about transportation and logistics of grain handling and shipping.

**NCI** NORTHERN CROP INSTITUTE USA  
Grain Industry Emerging Leader Program - Merchandising to Leadership  
December 6-8, 2022 | 10 Participants

# 2023 COURSE SCHEDULE

\* Subject to change. TBD = to be determined.

- |           |                                                                        |           |                                                                                          |
|-----------|------------------------------------------------------------------------|-----------|------------------------------------------------------------------------------------------|
| <b>1</b>  | <b>HEALTHY SOLUTIONS FOR FOOD BARLEY USES</b><br>January 30-February 9 | <b>13</b> | <b>INTSOY: INTRODUCTION TO SOYBEAN</b><br>August 14-18                                   |
| <b>2</b>  | <b>UNIFORMITY IN THE FEED INDUSTRY</b><br>March 21-23                  | <b>14</b> | <b>FEED INGREDIENT PROCUREMENT COURSE</b><br>August 28 - September 1                     |
| <b>3</b>  | <b>PASTA PRODUCTION AND TECHNOLOGY</b><br>April 25-27                  | <b>15</b> | <b>PASTA FROM WHEAT MULTIPLE CLASSES</b><br>August 28-September 1                        |
| <b>4</b>  | <b>ETHANOL PROCUREMENT</b><br>May 8-10                                 | <b>16</b> | <b>NEXT FIVE YEARS CONFERENCE</b><br>September 11                                        |
| <b>5</b>  | <b>HIGH OLEIC SOY FOODS COURSE</b><br>May 16-18                        | <b>17</b> | <b>GRAIN PROCUREMENT MANAGEMENT FOR IMPORTERS</b><br>September 11-20                     |
| <b>6</b>  | <b>FERMENTED FOODS CONFERENCE</b><br>May 18                            | <b>18</b> | <b>BARLEY AND MALT QUALITY</b><br>September 18-20                                        |
| <b>7</b>  | <b>PRODUCT COMMERCIALIZATION WORKSHOP</b><br>May 19-20                 | <b>19</b> | <b>HEALTHY FOODS CONFERENCE</b><br>September 24-25                                       |
| <b>8</b>  | <b>NCI SUMMER AG ACADEMY</b><br>June 14-16                             | <b>20</b> | <b>FOOD GRADE SOY PROCUREMENT CONTINUITY</b><br>October 2-5                              |
| <b>9</b>  | <b>FOOD GRADE SOYBEAN PROCUREMENT</b><br>June 19-23                    | <b>21</b> | <b>ETHANOL PROCUREMENT</b><br>October 23-25                                              |
| <b>10</b> | <b>MINNEAPOLIS PORT TOUR</b><br>July 10-11                             | <b>22</b> | <b>SOYBEAN/SOYBEAN MEAL PROCUREMENT AND RISK<br/>MANAGEMENT</b> October 30-November 3    |
| <b>11</b> | <b>BISON SALES TRAINING</b><br>July 17-18                              | <b>23</b> | <b>ANIMAL NUTRITION: INGREDIENT AVAILABILITY AND INCLUSION<br/>RATES</b> November 6-16   |
| <b>12</b> | <b>ANCIENT GRAINS CONFERENCE</b><br>July 25                            | <b>24</b> | <b>GRAIN INDUSTRY EMERGING LEADER PROGRAM: LEADERSHIP<br/>VS MANAGEMENT</b> December 5-7 |



## WEBINARS

# WEBINARS



NCI webinars have proven to be a powerful tool in developing markets, connecting people, and sharing ideas to grow markets for crops grown in the region. The webinars have allowed us to reach audiences and share messages that we would not be able to during an in-person course. It eliminates the need for travel, and allows us to plant seeds of innovation in the region and globally.



This past year, NCI hosted a total of 54 webinars under the following series names: the NCI Market Update, Future of Feeding, Cereal Innovators and NCI's newest webinar series titled, "Everything Ethanol". The Everything Ethanol webinar series focuses on advancing global ethanol market development with topics throughout the series including ethanol marketing factors, policies around the world, human health & ethanol, and more. Three new series are in development for 2023 and beyond.

NCI also collaborated with the World Initiative for Soy in Human Health (WISHH) to offer Soy Forward, a four-part webinar series for countries in Southeast Asia. In total, 2,577 participants from 57 countries worldwide participated in one of NCI's webinars or watched its recording. This statistic shows why the NCI truly thrives at *Connecting in the Global Marketplace*.

## HANDBOOKS

# HANDBOOKS

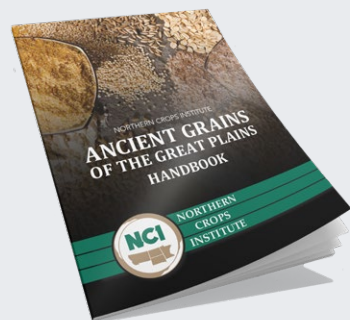


The Northern Crops Institute published its *Ancient Grains of the Great Plains Handbook* this past fall. The handbook was designed to provide an overview of the broad category of crops known as ancient grains, also known as heritage grains. The

handbook's purpose is to introduce ancient grains categories, their characteristics, and uses. It aims to provide introductory information on ancient grains so that its readers will dive deeper into the production, procurement, processing, and/or marketing of ancient grains and ancient grain products.

To purchase your copy of the *Ancient Grains of the Great Plains Handbook*, please visit: [northern-crops.com/store](https://northern-crops.com/store).

NCI continues to expand its written offerings as well. Three new publications are in development for 2023: Wheat Quality Handbook, Barley Food Uses Handbook, and Kitchen to Consumer: A Practical Guide to Commercializing Your Food Idea.



## CONFERENCES

# CONFERENCES



NCI successfully launched two new conferences. The Ancient Grains conference brought together people from across the industry to the historic Oliver Kelley Farm in Elk River, MN. The Next 5 Years Executive Conference gave attendees the chance to begin planning for the possibilities of the coming years through the lenses of geopolitics, global food production, sustainability policies, and energy transitions. These conferences will be repeated in 2023, and our first Fermented Foods conference will happen in May.



### NCI HOSTS FIRST EVER ANCIENT GRAINS CONFERENCE TO PREPARE FOOD LEADERS FOR GROWTH

The Northern Crops Institute (NCI) hosted its first ever Ancient Grains Conference on July 20th, 2022, at the Oliver Kelley Farm in Elk River, MN. The purpose of the event was to explore and educate the 50+ attendees of the conference on the benefits of consuming Ancient Grains foods while also showing them the numerous potential uses for these types of grains. With three keynote speakers, numerous panel participants, and hands-on work for attendees, this conference offered a true crash-course in the viability of Ancient Grains in the future and why they've quickly become the latest hot macro food trend.

The conference began with opening remarks from three individuals. Once these were complete, the first keynote presentation began with Shrene White, Director of Specialty Grains & General Manager of The Annex by Ardent at Ardent Mills, presiding. During her keynote, White provided some backstory on what Ancient Grains are and why they are increasingly being sought after by the public.

Following a short break, the first panel discussion began: Agronomy. Led by Neil Doty of NCI, this discussion focused largely on how ancient grains are grown and maintained along with how they're currently being used in the food industry. A second panel (Trends & Applications) was also featured at the conclusion of this one, and was led by Aidin Milani, Sales & Development Manager for Pulses & Seeds at Buhler, Inc. Milani's panel introduced conversations regarding modern approaches to utilizing Ancient Grains, and led right into the lunch hour.

The second keynote speaker was Andrew Ross, a professor in the Food Science Department at Oregon State University. His presentation focused largely on the nutrients that are found within Ancient Grains foods and the numerous health benefits that one can expect if they begin incorporating these Ancient Grains foods into their diet regularly.

Upon the end of Ross's keynote, attendees transitioned away from presentations to their hands-on work for the day in the Oliver Kelley Farm kitchen. Hosted by Laurie Scanlin, Principal Food Scientist at Ardent Mills, participants were provided instructions with how to work with the tools and Ancient Grains ingredients provided to them for the baking exercise. They then created their own dough and used it to prepare a number of food items. The attendees then were able to consume the foods they created!

The last keynote speaker was Jonathan Bethony, co-owner and head baker at SEYLOU. Bethony spoke about his business and also the new and creative ways his bakery has begun using Ancient Grains for. He also shared what his and other bakeries his is affiliated with plan to do with the increasing adoption of Ancient Grains, giving attendees another taste of what's to come as Ancient Grains become more and more accepted in the baking world.



Overall, this was an extremely successful event, not only for NCI but also for the Oliver Kelley Farm. Both teams worked endless hours in tandem with each other to make this conference possible, and the results were well worth it.

# CONNECTING IN THE GLOBAL MARKETPLACE

# 1,948

LIVE PARTICIPANTS  
and 1,147 non-live participants from

# 57

COUNTRIES  
attended or watched  
the recording of an  
educational course or  
webinar hosted by the  
NCI in 2022.

The Northern Crops Institute is an international meeting and learning center that unites customers, commodity traders, technical experts, and professors for discussion and education.

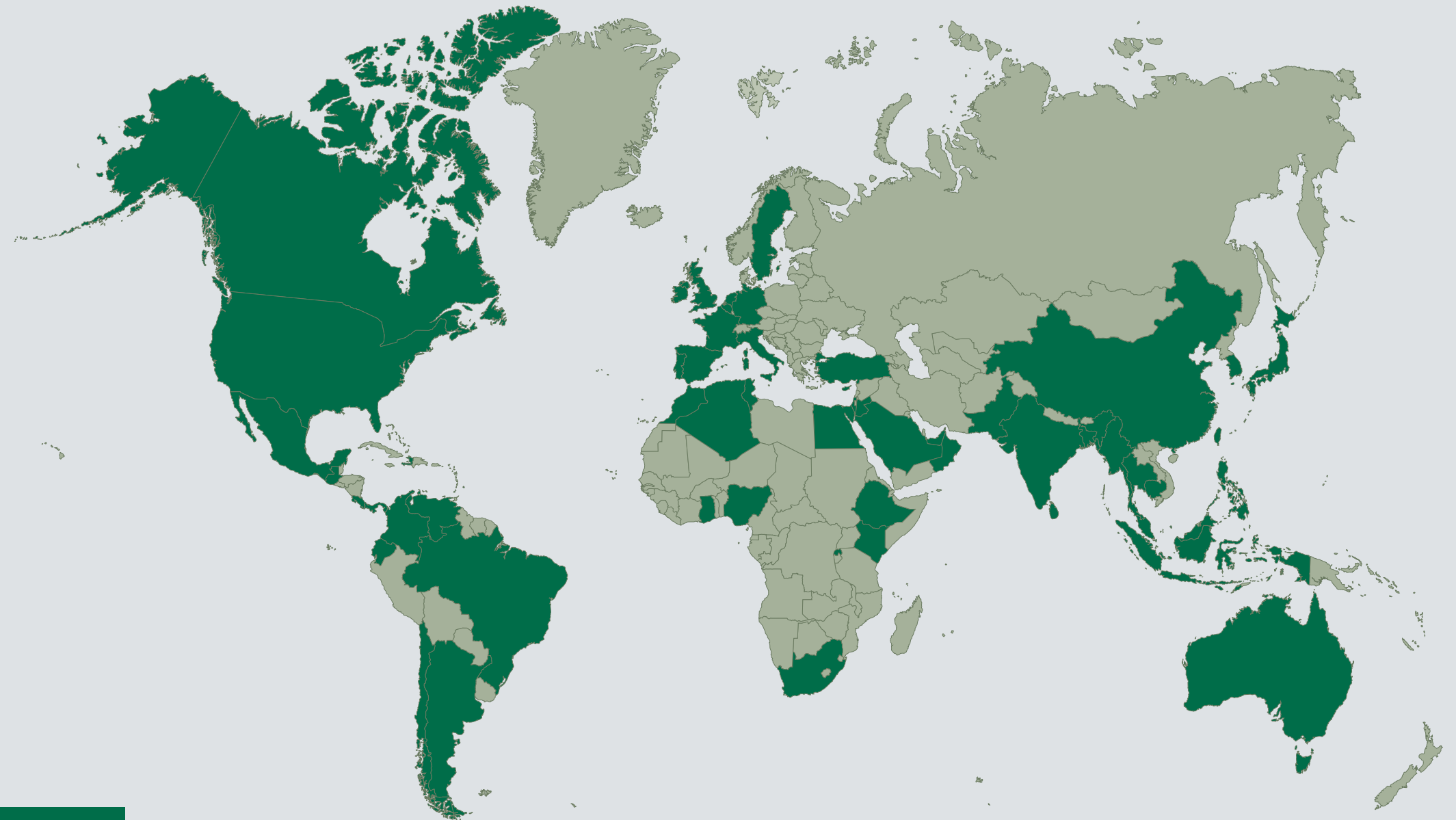
The Northern Crops Institute is a globally recognized facility. In the past year, we had the privilege of educating 1,948 live participants and 1,147 non-live participants from 57 different countries through our courses, webinars and recordings of both. It is through these avenues that we work to expand and maintain domestic and international markets for northern-grown crops.

At the Northern Crops Institute, we believe that crops grown in the northern-tier of the U.S. are valued by perceptive worldwide customers and will stand the test of quality against competitors. We also believe that adapting to new trends and technologies is necessary to remaining vital to the agricultural industry. This year's record participation showed us that we can persevere through anything, and allowed us to truly connect in the global marketplace.

During last year's courses and webinars, participants had the opportunity to virtually tour farms and facilities, engage in virtual demonstrations, attend a variety of lectures from university professors and technical experts in the industry, and much more.

## “ COURSE PARTICIPANT

“To be honest, I didn't know what to expect, but it was amazing. First of all, the member's groups were great and to see the whole supply chain and where the grains come from: the farmers, to the trains, or through the port, and from there to our country, it was pretty amazing to see it. It was an amazing experience. I came back and I was full of energy.”



■ NCI's global reach in 2022 denoted by the countries participants were from.



### DID YOU KNOW?

The Northern Crops Institute hosted a total of 54 webinars in 2022.

# EVENTFUL YEAR FOR NCI TECH TEAM

To anyone that has interacted with the tech team recently, it's no surprise to hear that 2022 was an eventful year. There were many good odors coming from our food labs, any many samples to try for offering internal feedback or sensory ratings. Okay, and some odors were less worthy of cookbook inclusion...



For at least the 4 years that NCI has been tracking, we continue to set records for the number of clients and individual projects per year. This of course coincides with our increased staff, but gives a good sign that our services are in demand and the team does excellent work. We also continue to increase the number of sponsored grant applications and project work as we have the staff expertise to engage a wider group of ag commodity groups than ever before. Significantly more time was devoted to NCI short courses, tours and product demonstrations now that many groups are traveling again. This includes the project and grants that Shane is bringing in to the NCI Feed Production Center with his connections and leadership there.

With this increase in projects, we continue to make efforts each year to look for internal process efficiencies. Great improvements were made in 2022 in how we work, with tracking projects, data, invoicing, etc. Better communication tools were also a focus for internal Q/A, project sharing and updates, especially with multi-stage projects, and over 3 floors, and 2 buildings. We aren't perfect yet, and still have improvements to make so that we can offer exceptional customer service to go along with the exceptional technical knowledge.

We have remained steady in our requests for pasta production, bakery products, snack foods, and analytical services. We continue to increase our efforts in oilseed processing, from dehulling to expeller pressing, and solvent extraction. The past year, that included a wider variety of oilseeds. In some cases, we are helping write protocols for new commodities. We also experienced significantly more sensory projects as clients are asking us to help with product development from concept to finished product. NCI was perhaps not considered a "food product development kitchen" in past years, but we certainly are now.



What excites us is that more companies are beginning to learn about NCI and our capabilities. NCI has not honestly promoted our tech services to any extent, and yet people find us. We are being contacted by new clients through the website and through client referrals. We have picked up numerous clients from outside this region, and even some existing customers are surprise by our wide offering of services. It happened repeatedly that a client contacted us for a particular service then changed priorities or added other services when they learned all we can do. We have also consulted with more people than ever about commodity sourcing, product development, packaging, etc. Sometimes we answer their questions directly, or at least get them in touch with the right contacts. These groups may not come to NCI for tech services, but we are meeting our mission all the same.

As an example, the recent high protein food push has been very good for NCI as it crosses over into every food category. We continue to believe that whatever the next food trend is, NCI will have a role in promoting the wide-range of commodities grown in the four-state region. We look forward to providing the customer service that connects the global marketplace.

# NCI IN THE WHEAT BOOTH AT LIVING AG CLASSROOM

Each year, the Living Ag Classroom educates 4th grade students on the diversity of agriculture in the state of North Dakota, and its role in feeding the nation and the rest of the world. In early March 2022, many agricultural organizations and commodity groups in the state gathered at the Red River Valley fairgrounds to highlight different areas of agriculture.

The North Dakota Wheat Commission was one of the twelve presenting groups on this year's roster. The NCI communications team was more than happy to help out at the booth when asked if any volunteers were available.

One key part of the NCI's mission is to promote the region's crops through education. While NCI's educational courses are created for business professionals and other technical experts, it's never too early to start teaching about agriculture. It is important for kids (just like the 4th graders at the event) to learn about where their food comes from.

Specifically, the kids learned about the two types of wheat grown in North Dakota: durum wheat and hard red spring wheat. The kids took guesses on what foods were made from these types of wheat. To break down some numbers, one bushel of durum wheat makes about 42 boxes of pasta, and one bushel of spring wheat makes about 42 loaves of white bread or 64 loaves of whole wheat bread.

Next, the students were able to see the difference between the grainy semolina made from milling durum and the powdery whole wheat flour from milling hard red spring wheat. They learned about the three parts of a kernel of grain (bran, germ, endosperm), and what each is used for.

The second part of the demonstration had to do with all the factors that contribute to the cost of bread at the grocery store. By using convenient whole numbers for easy math, the kids calculated that a farmer makes approximately 10 cents for the wheat in one loaf of bread. Their equation used wheat prices at 6 dollars per bushel divided by 60 loaves of bread made per bushel. It was then explained how the rest of the cost of bread is made up of several other people working together. These include the grain elevator, the flour mill, transportation, the bakery, the grocery store, and more.



4TH GRADERS PLAYED "IS THE PRICE RIGHT?" TO CALCULATE THE FARMER'S SHARE FOR HIS WHEAT IN THE PRICE OF ONE LOAF OF BREAD.



THE NCI COMMUNICATIONS TEAM TRAVELED TO THE RED RIVER VALLEY FAIRGROUNDS TO HELP TEACH 4TH GRADERS ABOUT NORTH DAKOTA WHEAT.

Lastly, the students learned about wheat exports. The United States produces twice as much wheat than can be consumed here, so half is sold and exported to other countries – over 60 countries to be more specific. The Philippines buys the most hard red spring wheat from the United States, and Italy buys the most durum wheat. The 4th graders were impressed at how much of an impact wheat from the United States (or North Dakota specifically) has on feeding the world.

The NCI would like to thank the North Dakota Wheat Commission for allowing us to help at this great educational event. An additional thank you goes out to all the other commodity groups and agricultural organizations who also attended to make this event a success.

# NCI WELCOMES PARTICIPANTS FOR 2022 SOY NUTRITION WORKSHOP



PARTICIPANTS WERE ABLE TO GET HANDS-ON EXPERIENCE NOTING THE TASTE, TEXTURE, SHAPE, AND MORE OF THE TOFU.



NDSCS CULINARY STUDENTS CHECK OUT THE FRESH TOFU MADE AT NCI.



NCI FOOD TECHNOLOGIST EDIL VIDAL-TORRES LED THE TOFU AND SOYMILK DEMONSTRATION.

In October 2022, NCI welcomed a group of dietitians, influencers, and culinary students from North Dakota State College of Science as part of the soy nutrition workshop they are attending. The NCI portion included a tour of NCI and a firsthand look at how tofu and soymilk are made.

NCI's food technologist Edil Vidal-Torres led the soymilk and tofu making demonstration in NCI's extrusion lab. This was a great learning experience for the group to see in real time and action how the beans are prepared and then grinded in the machine as the process occurs.

“Earlier today they got to try some different tofus, some miso, soy nut butter, soymilk, and things like that, so they were able to get an idea of the taste and texture and how to incorporate them into meals,” explains Shireen Alemadi, Program and Education Coordinator at NDSC.

In addition to enjoying some foods with added soy protein, the group also took a tour to a local farm to see soybean harvest in action. “People are always interested in where their food comes from,” notes Linda Fund, Executive Director of the Soyfoods Council. The farm visit added some additional insight for the group starting right on the farm where the soybeans are planted, grown, and harvested.

This workshop was put on by the Soyfoods Council and sponsored by the North Dakota Soybean Council. NCI would like to thank all those involved in planning this workshop and is looking forward to hosting again.

# PELTIER COMPLEX, NCI'S NEW HOME, TAKING SHAPE



The Northern Crops Institute (NCI) in Fargo, ND, is excited to have a new home in the Peltier Complex beginning in the Summer of 2024. This new 3 story and 160,000 square foot facility is located on the southwest corner of the North Dakota State University campus on 18th Street North. The Peltier Complex will be the new home of NDSU's food science, meat science and cereal science along with NDSU, USDA, and NCI. This will be the largest academic building project in NDSU's history. The name was given by the Peltier family, who have had a long history in agriculture at NDSU.



RENDERING OF PELTIER COMPLEX, SOUTHEAST APPROACH

In the new facility, NCI will have over 3 times the space we have today, along with 3 new labs for soy, protein, and fermentation. There will also be upgrades to the pasta lab, bake lab, and pilot-scale mill room. Additionally, all labs will be food-grade and recognized as safe for human consumption.

The Peltier Complex will open opportunities and markets for crop and livestock production, food systems and the development of new agricultural products. The state-of-the-art facility will include spaces for everyone to collaborate and create a community between the different organizations and programs the building hosts. The building will include shared meeting spaces, huddle rooms, offices, work spaces, and a shared sensory kitchen and dining space. This complex will bring together scientists, teachers, farmers, customers and students who will develop innovative solutions to complex problems. The Peltier Complex will be a great way to recruit more students and professionals that are passionate about agriculture to Fargo.



PELTIER COMPLEX, CURRENT PROJECT STATUS

Today, construction is progressing well and “on schedule to start moving in the first part of April,” said Mike Ellingson, NDSU Director of Facilities Management. “The steel is all erected with most of the exterior framing up,” said Ellingson. “The roof is fully installed and the exterior metal panel installation just started.”

The Peltier Complex is set to be completed in Spring of 2024. NCI is excited to have more room and technology to continue our work as an international meeting and learning center to promote regional agriculture.

## THANK YOU'S

# THANK YOU NORTHERN CROPS INSTITUTE SUPPORTERS

Thank you to all who supported NCI programs and activities in 2022. An additional thanks to our:

## 2022 FUNDING PARTNERS

Minnesota Corn Growers Association  
Minnesota Department of Agriculture  
Minnesota Soybean Research & Promotion Council  
Minnesota Wheat Research & Promotion Council  
Montana Wheat & Barley Committee  
North Dakota Barley Council  
North Dakota Corn Utilization Council  
North Dakota Soybean Council  
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North Dakota Wheat Commission  
Northharvest Bean Growers  
South Dakota Corn  
South Dakota Department of Agriculture  
South Dakota Wheat Commission



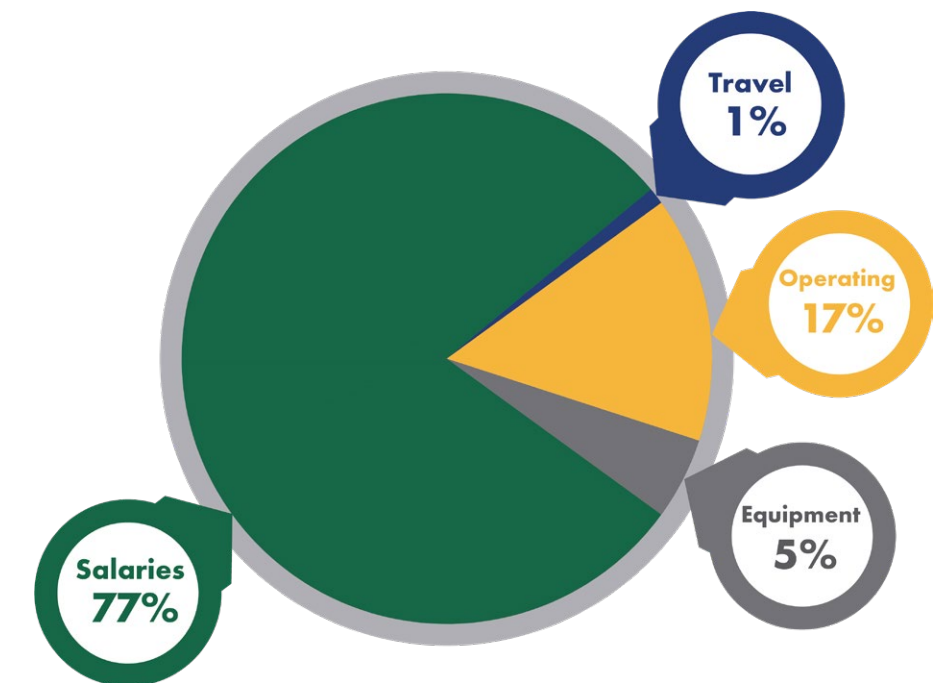
**MARK JIRIK, DIRECTOR**

"Thank you to all who supported the Northern Crops Institute last year. Your generosity allows us to expand and maintain domestic and international markets for northern-grown crops."

## FINANCIALS

# NCI 2022 EXPENSE BREAKDOWN

A breakdown of NCI's fiscal year 2022 final expenses is as follows:



## MISSION:

The 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.

# NEED TO TEST AN INGREDIENT OR GET ASSISTANCE WITH PRODUCT OR PROCESS DEVELOPMENT?

We're here for you.



## TECHNICAL SERVICE CLIENT

“Since we started these conversations (with NCI), we have probably gained at least 50% in volume.”

### PROCESSING AND PRODUCT DEVELOPMENT

# PROCESSING AND PRODUCT DEVELOPMENT

If you need to test an ingredient or get assistance with product or process development, then pilot-scale processing at the Northern Crops Institute might be your solution.

#### WE'RE HERE FOR YOU.

NCI's technical staff has worked with food processors and ingredient suppliers, large to small, established to start-up, from all over the globe.

#### WE'VE GOT EXPERIENCE.

Our technical staff has experience in a wide variety of crops and food production including milling, pasta production, baking, soyfoods, oilseed extraction, and extruded foods. We can make a variety of baked products, tortillas, breakfast cereals, long and short-good pasta, snack foods, soy milk and tofu, and texturized vegetable protein and meat analogs. NCI also manages a livestock feed production center with full-fat extrusion and pelleting available. Additionally, we can assist with analytical and testing services and staff will travel worldwide to assist in the uses of northern-grown crops.

#### WHAT WE OFFER.

We offer cost effective service fees, confidentiality, complete services including purchase of ingredients (specialty ingredients are supplied by client - other ingredients provided at cost) and laboratory for proprietary use (upon approval).

TO LEARN MORE OR CONTACT US WITH QUESTIONS, VISIT:

[WWW.NORTHERN-CROPS.COM/TECHNICAL-SERVICES](http://WWW.NORTHERN-CROPS.COM/TECHNICAL-SERVICES)

## OUR TEAM

We're here to assist you.

### TECHNICAL TEAM

David Boehm | Technical Director  
Kim Koch, Ph.D. | Senior Feed, Milling and Extrusion Specialist  
Shane Mueller | Feed Mill Manager  
Neil C. Doty, Ph.D. | Business Development Manager  
Travis Strobel | Grant and Client Administrator  
Rilie Morgan | Process Project Manager  
Owen Oltman | Processing Technologist  
Rachel Carlson | Food Scientist  
Brent Trela | Food Scientist  
Fatemeh Zare | Food Scientist  
Mary Niehaus | Food Technologist  
Edil Vidal Torres | Food Technologist  
Amrita Ray, Ph.D. | Milling Specialist

### EDUCATIONAL PROGRAM TEAM

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Brian Sorenson | Program Manager  
Nick Sinner | Program Manager  
Krista Jansen | Program Specialist  
Liz Labuhn | Program Coordinator  
Brooke Thiel | Education Specialist

### COMMUNICATIONS TEAM

Grant Christian | Communications & Marketing Manager  
Kali Berlinger | Communications & Marketing Specialist  
Kari Schiefelbein | Communications & Marketing Specialist

### ADMINISTRATIVE TEAM

Janel Brooks | Accountant  
Lynn Stadum | Administrative Assistant

### EXECUTIVE TEAM

Mark Jirik | Director

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**CONNECTING IN THE**  **GLOBAL MARKETPLACE**

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