

CONNECTING IN THE GLOBAL MARKETPLACE

Northern Crops Institute

2021 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

CONTENTS

Director's Report	3	News & Events	14
NCC Chair's Report	4	Technical Services	17
2021 Northern Crops Council	6	Communication	18
Educational Courses	8	Video Production	19
2022 Course Schedule	9	Thank You's	20
Webinars	10	Financials	21
Handbooks	11	Processing & Product Development	23
Global Outreach	12	Our Team	23

2021 will be a year to remember for the Northern Crops Institute. The foundation for growth and a new era in market development were laid down. In a very big way, it was the leadership of our North Dakota elected officials that have brought into motion the building of the Peltier Complex. The building will house the Northern Crops Institute, NDSU's Cereal and Food Science Programs, Meat Science facilities, and Agricultural Engineering and Bioprocessing Labs, in addition to the USDA's cereal processing labs.

It will be a building that fosters innovation and collaboration for the region as a whole. Our founders understood that crops don't end at state borders, and our supporters realized that the impact of this endeavor doesn't stop at them either. It is the reason we are seeing four-state support for the Peltier Complex in giving as well.

Less noticeable, there was a day-by-day change that is occurring at NCI as well. 2021 shattered all previous records when it came to number of people participating in programs. NCI hosted fifteen courses, forty-three webinars, and

released its second handbook. From a technical services standpoint too, there were a record number of clients and projects that shattered anything that has been done before.

All of the work and investment is setting the Northern Crops Institute up for even greater opportunities to have an impact on the region and beyond for 2022. These are investments in realizing our vision of establishing northern-grown U.S. crops as the world's choice for food, feed, and value-added applications.

2021 was also the year that we celebrated forty years as an Institute. None of the work that we've accomplished in 2021 could have happened without the vision and growth of our past teams, leadership, Northern Crops Council members, and commodity group leaders. We are building on their legacy! Here's to the next forty years!

-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. In that time, NCC meetings have gone from completely virtual, to hybrid, to back in person; similar to NCI short courses. We know there is a need for all those options going forward. I want to give a big thanks to the staff of NCI for stepping up and carrying NCI forward into the future. From videos, to webinars, great speakers and short courses – the pandemic has only sped up the rate of growth and change.

As chair of the NCC, I took part in a few of the short courses. The grain procurement course, the oldest course at NCI, was a memorable one. There were participants from around the world and close to a hundred people on the virtual course banquet.

While going virtual opens up new opportunities, it is great to be back in person. Already in 2022, I've had the chance to participant in a few in person programs. 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.

As a farmer and rancher, there is a fair amount of optimism right now. While we'll be late getting the crop, it will get in. The snow and moisture seem to indicate that the drought is broken.

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 back in person. 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



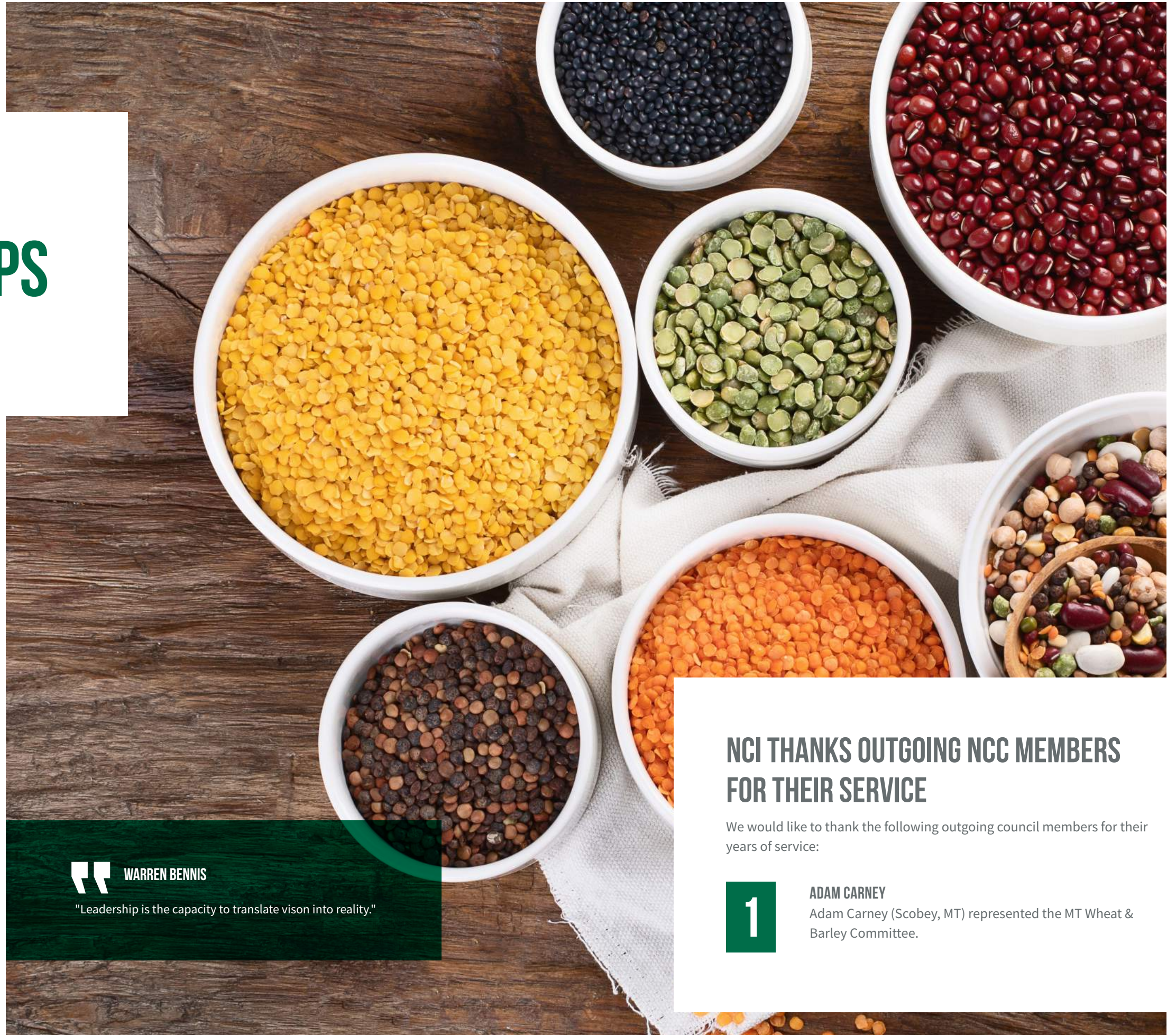
EDUCATION IS THE MOST POWERFUL WEAPON WE CAN USE TO CHANGE THE WORLD.

- Nelson Mandela

2021 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
- Tim Dufault, Vice Chair** | MN Wheat Research & Promotion Council
- Terry Angvick** | MT Wheat & Barley Committee
- 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
- Todd Sinner** | SB&B Foods, Inc.
- Bruce Speich** | ND Oilseed Council
- Dan Spiekermeier** | ND Soybean Council
- John Swanson** | MN Corn Research & Promotion Council
- Vance Taylor** | North Dakota Mill
- Terry Wehlander** | ND Corn Council
- Chris Wiegert** | Healthy Food Ingredients



WARREN BENNIS

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

NCI THANKS OUTGOING NCC MEMBERS FOR THEIR SERVICE

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

1

ADAM CARNEY

Adam Carney (Scobey, MT) represented the MT Wheat & Barley Committee.

EDUCATIONAL COURSES



2021 was an exciting year for NCI educational programs. Despite the ongoing COVID pandemic, NCI conducted all 15 courses online, and two hybrid courses where participants attended both in-person and online. The first course of the year was Healthy Solutions for Food Barley Uses, a new course held in February. The 28 participants attended online from Japan, South Korea, and the U.S. The course covered topics on the quality, utilization, and nutrition of barley for human food. The School of Wheat Quality was another new course for 2021, featuring Dr. Senay Simsek, NDSU Professor and Director of the Hard-Red Spring Wheat Laboratory. This course was sponsored by the U.S. Wheat Associates (USWA) and was designed for quality control managers and technicians. Over the six weeks, the course provided an in-depth study on the quality analysis of wheat, flour, and bread. Interest in the course was very strong, requiring two sessions, and had a total of 92 Participants from Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Vietnam.

In May, two new soymilk and tofu courses were conducted for 49 total participants from India on the quality and utilization of food-grade (identity preserved) soybeans. These courses were sponsored by the U.S. Soybean Export Council (USSEC), with the first course designed for entrepreneurs interested in starting soy food companies, and the second for current soy food manufacturers. Tofu and soymilk are gaining popularity in India with interest in additional soy-food products, including beverages, desserts, and cheeses. NCI conducted two sessions of the new Food-Grade Soybean Procurement course for USSEC, with participants from Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Vietnam.



FIRST IN-PERSON COURSE OF 2021: GRAIN INDUSTRY EMERGING LEADER PROGRAM: MANAGEMENT VS. LEADERSHIP

The Durum Foods course was another new course for 2021 and focused on the use of durum wheat for products other than pasta. There were 21 participants from Chile, Japan, Turkey, Canada, and the U.S. who attended this online course in August. The Ethanol Procurement for Importers course was also a new offering this year, with 80 participants from 25 countries, and was sponsored by the U.S. Grains Council (USGC). Topics included; U.S. Renewable Fuel Standard, Life Cycle Analysis, Risk Management in Renewable Energy Products, Supply Chain Management, and U.S. Corn and Ethanol Market Situation and Outlook. Participants came from several different countries which included; the United Kingdom, Spain, Saudi Arabia, Netherlands, UAE, Kenya, Ghana, Jordan, Nigeria, India, Singapore, Columbia, Chile, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Dominican Republic, Panama, Malaysia, South Korea, Taiwan, Japan, China, and the U.S.

The Grain Procurement Management for Importers course was conducted online again in September with 80 participants representing 22 countries. These countries included; Brazil, Chile, China, Colombia, Ecuador, Indonesia, Israel, Japan, Kenya, Mozambique, Nigeria, Oman, Philippines, R.O.C. Taiwan, Saudi Arabia, Senegal, Tanzania, Thailand, Tunisia, Turkey, UAE, and the U.S. The Quality Feed Pellet Production course was held in November with 19 participants from Eastern Europe.

NCI was also able to host two hybrid courses this past year, meaning participants attended both in-person and online. The Grain Industry Emerging Leader Program: Management vs. Leadership was held in June/July, and the Barley and Malt Quality course was held in September. We are looking forward to holding courses both in-person and online this coming year.

2022 COURSE SCHEDULE

* Subject to change. TBD = to be determined.

- | | |
|---|--|
| 1 HEALTHY SOLUTIONS FOR FOOD BARLEY USES (ONLINE)
February 1-10 | 10 INTSOY: INTRODUCTION TO SOYBEAN (IN-PERSON)
August 7-12 |
| 2 BOARD LEADERSHIP (IN-PERSON)
March 22-23 | 11 GRAIN PROCUREMENT MANAGEMENT FOR IMPORTERS (IN-PERSON)
September 12-23 |
| 3 PASTA PRODUCTION AND TECHNOLOGY (IN-PERSON)
April 26-28 | 12 BARLEY AND MALT QUALITY (IN-PERSON)
October 3-6 |
| 4 FOOD SAFETY - PREVENTIVE CONTROLS FOR HUMAN FOOD (IN-PERSON) May 11-13 | 13 CONTRACTING FOR WHEAT VALUE (U.S. WHEAT)
October 3-6 |
| 5 FOOD SAFETY - PREVENTIVE CONTROLS FOR ANIMAL FOOD (IN-PERSON) May 16-18 | 14 GRAIN PROCUREMENT MANAGEMENT FOR IMPORTERS (ONLINE)
October 10-21 |
| 6 FOOD GRADE SOYBEAN PROCUREMENT (IN PERSON)
June 6-10 | 15 PLANT-BASED TEXTURIZED PROTEIN PRODUCTS (IN-PERSON)
October 17-21 |
| 7 CUSTOM GRAIN PROCUREMENT COURSE (U.S. WHEAT)
June 13-17 | 16 ETHANOL PROCUREMENT FOR IMPORTERS (ONLINE)
October 24-November 10 |
| 8 DULUTH PORT TOUR (IN-PERSON)
June 20-21 | 17 PELLETING TECHNOLOGY (ONLINE)
November 1-10 |
| 9 GRAIN INDUSTRY EMERGING LEADER PROGRAM - MERCHANDISING TO LEADERSHIP (IN-PERSON) June 22-24 | 18 GRAIN INDUSTRY EMERGING LEADER PROGRAM: LEADERSHIP VS MANAGEMENT (IN-PERSON) December 13-15 |

ON-DEMAND COURSES

- | | |
|--|--|
| 1 BARLEY TO BEER
Coming soon | 3 DURUM FOODS
Coming Soon |
| 2 INTRODUCTION TO RISK MANAGEMENT
Coming soon | |

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 42 webinars under the following series names: the NCI Market Update, Future of Feeding, and Cereal Innovators. In total, 2,535 participants from 59 countries worldwide participated in one of the webinars or watched its recording. This statistic shows why the NCI truly thrives at *Connecting in the Global Marketplace*.

The NCI Market Update webinar is an hour-long commodity market update that features a new speaker each month. These speakers share the latest news and analysis impacting the global commodity markets. Frayne Olson, a past Market Update presenter and NDSU professor, highlighted the importance of these webinars.

"The online market updates provide a good opportunity to stay in touch with the NCI program participants. Although it is not as nice as meeting in person, it allows everyone to stay connected and remain current on rapidly changing market conditions. Accurate information is critical for making good crop marketing decisions. These market updates allow participants to interact with a variety of professionals and hear different perspectives and viewpoints."

The Future of Feeding webinar series focuses on using innovation in the processing of animal food, the equipment being used, and using grains from our region for co-products. Robert Thaler, a past Future of Feeding presenter and SDSU professor, described the value of this webinar series.

"Things that we eat impact us, just like things that animals eat impact them... Talking about nutritional information is always fun. Feedstuff is an important topic because many different aspects go into it."

These webinars have been an excellent way for NCI to create online resources. They have been vital in uncovering different opportunities for our organization. NCI would like to thank its participants, speakers, and sponsors for all they have done to help NCI and our mission.



NCI LAUNCHES CEREAL INNOVATORS WEBINAR SERIES

The Northern Crops Institute (NCI) held the first installment of a new webinar series titled, "Cereal Innovators," on January 13th, 2021. 47 attendees from 15 countries participated in the live webinar featuring Brian LaPlante from Back When Foods, Inc., as he discussed, "Everything You Need To Know About Sourdough". This series is held the second Wednesday of each month and focuses on new and unique ways to use cereal grains. Topics throughout the series include new processes, helpful information on milling and baking, equipment information, and uses for cereal grains grown in our four-state region. Registration is free and open to the public.

LEARN MORE AT: [NORTHERN-CROPS.COM/WEBINARS](https://www.northern-crops.com/webinars)

HANDBOOKS



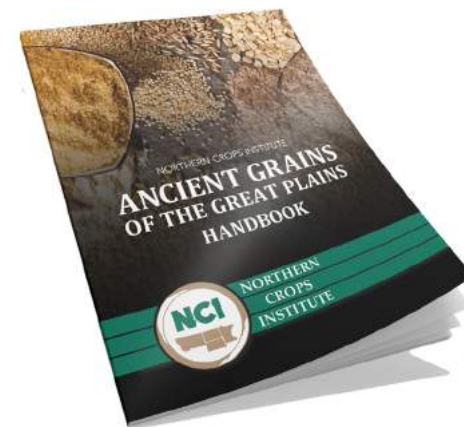
The Northern Crops Institute released its *Ancient Grains of the Great Plains Handbook* this past fall. The handbook was designed to provide an overview of the broad category of crops known as ancient grains, also known as heritage grains. The handbook's purpose is to introduce ancient grains categories,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

The *Ancient Grains of the Great Plains Handbook* provides historical, agronomic, and utilization information on the wide range of gluten-containing, gluten-free, pulse, and oilseed ancient grains. The handbook also discusses current and future food that incorporate ancient grains. The handbook is an easy-to-read user guide developed to assist in incorporating ancient grains into existing and new food products. Handbook readers involved in business or plan to soon be in business within milling and/or food processing will obtain valuable contextual information on ancient grains. Readers will become familiar with ancient grains' advantageous features and benefits, and will also become aware of product development opportunities by incorporating ancient grains into food production systems.

This handbook is an invitation for readers to gain essential, introductory knowledge about ancient grain's features and benefits. The NCI strives to encourage our readers to continue to explore the vast array of ancient grain opportunities to improve the health and wellness of consumers of all ages.

We thank our chapter authors who have devoted their time and expertise to deliver valuable contributions to the handbook. We are also grateful to our reviewers for constructive improvements to each chapter. The authors and reviewers represent private industries, nonprofit organizations, and academia. Finally, we are thankful for the outstanding staff at the NCI for assistance in preparing this handbook. This handbook will be augmented with future education and technical assistance programs from the NCI that will assist producers, entrepreneurs, merchandisers, and manufacturers in taking full advantage of using ancient grains.

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



NCI HOSTING ANCIENT GRAINS CONFERENCE

Mark your calendars for NCI's Ancient Grains Conference, this July 20th, 2022, at the Oliver Kelley Farm in Elk River, MN.

The Ancient Grains Conference aims to provide an educational and promotional setting to explore the characteristics and utilization of ancient grains. In the United States, ancient grains are starting to make a comeback within the food industry. They offer infinite ways to be prepared. NCI recognizes that these grains are underutilized, and the industry has only touched the surface in new food and beverage development.

Registration Fee: \$195 before June 29th, \$250 after June 29th

This fee also includes a complimentary copy of the Ancient Grains of the Great Plains Handbook - a \$125 value (as shown to the left).

CONNECTING IN THE GLOBAL MARKETPLACE

2,104

LIVE PARTICIPANTS
and 953 non-live participants from

63

COUNTRIES
attended or watched
the recording of an
educational course or
webinar hosted by the
NCI in 2021.

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

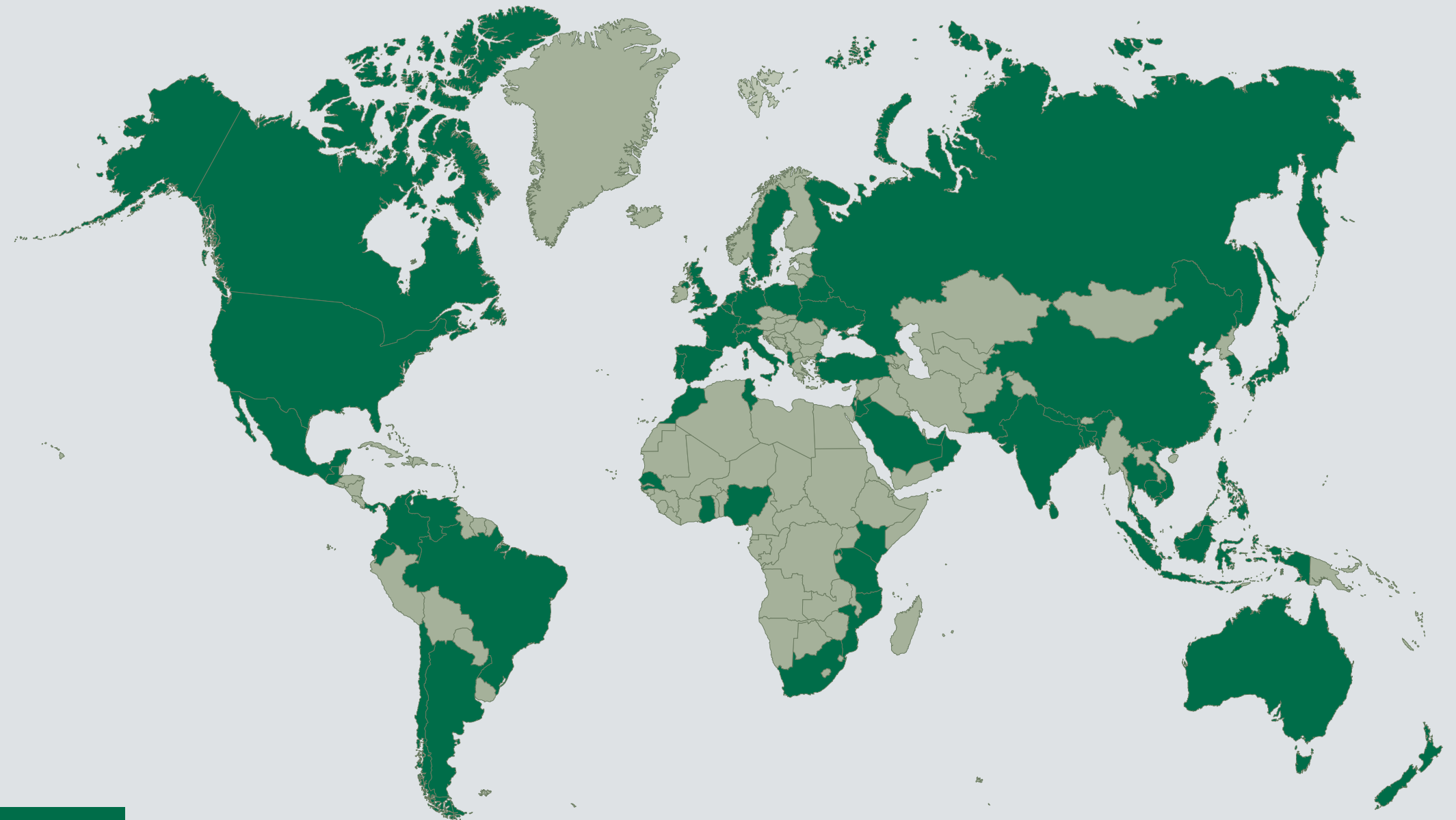
The Northern Crops Institute is a globally recognized facility. In the past year, we had the privilege of educating 2,104 live participants and 953 non-live participants from 63 different countries through our courses, webinars and recordings of both. It is through these avenues that we work to expand 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.

QUOTE 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 2021 denoted by the countries participants were from.



DID YOU KNOW?

The Northern Crops Institute hosted a total of 42 webinars in 2021.

NCI CELEBRATES 40 YEARS

The Northern Crops Institute (NCI) celebrated its 40th anniversary with an event held on November 18th, 2021. This event was held at the Fargo Air Museum and showcased NCI's past, present, and future through historical artifacts, slideshows, and speeches. A short program was held to commemorate our anniversary and featured speeches from Dean Bresciani, President of NDSU; Keith Peltier, Former NCC Chair; Representative Michael Howe, Grandson of George Howe; and Senator Mark Weber, Former NCI Director.



PEOPLE CELEBRATING AT NCI'S 40TH ANNIVERSARY

Mark Jirik, director of NCI, reflected on the beginning of NCI's history during his speech.

"40 years ago, our agricultural and elected leaders had a vision to change the game when it comes to marketing the crops of this region. We're here tonight to both celebrate, as well as honor our past."

In total, approximately 150 people attended our 40th anniversary celebration, including past directors, staff, Northern Crops Council members, legislators, advisory board members, commodity groups, ag commissioners, clients, collaborators from NDSU, family and friends.

NCI celebrated its anniversary in 2021 because 40 years prior, the North Dakota Senate Bill 2372 was authorized to establish the Northern Crops Institute. House Bill 1341 provided \$1.5 million for construction and equipment, and the official groundbreaking for the building was held on December 16th, 1981. The Northern Crops Institute's building was then completed in 1983.



KEITH PELTIER DURING HIS SPEECH AT THE 40TH ANNIVERSARY

Keith Peltier praised NCI for our continued growth and effort towards our mission during his speech.

"NCI is a wonderful institution. They do a great job of promoting the value of the region's products and the region's agriculture. Promotion is about people, and NCI has always had great people. The longevity of their staff speaks to their mission and the consistent message they have been able to deliver."

The Northern Crops Institute celebrated our anniversary on November 18th in concurrent with the groundbreaking for the new Peltier Complex that

was held the next day on November 19th. NCI will be a part of the Peltier Complex and NCI took part in the official groundbreaking and naming ceremony held at NDSU.

NCI EXCITED TO BE PART OF NEW PELTIER COMPLEX

The Northern Crops Institute (NCI) was pleased to attend the official groundbreaking and naming ceremony of the Peltier Complex, a new state-of-the-art agricultural product development center, that was held on November 19th, 2021.

The official ceremony was held on NDSU's campus in the Wallman Wellness Center and featured several speakers. The event speakers included; NDSU President Dean Bresciani; Governor Doug Burgum; State Senator Rich Wardner; State Senator Ronald Sorvaag; Greg Lardy, NDSU vice president for agricultural affairs; Mark Jirik, director of NCI; Keith Peltier; Eric Berg, NDSU professor of animal science; and Ana Magallanes Lopez, doctoral graduate research assistant.



MARK JIRIK, NCI DIRECTOR, BEFORE THE PELTIER COMPLEX CEREMONY

Mark Jirik commented in his speech how the new building will further improve the work and reach of NCI.

"The Peltier Complex will provide a modern, food safe, educational experience, that will allow us to expand our educational efforts and to produce better collaboration with our university partners, businesses, and with producers from throughout the region."

Each speaker shared the role they played in the creation of the Peltier Complex. All of which included; supporting bills for approval, fundraising, advocating, research, and more. In the end, it was a team effort that brought everyone to the official groundbreaking of this new state-of-the-art building. The Peltier Complex will join NDSU's food science, meat science, and cereal science labs along with the Northern Crops Institute.



POST CEREMONY GROUNDBREAKING

After the ceremony, attendees were welcome to see the official groundbreaking outside. Each speaker took part in the groundbreaking and was sent home with a souvenir shovel. Construction for the Peltier Complex will begin in the spring of 2022.

NCI TEAM TRAVELS TO MONTANA

Last July, The Northern Crops Institute’s office was a little on the quiet side as eight of our team members hit the road to travel throughout Montana. During the trip, our team members had the opportunity to make stops and tour local businesses, including breweries, farms, mills, and more. Since Montana is part of NCI’s four-state region, our team was excited to develop relationships and learn more about the land and crops raised in Montana.

Eight of our team members left the NCI office on Sunday and headed straight to Greg Kessel’s farm in Belfield, ND. With a warm welcome from the Kessel family, our team was able to take photos and videos while learning all about the family-run farm and its history. After saying goodbye to the Kessel family, we had the opportunity to attend the Medora Musical. The beautiful view and the warm air were perfect as the team had time to relax and enjoy each other’s company. Our team made our way to Glendive with high spirits to spend the evening before our drive through Montana the next day.



NICK SINNER (LEFT) AND RANDY GILBERTSON (RIGHT) DISCUSSING THE HISTORY OF PASTA MONTANA

On day two, our team split into groups to explore two different facilities. Half of the group made their way to Sidney, MT, to visit Meadowlark Brewing. This group was able to tour the location and learn about the organization’s passion for making the best quality beer. At the same time, the other group of four made the trip to IND Hemp in Fort Benton, MT. The group toured the facility, where they gathered video footage and learned about the various benefits hemp offers. At the end of the day, the group came together to enjoy some pizza and conversation at Mighty Mo Brewing Co. in Great Falls, MT.

The third day was the group’s last full day in Great Fall. The first group started out the day by visiting Montana Milling, where they had the opportunity to tour the facility and see the milling process up close. Afterward, they were able to take a trip to Mike O’Hara’s farm in Fort Benton, MT where they took photos and video of different crops and enjoyed conversation at the O’Hara family home. The second group spent the afternoon visiting Pasta Montana in Great Falls, MT. Here, they witnessed the pasta process from start to finish while learning about the exciting company history. After the Pasta Montana tour, they had the opportunity to learn from professionals at Montana’s Grain Grading Lab, also located in Great Falls. While touring the facility, they learned about grading different grains. The Grain Grading Lab staff went over each step, which offered a unique experience for NCI’s team members. To end the beautiful day, our group was able to see some of the beautiful scenery that Great Falls has to offer. The Giant Springs State Park offered a peaceful atmosphere to help the group unwind from a hard day’s work



NCI TEAM AT O'HARA FARM IN FORT BENTON, MT

Day four of the trip explored Montana State University in Bozeman, MT. Our group spent time on campus learning from different leaders and groups throughout the day. Our team wanted to thank the staff and faculty that shared their passion and research. The team spent the evening going over the highlights of their day, one of which was the excellent food at the MSU dining hall.

On the last day of the trip, we woke up in Mile’s City, MT, to drive back to Fargo, ND. Our team made it back to NCI’s office by the late afternoon, safe and sound. NCI wants to give a huge thank you to everyone involved in our Montana trip. Our Montana trip was an

experience of a lifetime, and we can’t wait to see what next summer brings.

INCREASED DEMAND LEADS TO BUSY YEAR FOR NCI TECH TEAM

The NCI Technical team has had a very eventful year. The range of projects and new clients indicates the reputation and demand for our services, and the capability of the team! From local start-ups to multi-national food companies, our project schedule is being reserved months in advance. This requires more planning for labs, resources, and staff.

In addition to baking and pasta projects, we have had increased demand for soy-food projects, such as soy milk and tofu, soy flours and soy protein concentrates, and fermented soy foods. The twin-screw extruder remains in demand as the NCI is uniquely fit for current plant-based and high protein food trends. We are busy with puffed snack products, texturized plant proteins, and high moisture meat analogs. Our solvent extraction work has increased as well with some clients targeting the oil, but many now after the defatted-meal of various crops for flours and protein concentrates. This has brought projects where NCI staff dehull, flake, solvent extract, mill, and finally extrude to a texturized product. Truly end-to-end!



WENGER TX-52 TWIN-SCREW EXTRUDER

We have also expanded the number of projects sponsored by our commodity group partners, making the direct link to market development for the commodities produced in our region. Adding sensory evaluation to many of these projects completes the cycle from development to the consumer sensory experience.

This past summer, we started work on quality evaluations for the grape breeding program at NDSU. As such, we hired Dr. Brent Trela to lead our enology efforts. We have also hired Dr. Fatemeh Zara and Edil Vidal Torres to lead food development projects and work with clients. We are pleased to have these new team members and expect more growth in the future, including an open position for “Oilseed Processing Specialist”.



WINE FERMENTATION

We believe the increase in project demand from current and new customers will continue, and we are prepared to meet our mission to promote the utilization of northern-grown crops.



DID YOU KNOW?

A full list of technical services the NCI provides can be found at northern-crops.com/technical-services.



PARTICIPANTS ATTEND THE GRAIN INDUSTRY EMERGING LEADER PROGRAM, NCI'S FIRST IN-PERSON COURSE OF 2021

COMMUNICATION

NCI ADAPTS AND THRIVES THROUGH ANOTHER CHALLENGING YEAR

The COVID-19 pandemic created a shift in how businesses operated everywhere, and the Northern Crops Institute (NCI) was no exception. With the increase of online usage as in-person events were paused, NCI learned how to adapt.

Since NCI was founded, our courses have primarily been in-person and have brought individuals from around the world to learn at the NCI. The pandemic halted our in-person educational courses and in response, we began increasing our online capabilities. Video and online technology has now allowed us to host courses online. This option has increased participation rates by allowing individuals who would not otherwise be able to join in-person, to take courses.

NCI is starting to return to normal in-person courses while also adopting online, on-demand, and hybrid options as well. The number of courses we are able to host will only increase due to our technology and online abilities. In 2021, NCI held 15 different courses with 13 being completely online and two being hybrid, with participants both in-person and online. We look forward to continuing to offer a variety of online and in-person courses.

With our educational courses on pause at the start of the pandemic, NCI found a way to continue providing educational resources to individuals around the world. The result was the start of our NCI webinars. Today we host three different webinars: NCI Market Update, Future of Feeding, and Cereal Innovators. We offer these webinars for free to the public and recordings are available to view after the live webinar on our website.

The pandemic challenged NCI to think outside the box and create online resources we would not have otherwise pursued. With new online capabilities, we are able to continue our mission and create further opportunities for education, technical services, and the marketing of northern-grown crops.



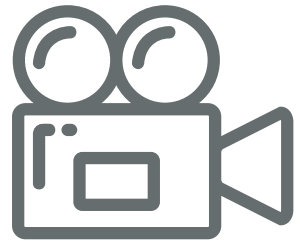
NCI HOSTED A TOTAL OF 42 WEBINARS IN 2021.



PARTICIPANTS ATTEND THE BARLEY AND MALT QUALITY COURSE (HYBRID), BOTH IN-PERSON AND VIRTUALLY.

VIDEO PRODUCTION

NCI EXPANDS VIDEO PRODUCTION CAPABILITIES



The Northern Crops Institute (NCI) video production rate skyrocketed in 2021. With the help of two additional communication team members, the number of videos produced in 2021 surpassed all previous NCI videos combined. In total, NCI produced and/or edited an astounding 111 videos in 2021.

In the spring of 2021, NCI welcomed two new communication team members who jumped right into video production for the online Durum Foods course. During the summer, the team gathered more video footage during their travels across North Dakota and throughout Montana. The tour videos produced during this time showcased Arrow K Farms in Belfield, ND, and O'Hara Land & Cattle in Fort Benton, MT. Other highlights included video tours and interviews at Montana Milling, IND Hemp, Pasta Montana, and Meadowlark Brewing. These videos have already and will continue to be used in NCI's educational courses.

The fall of 2021 brought a busy time for the communications team with more video footage. The team completed several harvest shoots that included many long days of shooting. The communications team captured and edited hundreds of harvest clips into NCI's video library this past year. Amidst the full swing of harvest, the team was also able to create several course content videos. The communications team completed four-course introductions and promo videos for upcoming courses. Eight more videos and two interview videos from course participants were also created for NCI's Ethanol Procurement course. To top it all off, our team produced a four-part video series with Genesis Feed Technologies for their "Seed to Feed" campaign. The campaign wrapped up with a live-streamed Traceability in Agriculture event hosted at NCI's headquarters.

The last few months of the year kept the communications team busy with video production. NCI celebrated two significant milestones in November; NCI's 40th Anniversary and the groundbreaking for NCI's future headquarters, the Peltier Complex. To end the year, the team worked on three more promotional videos for upcoming courses in 2022.

NCI wants to thank all organizations that welcomed our crew to film within their organization. We want to thank all individuals who took the time out of their busy schedules to show our team around their impeccable facilities. Without the help of these individuals, we would not have been able to produce content.



VIDEO SHOOT AT NCI FEED MILL FOR THE "SEED TO FEED" MINI-SERIES, WITH GENESIS FEED TECHNOLOGIES.

THANK YOU'S

THANK YOU NORTHERN CROPS INSTITUTE SUPPORTERS

Thank you to all who supported NCI programs and activities in 2021. An additional thanks to our:

2021 FUNDING PARTNERS

Minnesota Department of Agriculture
Minnesota Soybean Research & Promotion Council
Minnesota Wheat Research & Promotion Council
Montana Wheat & Barley Committee
North Dakota Barley Council
North Dakota Soybean Council
North Dakota State Appropriations
North Dakota Wheat Commission
Northharvest Bean Growers
South Dakota Department of Agriculture
South Dakota Wheat Commission
Washington Grain Commission

MARK JIRIK, DIRECTOR

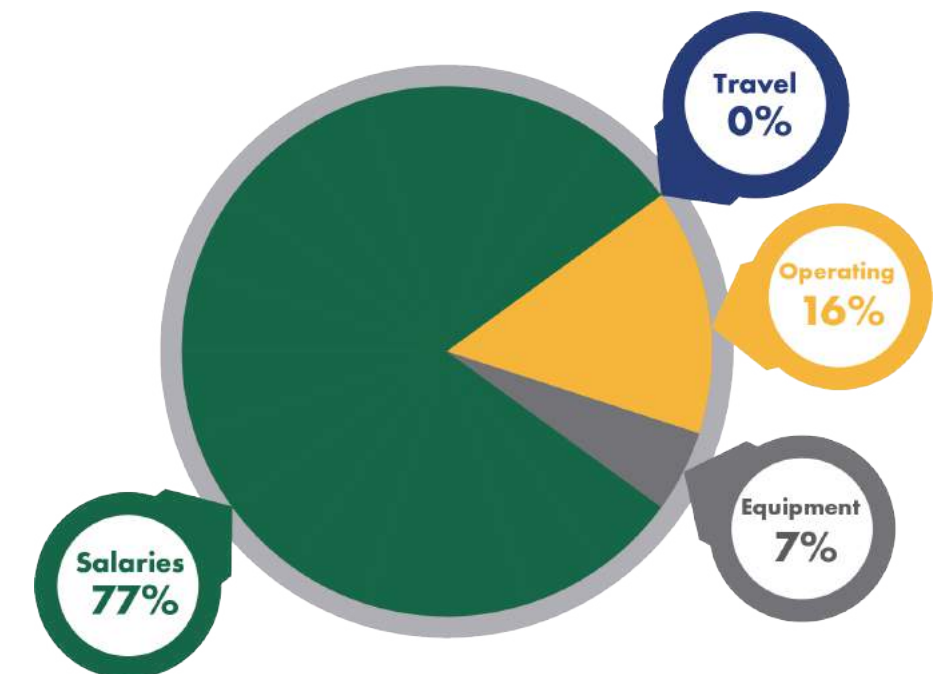
"Thank you to all who supported the Northern Crops Institute last year. Your generosity allows us to expand and maintain domestic and international markets for northern-grown crops."



FINANCIALS

NCI 2021 EXPENSE BREAKDOWN

A breakdown of NCI's fiscal year 2021 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

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
- 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

EDUCATIONAL PROGRAM TEAM

- Brian Sorenson | Program Manager
- Nick Sinner | Program Manager
- Krista Jansen | 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

FOLLOW US ON SOCIAL MEDIA!

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