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POLLINATOR PROTECTORS

RESEARCHERS USE BEES TO FIGHT DISEASE

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Local Beef
From Cow to
Cafeteria
—
Frequent the
Fresh Farmers
Market
—
Pretzels Bring
Pride to North
Dakota

BUILT BY FARMERS FOR FARMERS

2023 HIGHLIGHTED VARIETIES



ND2108GT73

SOYBEAN

Yield: High
Relative Maturity: Late
Height: Tall
Hilum Color: Yellow
Maturity Group: 0.8

ND21008GT20

SOYBEAN

Yield: High
Relative Maturity: Early
Height: Medium
Hilum Color: Gray
Maturity Group: 00.8

ND Frohberg

HRSW

Yield: High
Stem Rust: MR
Leaf Rust: MS
Head Scab: MR
Test Weight: High

CDC Rowland

FLAX

Yield: High
Large Brown Seed Size
Resistance to Lodging
Maturity: Late



CDC Fraser

BARLEY

Yield: High
Straw Strength: Strong
Good Malting Characteristics
Low Protein
Large Plump Kernels

AAC Stronghold

DURUM (Solid Stem)

Yield: High
Straw Strength: Strong
Good Milling Qualities
Low Grain Cadmium
Test Weight: High

ABI Cardinal

BARLEY

Yield: High
Straw Strength: Moderate
Height: Moderate
Good Plumpness
Good Foliar Disease Resistance

ND Heron

HRSW

Yield: High
Height: Medium
Straw Strength: Strong
Head Scab: Moderate Resistance



ND Stanley

DURUM

Yield: High
Straw Strength: Strong
Test Weight: High
Strong Disease Package



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North Dakota researchers are putting bees to work to help protect sunflowers. *Photo by Suanne Kallis*

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North Dakota AGRICULTURE

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SENIOR EDITOR **Hannah Patterson Hill**
 ASSOCIATE EDITORS **Rachel Graf, Hannah Nave Lewis, Carisa Ownby**
 SPONSORED CONTENT EDITOR **Susan Chappell**
 CONTRIBUTING WRITERS **Danielle Rotella Adams, Tracey Hackett, Nancy Henderson, Kim Hill, Sarah Hill, Gina Smith, Rachel Stroop**
 V.P./CONTENT & MARKETING **Jessy Yancey**
 V.P./CREATIVE SERVICES **Laura Gallagher**
 ART DIRECTOR **Amy Hiemstra**
 SENIOR GRAPHIC DESIGNERS **Eliza Hawkins, Beatrice Herndon, Cynthia Hester, Emmylou Rittenour, Lindsey Tallent**
 PHOTO DIRECTOR **Alison Hunter**
 PHOTO EDITOR **Jess Spence**
 SENIOR PHOTOGRAPHER **Jeff Adkins**
 STAFF PHOTOGRAPHER **Nathan Lambrecht**
 V.P./DIGITAL STRATEGY **Richard Stevens**
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 V.P./SALES OPERATIONS **Katie Middendorf**
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 SENIOR AD COORDINATOR/DESIGNER **Vikki Williams**
 SENIOR GRAPHIC DESIGNER **Holly Bikakis**
 MARKETING COORDINATOR **Sarah Henderson**

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CHAIRMAN **Greg Thurman**
 PRESIDENT/PUBLISHER **Bob Schwartzman**
 CONTROLLER **Chris Dudley**
 ACCOUNTING TEAM **Maria McFarland, Lisa Owens**
 DATABASE DIRECTOR **Debbie Woksa**
 EXECUTIVE SECRETARY **Kristy York**
 HUMAN RESOURCES MANAGER **Peggy Blake**

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For advertising information or to direct questions or comments about the magazine, please contact Farm Flavor Media at (615) 850-0309 or info@farmflavormedia.com.

North Dakota Department of Agriculture:

COMMISSIONER **Doug Goehring**
 BUSINESS, MARKETING & INFORMATION
 DIVISION DIRECTOR **John Schneider**
 PUBLIC INFORMATION OFFICER **Michelle Mielke**
 Special thanks to all Department staff for their support.

For more information about the North Dakota Department of Agriculture, contact:
 Michelle Mielke, Public Information Officer
 600 E. Boulevard Ave. Dept. 602
 Bismarck, ND 58505-0020
 (701) 328-2233 • mmielke@nd.gov

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Please recycle this magazine.



Commissioner Goehring is a third-generation farmer who operates a 2,800-acre, no-till farm near Menoken in south-central North Dakota with his son, Dustin.

Welcome to the seventh edition of *North Dakota Agriculture*,

a publication designed to showcase the diversity of one of the state's leading industries.

We invite you to take the time to get to know a few of our 26,000 farmers and ranchers and explore this vital industry that supports one in four jobs in the state.

In this issue, we'll tell you how an effort to provide North Dakota schools with local beef supports local ranches and provides better quality food for students.

We'll show you how 4-H members are using their hearts and hands to make a difference in their communities.

You'll learn how several soybean processing plants will soon be adding value to the crop and are a key piece of the puzzle in expanding animal agriculture in the state.

Come along with us as we tell you how researchers use bees to prevent head rot in sunflowers; how meat processing classes offer students new skills and opportunities; and how farmers markets are offering produce, canned goods and more to provide communities with a service they need.

You'll find the story of Dot's Homestyle Pretzels and how the Pride of Dakota program helps catapult companies like Dot's to big-time accomplishments.

And finally, you'll read about how a U.S. Department of Agriculture grant helps feed hungry North Dakotans and supports ag producers; celebrate our State Mill, operating for over 100 years; and get all the latest stats on North Dakota agriculture.

North Dakota has been blessed with abundant resources and a varied landscape enabling our farmers and ranchers to produce food, feed, fiber and fuel for families near and far. It is my hope that by sharing an in-depth look at North Dakota agriculture, you will come away with a greater understanding and appreciation for the men and women who produce the products you use every day.

While it's my honor to serve as agriculture commissioner, I am also a third-generation farmer. My son and I operate a 2,800-acre, no-till farm near Menoken in south-central North Dakota, where we raise corn, soybeans, spring wheat, sunflowers and barley. As farmers and ranchers, we want to show you how agriculture touches all of our lives.

Enjoy this issue of *North Dakota Agriculture*.

Sincerely,

Doug Goehring
North Dakota Agriculture Commissioner

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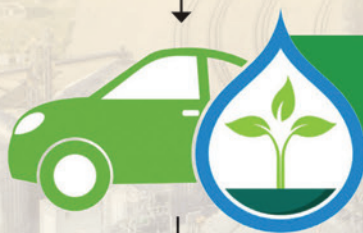
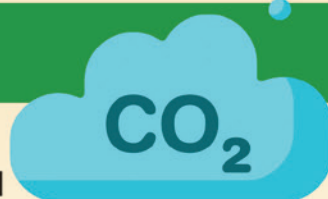


Homegrown

- Uses 40-60% of North Dakota's corn annually
- Purchases 80% of its corn from North Dakota farmers

Carbon-conscious

- National leader in carbon capture and storage
- Ability to capture up to 2.4 million tonnes of annual CO₂ emissions for potential sequestration to assist in meeting North Dakota's carbon-reduction goals
- This carbon reduction is equivalent to removing more than 520,000 vehicles from the road



Cost-effective fuel

- Unleaded88 (E15) saved consumers an average of \$0.16 per gallon summer 2022

Opportunities

North Dakota's ethanol industry is well positioned to take advantage of several future opportunities, including:

- Sustainable aviation fuel (SAF)
- Biochemicals
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North Dakota Ag

An overview of the state's food, farming and agribusiness sectors



North Dakota ranks No. 1 in the U.S. for production of:

- Canola **(84.7%)**
- Spring wheat **(52.7%)**
- Durum wheat **(52.8%)**
- Flaxseed **(82.1%)**
- Dry edible beans **(28.2%)**
- Pinto beans **(56.6%)**
- Dry edible peas **(41.9%)**
- Honey **(22.4%)**

39.3M

Total number of farm acres

1,512

Average farm size in acres



26,000

Total number of farms

7,306

Principal female producers

North Dakota ranks among the top five states in the U.S. for production of **all wheat, rye, sunflowers, lentils, barley, oats, sugar beets, navy beans, black beans, chickpeas and potatoes.**



96% of North Dakota farms are family-owned.

\$4.95B

Total of 2021 agriculture exports in tracked sales, which ranked No. 11 in the U.S.

Source: U.S. Department of Agriculture

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Small businesses are the heartbeat of North Dakota. Keep them going strong by supporting your local Pride of Dakota companies. Browse the more than 500 companies that participate in the program at prideofdakota.nd.gov.

Our members include food companies, manufacturers, publishers, artisans, gift manufacturers and service providers. Search for a nearby retailer, order direct or plan to attend one of the Pride of Dakota events held throughout the year for unique, North Dakota-made products.

If your business makes, manufactures, processes or produces goods and services in North Dakota, Pride of Dakota might be right for you. A program of the North Dakota Department of Agriculture, Pride of Dakota supports North Dakota businesses and entrepreneurs through promotion, market access and educational opportunities. Visit the website for more information, or contact a Pride of Dakota specialist via phone, (701) 328-2307, or email, pod@nd.gov.



Discover Local Foods

Are you looking for a specific business, farmers market or product? Visit ole.ndda.nd.gov/localfoods to find the recently updated Local Foods Map and browse the state's local producers. You'll find fruits and vegetables, eggs, beef, pork, poultry, honey, pickles, jams, jellies, baked goods and more. The map shows farmers markets, on-farm sales, roadside stands, community-supported agriculture (CSA) shares, retail food businesses, U-picks, wholesale options and online ordering opportunities. If you are a producer, we encourage you to sign up.



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What's Growing in North Dakota

A glimpse at the state's leading ag products based on cash receipts*

WHEAT

\$1.78B

North Dakota farmers harvested more than 6 million acres of wheat in 2021, contributing to the state's ranking as the nation's second-leading producer of all wheat. North Dakota's production of all wheat totaled over 196 million bushels in 2021, including about 174.5 million bushels of spring wheat, 19.7 million bushels of durum wheat and nearly 2 million bushels of winter wheat.



*What are cash receipts?

Defined by the U.S. Department of Agriculture's Economic Research Service, cash receipts refer to the total amount of crops or livestock sold in a calendar year.



CANOLA

\$689.1M

North Dakota ranks No. 1 in the U.S. for production of canola, providing nearly 85% of the country's total canola crop in 2021. That year, the state harvested 1.72 million acres of canola, producing more than 2.3 billion pounds of the crop.



CORN

\$1.3B

In 2021, North Dakota's corn harvest spanned almost 3.9 million acres, including 3.6 million acres of corn for grain and 250,000 acres of corn for silage, which produced about 381 million bushels of corn for grain and nearly 1.9 million tons of corn for silage.

PHOTOS: CLOCKWISE FROM LEFT: KEVIN YOUNG; ISTOCK.COM/00Y00; SPHIRTARTIST

BARLEY

\$139.7M

In 2021, North Dakota's barley production totaled more than 21.9 million bushels from a 430,000-acre harvest. The state ranks No. 3 nationally in barley production.



DRY BEANS

\$351.5M

North Dakota farmers harvested 620,000 acres of dry beans in 2021, resulting in the production of more than 6 million hundredweight of the commodity. That's equivalent to 28.2% of the nation's total dry bean crop in 2021, making North Dakota the leading producer of dry beans in the nation.



SOYBEANS

\$2.12B

Soybeans are North Dakota's No. 1 commodity in terms of cash receipts. The state's soybean harvest totaled 7.12 million acres in 2021 and resulted in the production of more than 181.5 million bushels of the crop.



SUGAR BEETS

\$292.3M

North Dakota's sugar beet harvest encompassed 222,000 acres in 2021, which produced more than 6.48 million tons of sugar beets.

SUNFLOWERS

\$273.7M

North Dakota ranks as the No. 2 producer of sunflowers in the U.S. In 2021, farmers across the state produced nearly 762 million pounds of sunflowers from 482,000 harvested acres.



POTATOES

\$236.8M

Producing 22.5 million hundredweight of potatoes from 75,000 harvested acres in 2021, North Dakota ranks fifth nationally in potato production.



[Find more online](#)

Learn more about agricultural crops and commodities in North Dakota online at [NDagriculture.com](https://www.ndagriculture.com).



CATTLE & CALVES

\$1.15B

North Dakota's beef cattle and calves inventory totaled 1.85 million as of Jan. 1, 2022. Morton County leads the state in beef cattle inventory, followed by McKenzie and Burleigh counties.

FOOD for THOUGHT

Beef to school program serves up inspiration



A 2022 effort to provide North Dakota public schools with local beef supports local ranches and provides better quality food for students.

The Beef to School pilot project was a grassroots endeavor among the Independent Beef Association of North Dakota (I-BAND), the North Dakota Beef Commission, and the North Dakota departments of

Agriculture and Public Instruction when national supply chain issues impacted local beef producers and public school systems.

North Dakota schools use about 400,000 pounds of ground beef annually, which equates to a cost of around \$1.5 million. Most buy meat through the national Commodity Food Program, but buying local beef makes sense

economically. Every dollar retained locally is spent an estimated seven times within the community.

“It struck me as odd that, in a state with plentiful cattle and ranchers, why hadn’t the children of North Dakota been consuming local beef in school all along?” says John Roswech, rancher and owner of Mott’s South 40 Beef processing plant.



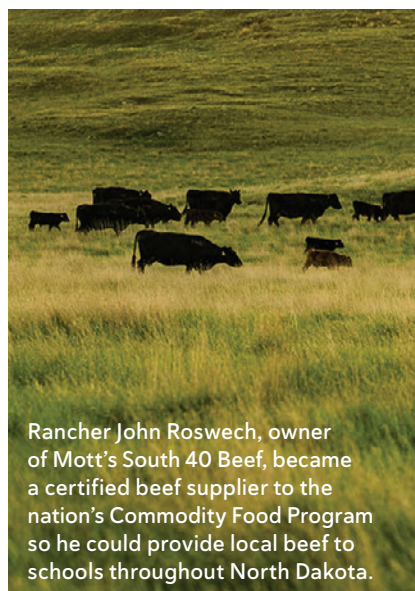
Local beef is a staple at the Dickinson Public School cafeterias, and school nutrition personnel like Elizabeth Klanderud and Kimberly Ehresmann, opposite page, as well as students like Lucas Shipman, see a difference in the food.

The pilot supplied beef from various producers and U.S. Department of Agriculture-licensed processors to 75 schools – with rave reviews.

Grassroots Beginnings

It all began with I-BAND members Jeremy and Stef Maher learning how to donate beef to their children’s school.

As the statewide effort grew and representatives of partner organizations met, the state’s second-largest school district in Fargo reported a beef supply issue.



Rancher John Roswech, owner of Mott’s South 40 Beef, became a certified beef supplier to the nation’s Commodity Food Program so he could provide local beef to schools throughout North Dakota.



“Using a local vendor for raw beef serves our school district well. In supporting a local business, you know they take pride in their product and take sustainable measures in food handling and safety precautions.”

- Nancy Muffley, Dickinson Public School District food service coordinator

With Fargo on board, Roswech supplied 1,000 pounds of ground beef. The taco subs are a hit with students, among the other offerings made with local beef.

As demand for local beef grew, more schools and ranchers joined the pilot. Roswech now sells about 50 pounds of beef weekly to his local Dickinson school system.

I-BAND President Frank Tomac says feedback is positive and enthusiastic, and school nutrition

personnel typically ask for more.

“They can smell and taste the difference immediately,” he says.

Naturally fresher and often leaner, local beef usually yields a greater quantity of usable product – for comparable or less cost than the \$4.09-per-pound beef widely supplied.

One enterprising school nutrition worker calculated that 922 pounds of local beef yield an average of 85 more pounds than the same quantity of other beef.

Nancy Muffley, Dickinson Public School District food service coordinator, says chub size variety is another advantage that means less waste.

“Using a local vendor for raw beef serves our school district well,” she says. “In supporting a local business, you know they take pride in their product and take sustainable measures in food handling and safety precautions. Their beef has a low fat content, which yields a superior product from many other sources. Supporting a local business and getting a quality product is a win for everyone involved.”

Opportunistic Future

The pilot achieved such positive reception that I-BAND officials plan to keep growing it, with support from partner organizations and potential grant funding.

An in-service that included a ground beef cookbook for school nutrition personnel was a popular component.

“Participants earned hours toward their continuing education requirements, and we plan to host another class in 2023,” Tomac says.

The experience inspired Roswech to become a certified beef supplier to the nation’s Commodity Food Program, to provide beef to schools throughout the state. The arduous task made South 40 Beef the only

North Dakota plant accepted into the program.

“My sincere hope is that the USDA will make this process more accessible for small businesses,” he says. “Our children deserve real beef from real ranchers in their home state. I look forward to taking part in more such opportunities in the future.”

To learn more, check out I-BAND’s Beef to school webpage, i-band.org/nd-beef-to-school.

– Tracey Hackett



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Snacking SUCCESS

PRIDE OF DAKOTA HELPS CATAPULT COMPANIES LIKE
DOT'S PRETZELS TO BIG-TIME ACCOMPLISHMENTS



Dot Henke of Velva founded Dot's Pretzels, and with the help of Pride of Dakota, the uniquely delicious pretzels grew to national fame.

In an effort to help a family member in Arizona who needed some simple gifts for clients during the Christmas season in 2011, Velva resident Dot Henke placed a sampling of the buttery pretzel twists she'd been experimenting with in her kitchen into small bags topped with pretty red bows.

"It wasn't just one or two clients calling to thank me," Henke says. "The phone rang off the hook, and they wanted to know where they could buy more."

The following spring, Henke took samples of her new product to the Pride of Dakota (POD) showcase in Williston.

"That made us think, 'Wow, we might have something special,' with the reactions of the consumers," Henke says. "POD was my speed dial for questions. They were my go-to. If they didn't know, they would guide me in the right direction."

Salty Sensation

Henke never set out to turn Dot's Pretzels into an international company. Her goal, she says, was simply "to have fun and fill in some free time."



“Pride of Dakota is a way to bring awareness to shoppers that the product they are about to buy is made, manufactured, processed or produced in their home state of North Dakota.”

- Katie Huizenga, NDDA Pride of Dakota specialist

Slowly, she grew her business the old-fashioned way: through trial and error, via word of mouth from loyal customers who couldn't get enough of her growing line of products. She worked hard, attending POD showcases and craft shows, sending sample boxes to North Dakota stores and continuing to tweak the unique recipe for the seasonings she added to the quality baked pretzels purchased from a supplier.

Within a decade, the snack's unique blend of butter and spices had whet appetites in all 50 states.

By the time The Hershey Company purchased the business in 2021, what had begun as a small local business had evolved into one of the fastest-growing scale pretzel brands in the country, representing more

than half of the category's growth in 2020. The deliciously seasoned pretzels – Original, Honey Mustard, Southwest and other flavors – are still made in North Dakota.

Henke is officially retired, though she still enthusiastically talks up the pretzel products every chance she gets.

“To me, Hershey's bought because we had a fantastic product and consumers loved Dot's Pretzels,” Henke says. “Why would you not want to be a part of such a great company?”



Taking Pride

Dot's Pretzels is only one of many success stories born from the POD statewide branding program. Created in 1985 by former North Dakota Department of Agriculture Commissioner Kent Jones, a small group

of businesses and the NDDA's marketing staff, the POD initiative and logo were designed to help local business owners start or expand their ventures by proudly labeling their products “Made in North Dakota,” among other things.

The program initially focused on food, with grocery stores raising awareness through special promotions. Today, companies ranging from artisans and service providers to gift manufacturers and publishers also gain support in selling their products through the POD program.

In addition, membership benefits now include annual Holiday Showcases, other networking opportunities and free business education conferences.

“What started with 20 companies is now averaging 530 Pride of Dakota companies every year,” says Katie Huizenga, NDDA Pride of Dakota specialist.

Only businesses with items made or assembled by an owner, employee or company volunteer qualify for membership.

“Pride of Dakota is a way to bring awareness to shoppers that the product they are about to buy is made, manufactured, processed or produced in their home state of North Dakota,” Huizenga says.

- Nancy Henderson



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2021 NDFB Photo Contest Winner Becky Graner

Adding Value *From Start to Finish*

NORTH DAKOTA SOYBEANS ARE MAKING HEADLINES WITH SEVERAL PROCESSING PLANTS INCREASING OPPORTUNITIES



The North Dakota soybean is small but mighty. It has many uses, from oil used in cooking to animal feed to sustainable fuel. In 2021, North Dakota soybeans had a production value of \$2.32 billion, and the state was home to the top three soybean acreage counties in the U.S. – Stutsman, Cass and Barnes.

For the state’s soybean farmers, production provided a solid income; however, soybeans were shipped out of state for processing, and the potential to capitalize more felt like a missed opportunity – until now.

A Plant of Their Own

Located just outside Casselton, the new North Dakota Soybean Processors Plant is being built as a joint venture between Minnesota Soybean Processors and CGB Enterprises.

“The location was chosen because it’s at an intersection of two different rail lines, which is extremely important for commodity transportation,” says Melissa Beach, community and economic development director at Casselton Economic Development. “For our growers, this plant will have a

significant long-term impact since having a processing facility near them raises the price of their product naturally. We’re taking out the middle market that was previously out of state.”

The plant is a huge win for soybean producers, who support many communities in the state, but Beach says there are a variety of positive economic impacts for Cass County and North Dakota as a whole.

“The short-term impacts to Cass County alone will be close to \$100 million spent in the construction phase on services



PHOTO: KAREN PULFER/FOUCHT



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BeLegendary.link/AgriTourism

like steel, for instance,” she says. “That’s very immediate. But we’re also looking at long-term job creation, ongoing maintenance of the facility that requires support companies, and by allowing soybeans to be processed in state, we’re keeping dollars in North Dakota.”

The plant is on target to be complete in 2024. In its first year, it’s expected to crush approximately 42.5 million bushels of soybeans to produce food-grade soybean oil and meal. Oil may go into the food industry or be turned into renewable fuel, whereas the meal will likely be used as livestock feed. The plant aims to provide roughly 50 to 60 high-paying jobs.

“The soybean crushing facilities that will soon be in operation are of great benefit in a state like North Dakota as a top 10 producer of soybeans in the nation,” Agriculture Commissioner Doug Goehring says. “The plants will add value for producers and create a variety of products, including food-grade soybean oil, soybean meal and fiber for livestock feed, and vegetable oil for renewable diesel. We are positioned to further develop

“It’s so important that growers have more opportunities to have their commodities processed in state. The more times you can add value and keep it in North Dakota, the more beneficial it is for everyone.”

- Melissa Beach, Casselton Economic Development community and economic development director

animal agriculture with local crush facilities in our state.”

A Neighboring Facility

The North Dakota Soybean Processors Plant isn’t the only value-add facility being built in the state. About 70 miles to the west in Spiritwood, Green Bison Soy Processing is also under construction.

A joint venture between ADM and Marathon Petroleum, the \$350 million facility will process \$150,000 worth of bushels of soybeans per day into oil, meal and fiber, with an estimated 600 million pounds of vegetable oil being sent to the Marathon refinery each year.

The plant is expected to be up and running by the 2023 harvest, providing approximately 70 full-time jobs.

With these two plants coming online, North Dakota will process and add value to more than half of its soybean crop in the next couple of years. Previously, it was exporting close to 90% of the crop.

Beach sums it up best. “It’s so important that growers have more opportunities to have their commodities processed in state,” she says. “The more times you can add value and keep it in North Dakota, the more beneficial it is for everyone.”

- Rachel Stroop

The official groundbreaking of the North Dakota Soybean Processors Plant took place in August 2022 near Casselton. The plant is expected to open in 2024.





MEAL TIME

NEW FACILITIES WILL PRODUCE TONS OF SOYBEAN MEAL,
AN IMPORTANT PROTEIN SUPPLEMENT

New crushing facilities, such as Green Bison Soy Processing, will produce soybean meal, a byproduct from the extraction of soybean oil. Soybean meal is used in animal feed, usually as a protein supplement. Of the soy meal fed to animals in the U.S., about 48% is fed to poultry, 26% to swine and 12% to beef cattle.

While soy meal is not a large portion of a beef cow's diet, it does play a role, according to Colin Tobin, Ph.D.

"Soybean meal provides livestock with more lysine, while corn, which

is heavily used in our state, is low on lysine," says Tobin, an animal scientist at North Dakota State University's Carrington Research Extension Center.

An essential amino acid, lysine is a precursor to many proteins.

Tobin notes that protein supplements are the most expensive part of an animal's feed ration.

"These crushing plants coming online provide cattle producers with a lot more opportunity to get protein supplements at a more reasonable cost," he says.

Scaling Up From Zero

The North Dakota Soybean Council (NDSC) hopes to see more soybean meal used locally rather than exported internationally.

"We don't use a lot of soybean meal currently because we don't have a lot of swine or poultry production in the state," says Jena Bjertness, NDSC director of market development.

She acknowledges a full supply chain system – from feed mills to slaughter plants – is necessary for large-scale swine or poultry production, but having a readily available source of feed is one



“In North Dakota, this is really becoming a boom. Going from zero to three crush plants is huge. It’s a very exciting time – something that could really change the future of agriculture in North Dakota.”

- Jena Bjertness, NDSC director of market development

piece of the puzzle.

“Getting that supply chain going helps make filling in the rest of the chain easier,” she says.

“Our soybean meal supply prior to these crush plants is extremely low,” she adds, noting the Green Bison Soy facility plans to produce 1.3 million short tons of soybean meal per year. “We are about to have a very large supply of soybean meal. Based on supply, if you have a more affordable feed source that you can easily transport, livestock production – for swine or poultry – starts to pencil out much better than it does having to transport feed a long way.”

Soy crush expansion is a national trend, largely driven by renewable fuels. A third crush plant has announced intentions to build near Grand Forks.

“In North Dakota, this is really becoming a boom,” Bjertness adds. “Going from zero to three crush plants is huge. It’s a very exciting time – something that could really change the future of agriculture in North Dakota.”

- Kim Hill

New crushing facilities in North Dakota will produce soybean meal, a byproduct from the extraction of soybean oil.



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Pollinator PROTECTORS

NDSU research uses
bees to spread biological
agent preventing head
rot in sunflowers





Bees are the unsung heroes of the agriculture industry – without them, we wouldn’t have many crops for food and feed. Besides their already important job of pollinating, what if bees could be put to work to prevent disease in certain crops?

“North Dakota is one of the top producing states for confectioner type sunflowers,” says Deanna Gierszewski, North Dakota Department of Agriculture Specialty Crop Block Grant program administrator. “We’re also No. 1 for honey, so we have a lot of bees in the state.”

These two stats came together for a creative solution to a devastating disease.

The Budding Problem

Sclerotinia head rot develops on sunflowers when cool, wet weather occurs during bloom in North Dakota, Minnesota and Manitoba. South Dakota has fewer issues with Sclerotinia head rot because it’s a bit warmer. The disease causes

sunflower kernels to fail to develop or become bitter, developing hard, black structures called sclerotia that mix with sunflower seeds at harvest.

This disease makes it more difficult to ensure a quality final product because “the sclerotia are similar in size and weight to sunflower kernels and can’t be separated by processors,” says Michael Wunsch, researcher at the North Dakota State University Agricultural Experiment Station in Carrington. “In addition, the Sclerotinia pathogen produces toxins that cause sunflower kernels adjacent to diseased tissues to become bitter.”

Sunflower processors have a 4% threshold of sclerotia by weight in loads of confection sunflowers. If a sunflower grower is unable to sell a load for human consumption, he might be able to find a birdseed market but will still take a financial hit.

Existing efforts to prevent this disease have their own shortcomings. Applications of

biological control or synthetic fungicides via traditional application methods are less effective due to the difficulty of achieving deposition of foliar sprays to the sunflower heads.

“It is very difficult to achieve satisfactory deposition of foliar sprays to the front of sunflower heads due to the position of the heads,” Wunsch explains. “Even with the best application methods, foliar sprays are deposited to only a small proportion of floret buds on sunflower heads. Modern fungicides move upward with water in plant tissues, but that doesn’t work for Sclerotinia head rot because the fungicide doesn’t move laterally between buds.”

A Buzzing Solution

Making the most of the daily habits of our fuzzy friends, Wunsch is studying how bees can transport spores of *Clonostachys rosea*, a fungal biological control agent that prevents sunflowers from developing Sclerotinia head rot.

Researchers at North Dakota State University are using bees to combat sunflower head rot. The bees transport spores of *Clonostachys rosea*, a biological control agent that prevents head rot and is harmless to bees, while they pollinate.



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“The spores of *Clonostachys rosea* colonize the sunflower petals, making the tissue inhospitable for the pathogen,” Wunsch says. “We’re taking advantage of bees naturally collecting nectar just as sunflower florets enter bloom, shortly before the florets become susceptible to Sclerotinia.”

Bees are well-suited for delivering the biological agent to sunflowers. Bee boxes are outfitted with a dispenser that deposits a powder of the biological control agent as bees exit the hive. The bees crawl through the powder, getting spores on their feet, legs and stomach.

“Sunflower heads have lots of flower buds, and each day, the outermost buds bloom,” Wunsch says. “The bees deliver the biological control agent to sunflowers daily, protecting each ring as it opens.”

Bloom duration depends on temperatures, lasting from seven days to up to two weeks, progressing faster if it’s hotter. Daily delivery of the biological control agent gives the agent time to establish itself, leaving no room for the pathogen to infect.

“This is one of the most promising strategies for managing Sclerotinia head rot in sunflowers,” Wunsch says. “Crop rotation is of limited effectiveness for this disease due to the broad host range of the causal pathogen and persistence of the pathogen in the soil. Resistant hybrids are unavailable. Oilseed sunflowers differ in their susceptibility to this disease, but in a bad year, even the best oilseed hybrids will develop head rot in 20 to 25% of plants. Almost all confection sunflowers are highly susceptible to head rot.”

Sclerotinia head rot causes significant quality problems, but thanks to the bee method, there are promising results for prevention.

Wunsch has been researching bees since 2016, conducting 10 trials at three different locations, averaging 50% control of head rot. Bee vectoring has kept saleable loads under the 4% threshold 90% of the time – ensuring that sunflower producers are paid for the crop.

Plus, vectoring has no impact on the bees or honey production – a win-win for sunflower growers and beekeepers.

– Sarah Hill



Sclerotinia head rot causes significant issues for sunflowers, but thanks to the bee method, there are promising results for prevention.



Buzzing Facts

Enjoy a few statistics on how this North Dakota State University program is successfully preventing sunflower head rot.

- » Bee vectoring averages **50%** control of sunflower head rot.
- » Saleable sunflowers must have less than **4%** sclerotia by weight.
- » Bee vectoring has kept saleable loads of sunflowers to less than **4%** sclerotia by weight **90%** of the time.

Source: North Dakota State University
Agricultural Experiment Station



Hearts and Hands IN SERVICE

4-H clubs demonstrate pledge through volunteering and community work

All 4-H students pledge to use their hearts to greater loyalty and their hands to larger service. In North Dakota, the Hay Creek Kids and the Ramsey Riders 4-H clubs are two of many lending their hearts and hands to service in unique ways.

Growing for Good

Jeff Ellingson wanted his kids to join 4-H, so he started a new club in 2010.

“We started our club the same year the North Dakota Department of Agriculture started the Hunger Free North Dakota Garden Project,” Ellingson says.

He thought supporting that program would be the perfect fit for Hay Creek Kids 4-H, most of whom had never grown a garden. The students learn to plant, grow and harvest produce in a plot on Ellingson’s property in Bismarck, focusing on potatoes and pumpkins. Donating the produce to the community is the goal.

“Every year that we donate, the food pantry directors tell the kids how many people in the community are served and what their donation does for the community,” Ellingson says. “I had no idea there is so much need in the community. The kids

are learning about the need years before I ever knew it existed.”

To date, the club has raised and donated nearly 39,000 pounds of potatoes. They also raise pumpkins, which they offer for freewill donations.

“When people come to our pumpkin stand, a lot of them tell stories about when they were in 4-H, so the kids get to engage with the community,” Ellingson says.

Funds from the pumpkin sales are used to purchase Christmas gifts for less fortunate children.

“We all go shopping as a group and try to emphasize that if it wasn’t

for what they are doing, there would be kids who wouldn't have any presents," says Ellingson, who received the North Dakota 4-H Volunteer of the Year Award in 2015.

"We're not a typical 4-H Club," Ellingson says. "We don't have a bunch of people earning ribbons. Through our way of teaching kids about growing something to give back to the community, my hope is they've learned more by asking themselves what their hard work is doing for the community and how it is helping others. I believe they are learning more about life answering that question."

Big Ideas, Caring Kids

A member of the North Dakota 4-H Hall of Fame, Alvina Ebensteiner has led the Ramsey Riders 4-H Club for 35 years.

"The kids in our club are interested in horses," she says of the club's name, "but we do all kinds of different projects, so they get a well-rounded experience."

This includes making tie blankets and donating them as well as donating caps and mittens for children in area schools, plus raising money for an all-seasons arena at the Devils Lake fairgrounds. A 4-H family faced serious medical issues, and the club raised more than \$5,000 through a silent auction.

"Our kids don't need to be prompted by adults to do these things," Ebensteiner says. "They see needs at school and in the community, and they are the first to suggest ways they can help. Because it's their idea, they get the project off the ground and make it successful."

The club's volunteer work also includes the Lake Region Stampede, a Professional Rodeo Cowboys Association-sanctioned event.

"That stampede couldn't be held in Devils Lake without volunteers from the community, and our kids



Top: Funds raised from the Hay Creek Kids 4-H Club pumpkin sale are used to purchase Christmas gifts for less fortunate children. **Bottom:** Ramsey Riders 4-H Club delivers birthday gifts to children who wouldn't have otherwise had a gift.

are a big part of that volunteering force," Ebensteiner says. "They run the concession stand, park cars and take tickets at the gate."

Ramsey Riders are among the thousands of 4-H members pledging their hearts and hands in service to better their communities and their world.

"Our club is a very caring group of kids," Ebensteiner says.

– Kim Hill

4-H Pledge

I pledge my head to clearer thinking,
My heart to greater loyalty,
My hands to larger service,
and my health to better living,
for my club, my community,
my country and my world.



Making **A MARKET**

Lena's Fresh Farmers Market provides fresh produce, canned goods and more



Lena's Fresh Farmers Market in Rolla is an outdoor-indoor market offering local foods and products year round.

The whole family also helps with the garden business, Mickelson Tiny Plants, where they grow everything from potatoes, green beans and onions to spinach, beets and raspberries.

"If you can name it, I probably grow it," Mickelson says.

Lena's Fresh Farmers Market

Located on the main street in Rolla, Lena's Fresh Farmers Market is an outdoor-indoor market open every Wednesday and Saturday from July 1 through Halloween. Then, in the winter, pop-up markets are held inside.

Depending on the day, Mickelson says they have between two and four additional vendors besides themselves.

"We sell fresh fruits and vegetables in the outside space when it's warm and use the inside space during the winter," Mickelson says. "In the winter, we have lots of baked and canned goods. We have frozen soups, perogies and stuffed peppers, plus about 24 different canned products. The most popular is

Danielle Mickelson has always been an avid gardener, following in the footsteps of her mother and grandmother. She hadn't thought much about selling her produce, but several years ago, what started as a way for her sons to pay for a plane ticket soon turned into a newfound passion and career.

"About eight years ago, my two youngest sons were trying to make some money to visit their grandparents in Las Vegas," Mickelson says. "We decided to

take some of our vegetables to the farmers market in town, and we made \$72 that first time. My daughter thought we were onto something, so over the next few years we went from a tiny card table of products to several large tables, and in 2018, we purchased the lot and adjacent building."

Mickelson left her teaching job of 22 years, and now, she and her husband run a year-round farmers market, Lena's Fresh Farmers Market – named after her husband's great-great-aunt.



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pickles. We sell about 2,000 jars of pickles.”

Mickelson understands the importance of fresh, locally grown food and says the market’s goal is to fill in gaps within the small town. For example, there’s no bakery in Rolla, so each market provides fresh sourdough bread and pizza dough.

“We had a terrible blizzard for a few days, and the grocery stores were out of everything,” she says. “People were so thankful to have access to fresh bread, eggs and things like frozen soups. We feel like we’re really providing our community with a service they need in terms of local, nutritious food.”

She adds that any products that aren’t sold at the market are processed into some type of product, so not only is it extremely fresh, but there’s also no waste.

“We’ll grind and freeze things like carrots, pumpkins and squash so we can make soups and pies through the winter,” Mickelson says. “There’s no waste, and we’re extending the ability to be profitable.”

For more information on Lena’s Fresh Farmers Market, visit [facebook.com/lenasfreshfarmersmarket](https://www.facebook.com/lenasfreshfarmersmarket).

Finding Fresh

The North Dakota Department of Agriculture also plays a role in promoting local food across the state at farmers markets like Lena’s Fresh Farmers Market, as well as at schools, local events and more.

Helping consumers understand what food is available locally is very important for farmers, small businesses and the community in general. The Local Foods program was created under the NDDA in 2008 to help do just that through various educational and support programs.

Consumers and producers can visit the NDDA Local Foods website to learn more about what’s available seasonally, where to find farmers markets across the state and, if you’re a producer, how to get your foods to market. Learn more at [ndda.nd.gov/divisions/business-marketing-information/local-foods](https://www.ndda.nd.gov/divisions/business-marketing-information/local-foods).

– Rachel Stroop



PHOTOS: DANIELLE MICKELSON



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HISTORIC GROUND

After more than 100 years, the North Dakota Mill is still going strong

More than a century ago, wheat wasn't a profitable crop for North Dakota farmers. At the time, the nearest flour mills and grain exchange were in Minneapolis, and freight costs took a significant chunk of growers' revenue. But in October 1922, the opening of the North Dakota Mill and Elevator in Grand Forks resolved this problem.

The only state-owned mill in the U.S., the North Dakota Mill faced numerous challenges during its first 50 years, including struggling to turn a profit in its first decade and damage from two major fires. But over the past five decades, the operation has blossomed into a substantial asset for North Dakota.

"The mill receives no financial assistance from the state and is totally self-supported," says Vance Taylor, mill president and CEO. "We have great relationships with state and local government officials."

The mill supports the local economy with an annual payroll of \$16 million. It also contributes about half its profits to North Dakota's general fund and 5% to the state's Agricultural Products Utilization Commission, which finances development of new uses for North Dakota agricultural products. Remaining profits are returned to the mill in the form of capital projects.

Building on Success

After numerous expansions, including the 2022 addition of two

In October 1922, the North Dakota Mill and Elevator opened in Grand Forks and 100 years later continues to help the state's growers.



new milling units, the operation now grinds up to 140,000 bushels of grain per day with its 10 total milling units and has a terminal elevator that can store 5.3 million bushels. Since 2000, daily capacity has grown from 2.7 million to 6 million pounds of flour.

Taylor attributes the North Dakota Mill's success to its staff as well as the grain it sources – about 90% comes from North Dakota and 10% from Minnesota, with occasional purchases from South Dakota and Montana.

"We source some of the best spring wheat and durum in the world from North Dakota," he says. "And we have excellent, dedicated and hardworking employees that work together as a team to meet common goals."

This year, the North Dakota

Mill Matter

- » The North Dakota Mill is certified to process organic wheat products.
- » Ninety percent of the mill's grain is hard red spring wheat, which is ground into baking flour. The remainder is durum wheat, used to make semolina flour for pasta.

Source: North Dakota Mill

Mill is embracing new marketing strategies, including increasing branded product sales, targeting bakery customers seeking high-quality flours, and promoting new products to the retail and food service markets.

"With the additional capacity available from our new mills, we will work hard to continue to grow the business by working closely with our producers, customers, suppliers and other partners," Taylor says.

– Gina Smith

Processing PROFESSION

MEAT PROCESSING OFFERS STUDENTS IN NORTH DAKOTA
NEW SKILLS AND OPPORTUNITIES



Students across North Dakota have more career options thanks to expanded ag education courses in meat processing.

With more than two cattle for every citizen in the state, many high school and college students are pursuing advanced training to foster this expanding career path. Offering hands-on meat processing training and certificates in high schools and colleges is making a significant impact throughout North Dakota.

Skills in the Making

Minot High School in north-central North Dakota offers Game and Meat Processing, a two-hour class open to 10th, 11th and 12th graders.

Students learn how to identify and process beef, lamb, pork, poultry and wild game while gaining experience making sausage, jerky, bacon and ham. They also acquire essential skills to safely operate meat processing equipment and discover creative ways to market meat products.

“We have four ag teachers and

Southeast Region Career and Technology Center introduced mobile meat labs so rural high schools could offer hands-on training for students.

roughly 400 ag students each year at our high school,” says Lance Van Berkom, agriculture educator at Minot High School. “I teach Meat Processing to around 30 students a year and am excited that our new high school will include a new meat processing lab.”

Minot Public Schools broke ground on the new high school in November 2022, and it is expected to open in fall 2024.

“Over my 30 years teaching, I’ve seen the influence our ag program has had on the community,” Van Berkom says.

Learning on the Go

Not all North Dakota high schools have a meat processing lab. To add hands-on training for students who need access to an on-site meat processing lab, Southeast Region Career and Technology Center (SRCTC) introduced a mobile meats lab in 2006.

The idea came from the director, Dan Spellerberg, as part of the center’s vision to be the leader of best practices for education in North Dakota.

“We strive to create real-life experiences for students in rural areas that they would typically only get in our big city schools,” Spellerberg says.

With its mobile meats lab, SRCTC offers meat processing fundamentals, including safety and sanitation, while showing students where their meat comes from.

Working with 14 high schools in southeast North Dakota, SRCTC’s mobile meats lab annually serves approximately 1,900 students with hands-on meat processing and cutting training.

The SRCTC mobile meats lab has a custom-exempt license from the North Dakota Department of Agriculture to handle beef, pork and lamb, and it has regular state inspections, just like a meat



Meat processing training offered at Minot Public Schools, top, and North Dakota State College of Science, bottom, allows students to have a more marketable resume thanks to the hands-on experience these programs provide.



processing plant.

Additional mobile meats labs have launched since 2020, with five now operating across the state, offering meat processing training to more than 50 schools.

“We’re providing students with fundamental experiences and giving them exposure and training in an important industry that greatly needs trained employees,” Spellerberg says.

Increased Demand in Meat Processing

There are many reasons why meat processing jobs are in high demand in North Dakota. As a result, the North Dakota State College of Science (NDSCS) in the eastern part of the state is seeing an influx of students pursuing their two-year meat processing certificate.

“Right now, there’s greater demand because there are more small-to-mid-size slaughter plants opening that need experienced employees,” says Craig Zimprich, associate professor/chair of agriculture at NDSCS. “There’s a strong generational turnover too, so people are looking to fill those roles, and livestock producers are also looking to market their livestock locally and have more control over their market.”

Meat processing training gives students across the state a strong advantage.

“Meat processing plants that have hired interns from our program, or will hire full-time workers after graduation, are extremely happy to hire trained people,” Zimprich says. “We’re trying to convey to students that there are many opportunities available for them with our nine-month meat processing certificate.”

– Danielle Rotella Adams



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Grilled Steak Salad with Blue Cheese, Bacon and Avocado

Prep Time: 35 minutes | **Cook Time:** 25 minutes | **Makes:** 4 servings

Ingredients

Grilled Skirt Steak:

- 1/4 cup soy sauce
- 1/4 cup balsamic vinegar
- 2 tablespoons olive oil
- 1 tablespoon honey
- 1/2 teaspoon salt
- 1/4 teaspoon crushed red pepper flakes (optional)
- 1 pound North Dakota skirt steak

Salad:

- 2 teaspoons olive oil
- 4 ears of corn, husks removed
- 1/4 teaspoon salt
- 5 ounces spring mix greens

- 1 cup cucumber, sliced
- 6 slices cooked bacon, chopped
- 1 large avocado, sliced
- 2-3 tablespoons blue cheese, crumbled

Green Goddess Dressing:

- 1/2 cup Greek yogurt
- 1/2 cup olive oil
- 1 clove garlic
- 1/4 cup chives, chopped
- 1/4 cup parsley, chopped
- 1/2 cup cilantro, chopped
- 1/4 cup dill, chopped
- 3 tablespoons lemon juice
- 1/2 teaspoon sea salt
- 1/4 teaspoon black pepper

Instructions

1. In a small bowl, whisk together the soy sauce,

vinegar, oil, honey, salt and red pepper flakes (if using). Pour the marinade into a resealable bag and add the steak. Allow steak to marinate for 30 minutes on the counter.

2. Meanwhile, preheat grill to 450 to 500 degrees. Rub oil over the ears of corn and sprinkle with salt. Grill corn for 15 to 20 minutes, rotating periodically. Once the kernels are tender, remove from grill and let cool.

3. Remove steak from the marinade and pat excess marinade off with a paper towel. Cook steak on the grill for about 3 minutes.

Flip and cook another 2 minutes. Remove from the grill and let rest about 10 minutes before slicing.

4. While the steak is resting, combine all dressing ingredients in a blender or food processor and blend until smooth. Set aside.

5. Cut the kernels off the ears of corn and add them to a large bowl along with the spring mix, cucumber, bacon, avocado and blue cheese. Toss to combine.

6. Divide salad between 4 serving bowls and top with grilled steak and desired amount of dressing. Serve immediately.



Granting Greatness

New USDA grant helps feed hungry North Dakotans and supports ag producers



Great Plains Food Bank with nearby producers and procure local food based on their needs,” says Doug Goehring, North Dakota agriculture commissioner. “In addition to providing food for underserved communities, the program will help create and expand economic opportunities for local and socially disadvantaged producers.”

The LFPA is bringing agriculture needs in North Dakota full circle.

“As an organization that typically relies on and asks for food donations, it’s incredible to be able to invest in our farmers, ranchers and producers,” Sobolik says. “For decades they have supported us, and we can now return the support when it’s needed most.”

– Danielle Rotella Adams

Underserved communities will have new access to locally sourced, fresh and nutritious food thanks to an agreement with the U.S. Department of Agriculture’s Agriculture Marketing Service (USDA AMS) under the Local Food Purchase Assistance Cooperative Agreement Program (LFPA).

Announced in late 2022, the North Dakota Department of Agriculture will partner with the Great Plains Food Bank to purchase locally grown, produced and processed food from underserved producers and distribute it to those in need.

“The LFPA grant program comes at a crucial time and is a win-win for North Dakota farmers, ranchers, producers and our food-insecure neighbors,” says Melissa Sobolik, CEO of the Great Plains Food Bank.

Serving more than 126,000 North Dakotans, the Great Plains Food Bank is the state’s only food bank.

With inflation impacting the cost of food, many in North Dakota are forced to choose between paying for food or other basic needs.

“Funds from the LFPA program mean people can eat a well-balanced meal tonight,” Sobolik says.

The LFPA enhances food and agriculture supply chain resiliency in the state by supporting socially disadvantaged farmers, ranchers and producers and providing the food they generate to underserved communities in North Dakota. Authorized by the American Rescue Plan, the USDA has awarded funding through noncompetitive cooperative agreements with state and tribal governments.

To date, 48 states, three territories and 19 tribal governments have entered into cooperative agreements with the USDA AMS for local LFPA programs.

“The LFPA grant program is a great opportunity to connect the

How to Get Involved

Farmers, ranchers and producers interested in participating in the Local Food Purchase Assistance Cooperative Agreement Program can reach out to Stephanie Erickson at the Great Plains Food Bank at (701) 232-6219. Interested producers can complete a form to show interest at forms.office.com/g/wZTuy84d5N.

Interested producers can also sign up on the Local Foods Map at ndda.nd.gov to match up with local schools and organizations.



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SPECIALTY CROP GRANT - Support for producers and processors in North Dakota with the global promotion and international export expansion of specialty crop products. Funding for NDTO's Specialty Crop Grant is made possible by the U.S. Department of Agriculture's (USDA) Agricultural Marketing Service through a grant from the ND Department of Agriculture. Funding may be available for:

International Trade Shows | International Sales Trips

More info about both grants can be found at [NDTO.com/grants](https://ndto.com/grants)

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