



Ag Outlook Seminar provides insight into carbon topics

Attendees at the 2022 Ag Outlook Seminar/Appreciation Luncheon held last month at the Wayne Fire Hall had the opportunity to learn about several topics related to handling carbon created through the production of ethanol and other areas of agriculture.

Brent Niese, Summit Carbon Solutions Project Manager, shared information on the proposed project that would run through Wayne County before ending up in North Dakota.

Niese told those in attendance at the seminar that one-half of the corn produced in Nebraska is used in the eth-

anol industry and talked about how much carbon is produced during the production of ethanol.

"For every three pounds of corn used, one pound becomes ethanol, one pound is distillers' grain and one pound of carbon is produced," Niese said.

Niese said 80% of the ethanol produced in Nebraska is exported out of the state.

He also discussed safety in the transportation of the carbon through the pipeline and noted "this is not new technology." He also explained the geological benefits of storing the carbon

in North Dakota and the fact the state has adequate space available for storage.

At the present time Summit Carbon Solutions intends to install 318 miles of pipeline through Nebraska as the firm is working with six ethanol plants. Additional plants could be added in the future.

Niese answered a number of questions from those in attendance at the seminar in regard to tax advantages and challenges of developing the pipeline.

"This is 'a' solution to dealing with the carbon created during ethanol production. It may not be the only solution," Niese said.

John Hay, University of Nebraska-Lincoln Extension presented an overview of agriculture and voluntary carbon markets.

Hay told his audience that "farmers must do their homework before signing any contracts" and said his goal during the seminar to "share information to allow farmers to make better decisions."

He talked about ways to earn carbon credits including reducing tillage intensity, planting cover crops, reducing fertilizer rates, planting trees and reducing stocking rates on pastures.

Other topics during the 2022 event included Business-Minded Marketing with Hurley & Associates, U.S. Drought Monitor, Impact Reporting and Drought Outlooks from the Na-

tional Drought Mitigation Center and a lunch-time presentation from Doug Temme on his recent International Trade Destination visit to Columbia.

The seminar and lunch are coordinated annually by the Ag Task of the Wayne Area Economic Development.

Current members include Bill Claybaugh, Alan Finn, Ron Gentrup, Matt Haschke, Matt Jones, Brandon Mainquist, Irene Mock, Doug Temme, Amy Topp and Luke Virgil.



Brent Niese with Summit Carbon Solutions shared information and answered questions regarding a pipeline scheduled to go through Wayne County.



John Hay with UN-L Extension discussed the different aspects of carbon credits in the ag industry.

Cover crops can improve your corn harvest

People unfamiliar with farming might assume that fertilizer is the only way to improve the growth and overall health of crops like corn. While fertilizer can be a useful tool, farmers are resourceful and often implement a wide range of strategies to improve the health of their crops and yields. One method involves planting additional crops, known as companion crops or cover crops. Companion crops are planted and raised at the same time as corn while cover crops provide benefits over the winter between plantings.

For Nebraska corn to receive the most benefit from companion crops and cover crops, you need options that work with the local climate and soil composition. And since Nebraska corn is regularly grown in rotation with soybeans, your companion/cover crops should also benefit this rotational planting schedule. Fortunately, Nebraska corn farmers have several options to choose from.

Remember – Cover Crops Need Their Own Management

It’s important to remember that cover crops aren’t something you can just toss over the soil and expect to see benefits from. Cover crops might

offer multiple advantages for corn and soybeans, but they may also create new challenges, requiring farmers to implement additional management strategies. Having a firm understanding of the needs of the cover crop being planted is essential to the final result yielding a good harvest.

Benefits Of Using Cover Crops

What exactly are the benefits of growing cover crops in your cornfield? While they may be specific to the plant, most cover crops offer multiple benefits:

Discourage pests and weeds from settling down – Insects and invasive weeds can wreak havoc on a field. Planting cover crops can limit their ability to spread, especially if the added crops encourage beneficial insects like parasitic wasps.

Improve and retain soil nutrients through multiple plantings – Ensuring there is enough nitrogen in the soil is one of the most important aspects of an effective corn and soybean rotation. Cover crops keep your soil loaded with nitrogen by pulling it from the atmosphere.

Prevent soil erosion or compaction during harsh weather – Cover crops

like winter wheat and similar grasses can help keep a wide area of soil in place. This can protect still-growing corn from strong winds or floodwater draining away soil into waterways. Conserve moisture and biomass for future corn crops – Cover crops can help increase soil health and future crops by fixing nitrogen and sequestering carbon into the soil.

Cover Crops For Nebraska Corn – Grasses And Legumes

Nebraska can be bitterly cold, windy and blustery in the winter. For cover crops to succeed, they must be well-adapted to these potentially harsh conditions. Because of this, the effective cover crops in Nebraska are often cereal grain or legumes. Not only are these cover crops hardy and reliable, but they also fit nicely into the popular corn and soybean rotation.

Remember that cover crops have their own set of obstacles. Nebraska corn farmers use different strategies to ensure a successful crop. For example, they can time the planting of cover crops to allow winterkill (where excessive winter conditions kill back the crop) to naturally remove cover crops in time for the next planting of corn.

Clovers (Such As Red, White And Berseem Clover)

Clovers are a broad family of herbs in both annual and perennial varieties. They fix nitrogen, reduce erosion and regularly attract beneficial insects. Make sure to choose the right species for your corn-planting schedule. Berseem clover is ideal for Nebraska corn rotations because it will be winter-killed before spring, leaving all the

nitrogen for the corn.

Cereal Grains (Such as Winter Wheat, Rye, Barley and Sorghum)

Grasses are some of the hardiest plants around. That makes cereal grains a great fit for winter cover crops in Nebraska. Rye is a low-cost and vigorous cover crop for corn, ideal for helping water and nutrients infiltrate deeper in even the poorest quality soil. It also smothers weeds, benefiting the corn and soybean rotation.

Mixing cereal grains and legume cover crops may offer the best results for growing corn than cereal grains alone. Such versatile cover will offer the most benefits from each while helping to minimize possible drawbacks.

Medics (Such as Black, Burr and Barrel Medics)

Also known as medick or burclover, these legumes are closely related to alfalfa. Many species are tolerant of conditions across Nebraska, especially hardy cultivars like black medic. As legumes, they support corn by fixing nitrogen into the soil. Medics also prevent soil erosion and the growth of weeds around corn.

Try These Companion And Cover Crops To Boost Your Corn Yield

From restoring as many nutrients into the soil as possible, to capitalizing on mutually beneficial growth patterns, companion and cover crops are versatile tools in a farmer or gardener’s arsenal. They can help corn crops grow bigger, faster and healthier.

While they still present their own challenges, adding a companion crop or cover crop to your corn can yield exciting results.



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What happens to corn after it is harvested?

Corn is a staple crop across the world, used for food ingredients, animal feed, ethanol and a wide range of other uses. But field corn, especially the field corn grown across Nebraska, typically goes through a few additional steps. For human use, there are several important processes during and after harvesting that help decide where the corn may end up. It could be on your plate, in your cereal bowl or even in your car!

Some Steps Are Handled Right After Harvest

During the harvest, the first step that happens is large machines called combines move down the rows of corn, cutting plants down at the base and pulling them towards the center of the combine. A grinding component known as a threshing drum separates the kernels from the husk and cob. While the kernels are sent to the hopper towards the rear of the combine, the husk and cob are chopped into smaller pieces before being expelled back onto the ground.

Leaving these materials in the field helps provide organic matter and extra nutrients for the soil. In some cases, farmers and ranchers put their livestock such as cattle in the field to eat the remaining plants throughout the winter months because of their nutritional value.

So, What Happens Next?

Well, it depends on where the corn is going! There are several places corn will be sent:

If it's intended for human consumption, it will likely be sent to a processing plant where it will be turned into any number of useful products like corn oil, cornstarch and corn syrup. In fact, some corn products like Frito's and corn chips come from corn grown right here in Nebraska!

If it's headed for animal feed, the corn will be sent to a feed mill where it will be ground into a fine powder. It's then mixed with other ingredients to create a nutrition-dense feed for cattle, pigs, chickens and other farm animals.

Some ranchers prefer to keep the kernels, giving them directly to cattle in a feed ration.

If it's going to be used in ethanol, the corn will be milled and fermented to produce the type of alcohol that can be blended into gasoline. Nebraska is the number two producer of ethanol, with much of the ethanol being shipped domestically to California.

How Is It Decided Where Corn Ends Up?

There are different factors that play a role in where corn ends up after it is harvested. One of the most important is the type of corn that is being harvested. Field corn, the bulk of the corn grown in the U.S., is a hardy species ideal for feeding livestock and ethanol production. Field corn can also be added to a staggering array of food products like cornstarch or corn syrup.

The current market price may also influence where corn ends up after harvest. Some farmers choose to store their corn until the price rises and then sell it. Once ready to be sold, corn is usually shipped in large trucks or in containers on trains as it heads to its final destination. The corn is then either used right away or stored again until it is needed. A third factor is moisture content. Corn with high moisture content may need to be stored in an air-tight silo to prevent spoilage. Cooler weather and lower moisture extend the time it can be safely stored.

Food-Grade Corn Needs a Few More Steps

When field corn meets specific quality standards, it may be considered food-grade and fit for human consumption, which are often white corn. These kernels need a high starch content and test weight as well as low moisture and minimal stress cracks.

The kernels are cleaned and sorted by size using another process called "scalping." First, a large machine shakes the corn to remove any dirt or debris. Then, a series of screens sorts the corn by kernel size. Kernels that are too small or damaged are removed

and set aside for animal feed while the larger, healthier kernels move on to the next step in the process, grit removal.

During grit removal, the corn kernels are cleaned and sorted again to remove any small pieces of cob or other debris that may have been missed during scalping. The corn is passed through a series of screens and air blowers that remove the smaller pieces. What's left is a corn kernel that is clean, whole and ready to be used in a variety of

food products.
Nebraska Corn Farmers Help Get Corn Ready For Use
The next time you're enjoying a delicious recipe with corn or filling up your gas tank with an ethanol blend, take a moment to think about all the steps that had to happen to get that corn from the field to your plate or car! It's an amazing process happening right here in Nebraska, and farmers have a vital part to play.
SOURCE: Nebraska Corn Board.

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We salute the dedicated men and women of the agriculture industry, who play such an important role in keeping our nation's economy strong. Their commitment to producing a thriving variety of crops and livestock requires long hours, risk and hard work. For all of their contributions and for all the fruits of their labor, we thank America's farmers for bringing so much to the table.

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Did you know these 10 products were made with corn?

Few crops are as versatile as corn. This humble grain can be used to make everything from tortillas to cornbread. In fact, corn is a key ingredient in many of your favorite foods. It can be found in products like cereal, salad dressings, ice cream and even candy. But food is just the beginning when it comes to corn!

The truth is that corn grown in states like Nebraska plays a critical role in a wide range of finished products. When you look around your home, you may be amazed to learn

about the items that are made with corn. That's why continued research into new uses for crops like corn is so important! To help you understand just how versatile corn is, here are 10 surprising products that use corn.

1. Toilet Paper

To much surprise, corn is a soft and absorbent material. When used in products like toilet paper, it can keep sheets softer and more comfortable to use. The corn kernels are ground up and mixed into the paper. Cornstarch can also be used to bind the materials

together.

2. Drywall

Cornstarch's binding properties are also used in construction-grade materials like drywall. Its adhesive strength is tough enough to keep everything together and produce a smooth texture.

3. Toothpaste

Corn is used in toothpaste as a gentle abrasive to help clean your teeth. Cornstarch acts as a polishing agent and helps to remove any buildup on your teeth. It's also a natural source of fluoride, which can help to prevent cavities and ensure a brilliant smile!



4. Crayons

The next few products get a little more interesting. In 2021, a Japanese company pioneered the use of vegetable materials like corn in the production of crayons. The wax is made from rice while corn is mixed in for its brilliant yellow hue. Other colors use vegetables like carrots and cabbages. And with traditional crayons, corn is used in the glue underneath the wrapper as well as in the molds for easy removal.

5. Diapers

The absorbent properties of corn come in handy for even the youngest generation when used to make diapers. Cornstarch is used as a binding agent to keep the diaper held together. A corn-based gel is also often used due to its ability to absorb many times its own weight.

6. Spark Plugs

Wait, what? Corn can even be found in your car? Certain materials, like corn, feature a high melting point, which can withstand extreme temperatures.

Corn can be fashioned into a ceramic-like material that insulates the spark plug and prevents it from overheating.

7. Hand Soap And Sanitizer

Both soap and hand sanitizer use different compounds from corn including ethanol or citric acid. Depending on how it is used, corn can serve as an emollient (softening the skin), as a gentle abrasive, a thickening agent and even for fragrances.

8. Aspirin

Are all these technical terms giving you a headache? Common and helpful medications like aspirin come with a special coating that helps release the medicine in steady amounts while minimizing any unpleasant flavor. This coating, which is designed to resist stomach acid and break down in the intestines, is often made from... you guessed it! Corn.

9. Rubber Tires

Two of the most important aspects of quality tires are the pliability and grip. And luckily, both can be accomplished with corn. Cornstarch is added to the rubber for flexibility, making it easier to work with. Then, corn oil can be applied to keep the rubber from drying out. It also improves the tires grip the road, ensuring safer driving. The next time someone eats your dust, they'll also enjoy a little corn too.

10. Fireworks

And to finish this list with a bang, corn is also a key ingredient in fireworks. They need to combust at the right moment and burn evenly. The dextrin in cornstarch aids in this process by keeping the materials bound together until it's time for the big finale.

New Research Will Continue To Expand Corn's Versatility

Whether you're enjoying an afternoon snack or taking care of chores around the house, corn plays a big part in creating a useful product. Nebraska Corn strives to seek out research opportunities discovering new uses for this crop. From biofuels to fireworks, the importance of corn in each product is inevitable.

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You asked, we answered: Where all the corn in Nebraska goes

Nebraska is the third largest corn-producing state in the United States. But what happens to all the corn our farmers grow?

While some of it is exported internationally, much of Nebraska's corn actu-

ally stays within the country through domestic corn exports. The exact amount of corn we export varies from year to year, but typically it's around 200 million bushels.

Whether domestically or internationally, the demand for Nebraska corn is necessary support our farmers and keeps local economies strong. As the national and global demand for Nebraska corn continues to grow, our farmers will continue working hard to meet that demand.

Here are some of the industries and states that benefit most from corn grown in Nebraska, as well as the food and fuel products it's used in.

Domestic Exports

Ethanol

Nebraska is the second-largest producer of ethanol in the United States, behind only Iowa. We have 25 ethanol plants that produce a combined 2.18 billion gallons of ethanol each year. Our plants consume 750 billion bushels of corn each year.

Nebraska ethanol is heavily exported

to Texas, as well as other markets in the southwestern and western U.S.

Ethanol production offers many benefits to our state and country:

- It's a renewable, clean-burning fuel source.

- It reduces our dependence on foreign oil.

- It creates jobs in rural communities.

Beef and Dairy Operations

While Nebraska livestock producers are major consumers of the state's corn, Nebraska corn is also in high

demand in beef and dairy operations in Texas, Colorado, California and the Pacific Northwest. California is our largest market, taking in more than 145 million bushels of corn each year for livestock and poultry.

These operations rely on corn-based animal feed because of its high nutrition. After harvest, field corn is transported to a feed mill, where it's ground up and mixed with other ingredients.

There's a couple of important reasons why beef and dairy farmers feed their animals corn-based feed:

- It's an excellent source of energy and fiber.

- It's relatively inexpensive, which helps operations keep their overall costs down.

- It's easy to digest and extract nutrients from.

Distillers Grains and Corn Gluten Feed

Distillers grains and corn gluten feed are a by-product of the ethanol production process. They're high in protein and fiber and can be used as animal feed. In Nebraska, our ethanol plants produce 6.4 million tons annually.

Nebraska exports distillers grains to Texas and other Midwestern states to use in livestock operations, including cattle, swine and poultry farms. These grains are a nutritious, high-protein

source of feed and they're also relatively inexpensive.

International Exports

With more than 95% of the world's population living outside the United States, international corn exports are crucial for our state, as it drives demand and price.

As a whole, U.S. corn producers supply one-third of the world's corn and corn products. For Nebraska, international sales make up about 6% of our corn usage, with Mexico being one of our top markets.

Top International Markets for Nebraska Corn Exports

While Mexico is the main market for Nebraska's corn exports, other countries like Japan, South Korea, Taiwan and China are also important export markets. In fact, together these four countries make up about 25% of our state's international corn exports, according to the Nebraska Department of Agriculture.

Diversity in international markets is important in case one country's demand drops or another factor changes.

In addition to whole kernels, there are a number of different corn products that are in demand in these countries,



See CORN, page 8



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Four ways drones are used in agriculture

As the agricultural landscape continues to evolve, producers are looking for new and exciting ways to increase their yields while also conserving resources and limiting their impact on the environment. One of the ways they are doing this is through the use of agricultural drones to evaluate and care for their crops.

Drones are the newest wave of precision agriculture and smart farming, which is the use of technology to collect and analyze a wealth of data farmers can use to grow more with less.

How Are Drones Used In Agriculture

Just as Global Positioning Systems (GPS), Geographical Information Systems (GIS) and specialized software programs are used in conjunction with a tractor or combine on the ground, programs have been developed to guide drones as they fly over the field.

Types of Drones

There are several types of drones on the market. Drones with rotors — which are the most common agriculture drones—can include single-rotor aircraft, which have one set of spinning rotors on top like a typical helicopter or feature multiple rotors on the same drone, which are sometimes called



Luan Oliveira, Ph.D. Assistant Extension Educator with the University of Nebraska - Lincoln discussed the use of drones in crop production during last year's Family Field Day at the Haskell Ag Lab near Concord.

quadcopters or quadrotors.

The size of drones also varies. Smaller drones used for photography or personal use are smaller and lighter, while drones strong enough to carry liquid to apply to fields can be several

feet across in width.

Requirements to Fly

Flying a drone requires obtaining a certificate from the Federal Aviation Administration (FAA). The type of certification needed is based on how the drone is being used, where it is being flown and other factors, such as if it will be used to carry any pesticides or herbicides to apply to the crops.

Regardless of the permitting required, it's essential that all drone operators know and follow regulations, fly their drones at a safe height and take care to avoid all potential obstructions in the flight path.

What Is Agriculture Drone Spraying

Agricultural drone spraying is using a drone to dispense fertilizer to provide crops with necessary nutrients or to apply herbicide to control weeds or pesticide to treat insect infestations.

What Is Drone Mapping in Agriculture

One of the major uses of drones in

agriculture is to create detail-rich maps of fields, providing producers with a three-dimensional view of the growing area, including elevation changes and field boundaries.

These maps are used in conjunction with other programs to help farmers evaluate and analyze crop conditions and, if necessary, take targeted actions.

Benefits And Advantages Of Using Drones In Agriculture

The advantages of using an agriculture drone to collect data are in its speed, ease of use and lower cost to operate. Producers can quickly zero in on smaller problem areas, take steps to rectify any problems and then move on to the next field without having to bring in tractors, sprayers or other heavy equipment.

Drones are also designed to be extremely precise and because they are in the air, do not damage the plants or disturb soil in the field.

Four Ways Drones Are Used In Agriculture

There are several ways drones are currently being used in agriculture, including in Nebraska, and they range from mapping fields and assessing plant condition to precise application of chemicals.

1. Assessing Performance

Today's precision agriculture drones can be outfitted with sophisticated programming that detects and records variations in plant numbers, health, height and other statistics. It also can provide data that shows producers where their fields have areas of poor drainage or less-than-ideal soil conditions. By knowing exactly what's going on in the field and where it's happening, producers can quickly identify trouble spots where they need to focus their time and resources.

While producers can guide the controls of the drones themselves, software exists that can guide the drones on a pre-programmed flight over the

See **DRONES**, page 7



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Drones

(continued from page 5)

field. The inputs result in drones that maintain a preset height over the plants, compensating as necessary for changes in terrain, while scanning the

plants as they fly overhead.

2. Pest Control

One of the ways drones can put precision agriculture to use is through herbicide or pesticide applications.



Logan Dana, Farm Operations Manager at the Haskell Ag Lab at Concord, assisted Luan Oliveira with his presentation on the use of drones in agriculture.

Farmers typically use sprayers to apply chemicals to crops or depending on conditions and plant height, may hire a crop duster airplane to dispense product.

By using programs to analyze the health of the crop to pinpoint areas of sickened crops of infestation, producers using drones can apply product only to areas of the field that need it. This allows them to use less product, which is better for the environment and also better for the producer's pocketbook.

3. Delivering Essential Nutrients

Using the same analytical approach, producers can use agricultural drones to apply fertilizer in a specific and limited manner that gets nutrients to the plants that need them and doesn't waste product on the plants that do not need the extra help.

Precise application of fertilizer using agricultural drones is another way for producers to limit their input costs while caring for the health of their crops and their land.

4. An Eye in The Sky

Even without sophisticated programming or sensors, drones with regular cameras can still help farmers get their eyes on crops quickly to evaluate damage after a storm. Farmers with

livestock also use drones to check on their cattle herd or inspect fences for damage.

Using a drone to do this can save a lot of time, because they can quickly zoom over fields or down a fence line faster than a person could walk or drive the same distance. Drone technology benefits not only crops by livestock as well

SOURCE: Nebraska Corn Board.



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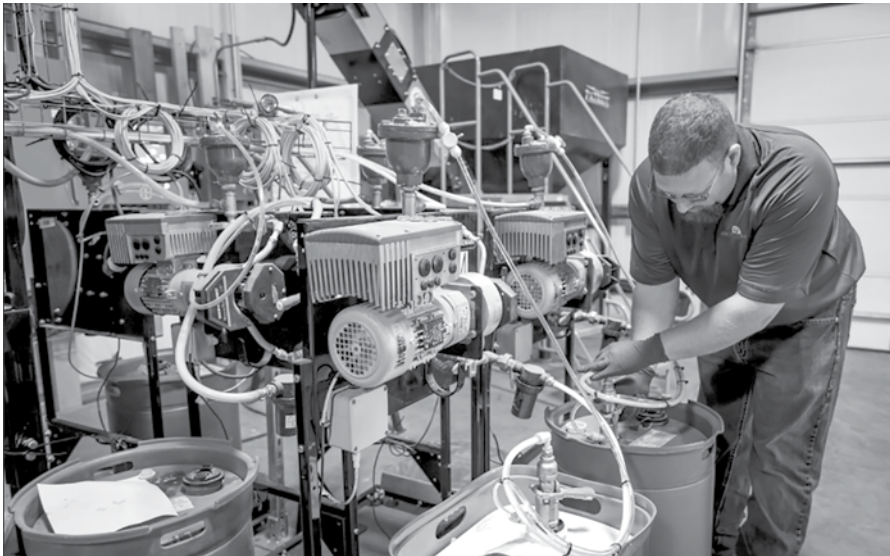


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Nebraska Corn Board to meet Jan. 31 - Feb. 1

The Nebraska Corn Board will hold its next meeting Jan. 31 – Feb. 1, 2023, at Nebraska Innovation Campus, 2021 Transformation Drive in Lincoln.

The Nebraska Corn Board will undertake strategic planning with the Nebraska Corn Growers Association on Jan. 31. The board will then address regular board business on Feb. 1.

The meeting is open to the public and will provide an opportunity for public discussion. A copy of the agenda is available by writing to the Nebraska Corn Board, 245 Fallbrook Blvd. Suite 204, Lincoln, Neb. 68521, sending an email to renee.tichota@nebraska.gov or by calling 402-471-2676.

The Nebraska Corn Board is funded through a producer checkoff investment of 1/2 cent-per-bushel checkoff on all corn marketed in the state and is managed by nine farmer directors. The mission of the Nebraska Corn Board is to promote the value of corn by creating opportunities.

Corn

(continued from page 5)

such as:

- Dry milling products like starch and sweeteners
- Wet milling products like corn oil, corn gluten meal and corn gluten feed
- Ethanol
- Beef and pork, which is raised on corn-based animal feed

Mexico

As the largest importer of U.S. corn, Mexico plays an important role in setting the price of corn on the international market. More than 60% of Nebraska’s corn goes there each year.

While dried kernels make up the majority of Nebraska’s exports to Mexico, other products like corn oil, starch and sweeteners are also in demand. Like the U.S., corn is a major part of Mexico’s diet. It’s used in torti-

llas and tamales, as well as in feed for poultry and beef livestock.

Mexico is also one of the top markets for U.S. ethanol, as they are working to increase their use of renewable energy.

It’s also important to note that Mexico is among the top three markets for pork imports from the U.S.

Japan

Japan is the second-largest market for Nebraska’s corn exports, accounting for about 15% of our state’s international sales, according to the Nebraska Department of Agriculture.

While whole kernels make up the majority of Nebraska’s exports to Japan, other products like corn oil, starch, sweeteners and livestock feed are also in demand. Corn is used in a variety of food products in Japan, including sushi, tempura, soba noodles

and soy sauce.

Japan is the third-largest market for U.S. ethanol exports, according to the Renewable Fuels Association. According to the latest available USDA data from 2019, the country used more than 127 million gallons of this fuel additive, which helps reduce emissions from vehicles.

Additionally, Japan is a major importer of U.S. beef and pork.

South Korea

South Korea is the third-largest market for Nebraska’s corn exports, accounting for about 10% of our state’s international sales, according to the Nebraska Department of Agriculture.

Like Japan, corn oil, starch and sweeteners remain in demand. Corn is used in a variety of food products in South Korea, including rice cakes, noodles, snacks and alcohol.

South Korea is the fourth-largest market for U.S. ethanol exports, according to the Renewable Fuels Association. And like Japan, South Korea is a top importer of U.S. beef and pork products.

Taiwan

Taiwan is the fourth-largest market for Nebraska’s corn exports, accounting for about 5% of our state’s international sales, according to the Nebraska Department of Agriculture.

Like Japan and South Korea, Taiwan also uses corn-based oil, starch and sweeteners. Corn is used in a variety of food products in Taiwan, including noodles, snacks, baby food and alcohol.

Taiwan is also a major market for U.S. ethanol exports, as they are working to increase their use of renewable energy.

In 2021, Taiwan eased its rules on U.S. beef and pork imports, which paves the way to increase imports in the country.

China

While China is not one of Nebraska’s biggest markets for corn exports, it’s a major player in the international corn market. In fact, China is the world’s largest producer and consumer of corn.

Although China produces corn, it doesn’t produce enough to meet the demands of its growing population. As a result, China has become a major importer of corn in recent years.

While most of Nebraska’s corn exports to China are whole kernels, the country is also a major market for U.S. ethanol exports. The country began importing ethanol in 2015 and has rapidly increased its imports since then. In 2021, Reuters reported the country bought 200 million gallons of U.S. ethanol, matching a previous record.

When it comes to beef and pork, China is the largest importer of U.S. meat products.

What’s Next For Corn Exports?

The future looks bright for Nebraska’s domestic and international corn exports.

The demand for meat and corn-based products, especially in Asia, is expected to continue to grow in the coming years. And as more countries look to reduce their dependence on fossil fuels, the demand for ethanol is also expected to increase.

SOURCE: The Nebraska Corn Board. Nebraska Corn Board works to promote the value of corn by creating opportunities.



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Granular vs. liquid fertilizer: What’s best for corn farmers

Corn is a versatile plant that feeds the world, supplying the food that consumers across the globe know and need.

However, people aren’t the only ones who need nourishment to be healthy. Corn needs it too.

Just like a lawn in a front yard, corn needs essential nutrients and minerals to grow — nitrogen, phosphorus and potassium chief among them. While some of the elements a corn plant needs to grow may already be found in the soil, additional fertilizers sometimes necessary to help the plants grow faster or make up for nutritional deficiencies in the ground.

Homeowners have plenty of products to choose from to make their lawn grow lush and thick, and farmers also can choose from numerous types of fertilizers to increase growth rates and bump up yields in their fields of corn. Two of the main kinds of products available are granular fertilizers and liquid fertilizers.

Is granular or liquid fertilizer better for corn? In short, the science says neither one is chemically superior. However, while each type of fertilizer is available in products that provide the necessary elements corn needs, the advantages and disadvantages of granular fertilizer versus liquid fertilizer exist in how they deliver nutrients to corn, according to an analysis by Michigan State University.

What Is Liquid Fertilizer For Corn

Liquid fertilizer, as its name gives away, is product that comes in liquid form. It is often applied by spraying over the ground or, depending on the substance being used, may be injected directly into the ground using special equipment attached to a plow towed behind a tractor. Some liquid fertilizers, called foliar fertilizers, also can be sprayed directly onto the leaves of the corn plants, which is designed to provide a quick uptake of nutrients by the plants.

The goal for farmers is not only to

use the right product for the plants, but also use as little as possible in order to promote sustainability and protect the environment.

Advantages of Liquid Fertilizer

1. Precision. Modern farming techniques enable liquid fertilizer to be precisely applied — in some cases injected, or “knifed,” directly into the ground right where plants will use it.
2. Availability. Nutrients from liquid fertilizers penetrate directly into the ground or onto the leaves of the plant, where it can readily be absorbed by the plant.

What Is Granular Fertilizer For Corn

Granular fertilizer, also sometimes referred to as “dry fertilizer,” is product that is in solid form — typically broken down into very small grains or granules. It is applied by scattering it over the ground.

Advantages of Granular Fertilizer

1. Slower Release Option. Granular fertilizer allows for a slower release of nutrients over a longer period of time than their liquid counterparts.
2. Price. In some areas, granular fertilizer may be less expensive to buy than liquid fertilizer.
3. Storage. Granular fertilizer can be easier to store than its liquid counterpart.

Which Is Better: Granular Fertilizer Or Liquid Fertilizer

The bottom line is that both types of fertilizer can provide the nutrients that corn needs to grow. The question of whether granular fertilizer or liquid fertilizer works best for growing corn depends on a variety of factors such as the growth stage of the plants and what equipment an individual producer already has at hand.

Because of the different strengths of liquid and granular fertilizers, some farmers may choose to use one or both — but apply each one at a different time of the year. For example, a producer may apply a type of liquid fertilizer on the corn at planting or during the growing season to provide

necessary nutrition to the growing plants, and then after harvest apply a different kind of granular fertilizer to the field to replenish nutrients in the soil.

SOURCE: Nebraska Corn Board

IANR, CASNR seeking items for anniversary time capsule

The University of Nebraska-Lincoln’s Institute of Agriculture and Natural Resources and College of Agricultural Sciences and Natural Resources are seeking items for inclusion in a time capsule to commemorate two landmark anniversaries.

In 2022, CASNR marked its 150th anniversary, and next year will mark the 50th anniversary of the passage of the legislation that formed IANR. CASNR and IANR are jointly celebrating these milestones during the Celebration of Innovation, which spans the 2022-23 academic year.

IANR and CASNR faculty, staff, students, alumni and stakeholders are invited to submit items for consideration for inclusion in the time capsule. Approximately 10 items will be selected for inclusion, with winning entries announced throughout the spring semester. Submissions will be accepted through March 1, 2023. The entry form and contest rules are available online at <https://celebrateinnovation.unl.edu/time-capsule-contest>.

“We’re excited to collect objects that represent the past, present and future of IANR,” said Jessie Brophy, IANR director of external relations. “This is a great chance for students, faculty, staff, alumni and stakeholders to share examples of what they think make IANR and CASNR innovative and special.”

The time capsule will be sealed on June 9, 2023. It is scheduled to be opened in 2073, in honor of the 200th anniversary of CASNR and the 100th anniversary of IANR.

For more about the Celebration of Innovation, visit celebrateinnovation.unl.edu.

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History of corn: From ancient grain to modern maize

Corn is part of the everyday lives of people around the world. It's in the food we eat, is often found in the fuel of the cars we drive and is a component in many of the products we use each day. Some might be surprised to learn that corn didn't always look like it does now, but in fact is the product of thousands of years of selective breeding. It has been a constant companion of the people of North America, who first brought it with them as they moved around the continent in ancient times and today cultivate vast fields that feed the world.

Who Grew The First Corn

A wild ancestor of the first corn plant, a grass called teosinte, was first selectively bred by indigenous farmers in southeastern Mexico between 8,000 to 10,000 years ago. While teosinte didn't look much like modern corn — it was described as a spikey grass with very small cobs — according to the University of Utah, the genetic difference between it and modern corn is only about five genes.

Just as crop scientists do now, the

indigenous farmers selectively bred teosinte for favorable traits, and over the years changed that edible wild grass into something that would become the corn we know today.



Corn also played an important role in the beginnings of the United States as a food source to early colonists. It is said to have been consumed at the first Thanksgiving in 1621 by residents of the Plymouth Colony.

Three Main Types Of Corn In Nebraska Today

There are many types of corn grown around the world today for a wide variety of uses, but the three most common corn varieties in Nebraska are:

Dent Corn. Better known as “field corn,” dent corn is commonly grown in Nebraska and is used for livestock feed and corn products such as ethanol.

Sweet Corn. Known to many as delicious corn on the cob – sweet corn is the kind of corn you buy in grocery stores to eat. If you're lucky, you are able to raise your own sweet corn and walk it straight from the field to your kitchen.

White Corn. Nebraska is the number one producer of white corn, which is used in food products such as potato chips, tortilla chips and tortillas.

Today's Corn Hybrids

Humans have continued to refine the corn plant over the years and today's corn comes in an array of specialized hybrids. Bred for specific performance traits, some varieties are developed to mature faster, others use less water or are able to better tolerate less-than-ideal soil conditions, insect predation or diseases that commonly affect corn and hurt yields.

Nebraska: A Modern Corn Powerhouse

Today, Nebraska is among the top corn-producing states in the nation — in 2021, producers in the Cornhusker State harvested 1.85 BILLION bushels of corn. That ranked third in the nation, behind only Iowa and Illinois.

Thanks in no small part to the efforts of Nebraska farmers, the United States is the top producer of corn in the world. As such, corn is an important part of U.S. agricultural trade policy with the country's largest corn exports in 2021 going to China, Mexico and Japan.



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Imaging tool rapidly assesses seed quality

Improving agriculture in a world that's heating up and drying out isn't solely about increasing yields. Nutritional quality is also crucial. While measuring yield is as easy as weighing grain, what's inside seeds is harder to discern.

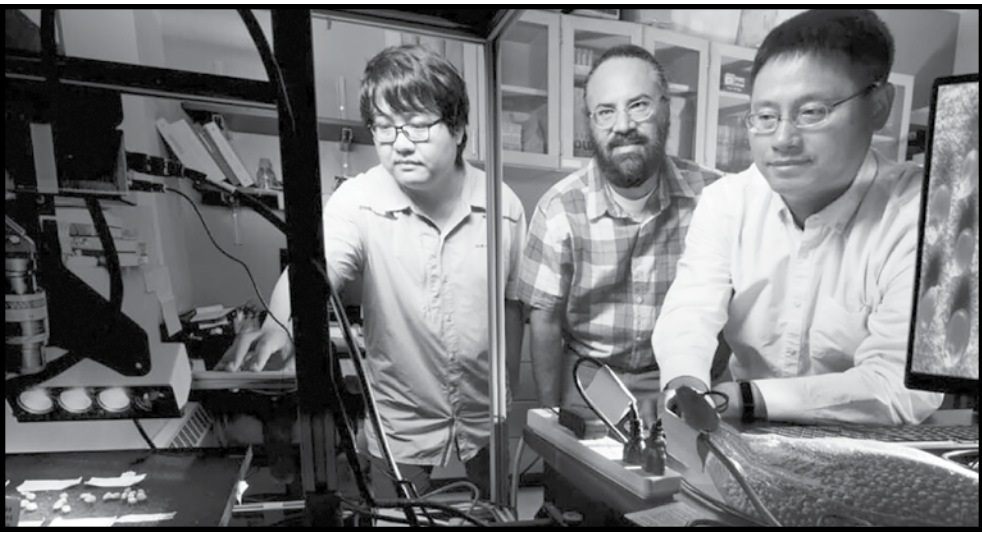
To help improve the nutritional value of crops undergoing heat stress, Nebraska agronomist Harkamal Walia teamed with computer scientist Hongfeng Yu and his team.

Together, they developed HyperSeed, an imaging system that uses light wavelengths to rapidly create a nutritional fingerprint of each seed.

"We had a bunch of seed for which we had measured yield, but it wasn't feasible to ascertain the quality of those grains," said Walia, Heuermann Chair of Agronomy. "The cool thing was they came up with an engineering solution."

The hyperspectral camera beams infrared electromagnetic waves onto seeds to measure reflection and absorption patterns. The results identify an individual seed's nutritional characteristics such as moisture content, nitrogen levels and starch content.

Normally, testing multiple varieties would require months of growing large numbers of plants to assay seeds that are destroyed in the process. With just a handful of seeds, HyperSeed cuts



Graduate student Tian Gao (left), Harkamal Walia and Hongfeng Yu work on their project.

the procedure down to seconds. Intact seeds can then be planted or further investigated.

Scientists can link variations in seed traits found by HyperSeed with changes in gene sequences. The technique can also be used to study the effect specific genes have on grain quality in gene-edited crop lines.

Yu, associate professor in the School of Computing and director of Nebraska's Holland Computing Center, and his team developed open-source software using affordable hardware, allowing

others to customize the system for their research.

HyperSeed's approach is similar to the hyperspectral camera at the Greenhouse Innovation Center on Nebraska Innovation Campus that measures plant traits. HyperSeed, however, is able to focus at the level of seeds and other tiny objects with high resolution.

"Hopefully, this will help make agriculture and food more resilient to a changing climate and increasing populations," Walia said.

The team detailed its system in the journal *Sensors*. The National Science Foundation funds this research. Stories on this research and more were featured in the 2021-2022 University of Nebraska-Lincoln Research Report, now available online.

Nebraska - The Golden Triangle

Nebraska is better situated in terms of corn, livestock and ethanol than any other state in the nation.

Together, these three components form "Nebraska's Golden Triangle," which serves as a powerful economic engine for our state.

Nebraska is the third-largest producer of corn in the country, second in ethanol production and distillers grains (the feed ingredient produced by ethanol plants), second in cow-calf production and first in cattle on feed. It's also an important location for the production of renewable corn-based polymers (bioplastics).

This means corn farmers have solid markets for corn – ethanol and livestock – while the two dozen ethanol plants across state then provide renewable fuel and a feed ingredient for the livestock industry.





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Why snow is so important for farmers during drought

For yet another year, much of the country faced hot and dry conditions during the summer. While these extended dry conditions were a hindrance or inconvenience to some, they are extremely challenging and potentially devastating for farmers and ranchers.

Historically, the average annual precipitation in Nebraska ranges from about 34 inches in the southeast to around 17 inches in the northwestern portion of the state. As of mid-December 2022, some areas of the state had barely received half of the normal precipitation.

As the country embraces the winter season, many who make their living off the land will be looking to the sky once again. Only this time they will be looking for snow, not rain.

What Is A Drought?

A drought is more than an unusually hot and dry week. According to the Glossary of Meteorology and the National Weather Service, a drought is, “a period of abnormally dry weather sufficiently prolonged for the lack of water to cause serious hydrologic imbalance in the affected area.”

What Is a Snow Drought

Although drought is usually thought of as a problem in the warm months, an area also can experience a winter

drought during the cold months. A lack of snow for an extended period of time is called a snow drought.

How Do Droughts Affect Farming

Water is the lifeblood of farming. Without adequate water, corn and all other crops wither in the fields, grass dries up in the pasture and hay doesn’t grow.

If there isn’t enough rain, farmers with irrigation systems can supplement water to their crops if water is available and they have access to it. Fields that aren’t irrigated are at the mercy of the weather. If there isn’t enough water, the corn crop will suffer and yields will go down.

Although advances in seed technology have resulted in corn varieties that are more resistant to drought than corn varieties in the past, the bottom line is that all corn needs water to live. If the plant doesn’t receive enough water to sustain life, the corn will not grow and the crop will be lost.

Is There a Drought in Nebraska

Like much of the U.S.,the state of Nebraska experienced drought during 2022. This didn’t change during winter, with the entire state in at least some form of drought in late December 2022.

Nearly 60 percent of the state was in a severe drought and 17 percent of the state was in an exceptional

drought, also as of late December, 2022 According to drought.gov, the drought conditions in Nebraska are expected to persist through the winter months until at least mid-February.

How Does Snow Affect Drought In Nebraska

Crops like corn get moisture from rain that falls during the growing season, but snow can play an important factor in how producers are able to cope with drought. The snow received now will impact the quality of corn that is grown the next year.

The two biggest ways snow helps with drought is that it puts moisture back into the soil and also replenishes the rivers, reservoirs, massive Ogallala Aquifer and other groundwater reserves farmers in Nebraska use to irrigate their crops. Both of those functions are especially critical after a drought, because the prolonged dry period depletes soil moisture and requires more irrigation to keep the crops alive.

Other ways snow helps farmers:

- Insulates cover crops. A blanket of snow on top of a field acts as an insulating blanket between cover crops planted in the soil and the cold winter air, preventing the ground from killing the crop.
- Reduces erosion. Just as it protects

cover crops, snow covering a field protects the soil below from being blown away by strong wind while also preserving what moisture and nutrients there are in the soil.

- Enables barge traffic. Snow assists farmers in getting corn and other crops to market by helping keep the water levels of major waterways like the Missouri and the Mississippi high enough to allow barge traffic to transport the crops to ports for international shipment. With 32 percent of Nebraska’s corn exported internationally, this is an important step in success for farmers and corn.

How Snow in other states can Affect Nebraska Farmers

Snow can have a major impact on farmers even if it falls in another state. The headwaters, or source, of one of the key rivers used for crop irrigation in Nebraska — the North Platte River — is found in Colorado.

Just as less snow on a Nebraska farm field means less water melts and drains into nearby streams, lakes and rivers, weather conditions around the headwaters and upper reaches of a river — whether it be significant amounts of snow and rain, or extreme lack thereof —can have an impact on water levels when the river gets to Nebraska.



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