

The Wayne Herald  
January 18, 2024

# CORN

## Bruggers have new ideas on old dirt

Brugger brothers Joe and Matthew were born to work together – perhaps just like their dad and uncle before them, and their grandfather and great-uncle before them.

But farming isn't the same business it was 100 years ago when the Brugger family farm was established in Albion.

In recent decades, food producers and food consumers have drifted fur-

ther from one another.

Consumers rarely purchase goods directly from farmers who grow them. Instead, beef, pork and other similar products are processed and packed – then sold wholesale to grocery stores and other distributors before, finally, consumers are able to purchase them at retail prices.

“Because we made all those effi-

ciencies,” Joe said, “we took out that consumer-producer relationship.”

Joe and Matthew Brugger aim to turn the tables on that model – and pull those tables closer to the farm.

In 2015, the twin brothers founded Upstream Farms with the mission of building relationships with customers buying their beef and pork.

They were still just sophomores at the University of Nebraska-Lincoln, participating in the Engler Agribusiness Entrepreneurship program. Students in the Engler program focus on harnessing our nation's agricultural strengths to develop their own entrepreneurial ideas.

From its inception, the brothers' agribusiness has operated in tandem with their family's farm.

Upstream Farms started out by providing meat at wholesale prices to restaurants, microbreweries and one particularly notable account – the University of Nebraska-Lincoln Athletic Department.

Matthew said that building relationships with wholesale customers while still finding time to grow crops, raise livestock and introduce creative new ideas was a challenge, because supplying restaurants meant being on call 24-7.

When the Brugger brothers moved home after college, they decided to

transition to a retail business model – selling directly to individual customers online.

“With an e-commerce business we're able to fill out orders three times a week and then be done with it,” Matthew said. “We can run the business from our little rural community and be successful – and still be farmers.”

And their community is important to them. One thing the Bruggers learned from the Engler program is that building a successful business within a rural community is one of the best ways to contribute to its economic growth and development.

“We were fortunate to grow up in a very supportive community and wanted to be able to give back,” Mathew said. “[We wanted to] create some sort of sustainable model for other communities to follow as well.”

Traditionally, farmers achieve higher profits by planting more acres or increasing the yield of each crop, diversifying into other agricultural enterprises – like livestock, or producing speciality agricultural products, but the Brugger brothers were looking for different ways to expand their agribusiness.

Not all of the grain grown at



Joe and Matthew Brugger own Upstream Farms Distillery to use extra corn to produce whiskey.

See DIRT, page 2





## Discussing research

Swetabh Patel, a researcher working at the Haskell Lab at Concord, shares the results of his research on the effect of manure and wood chips on nitrate leaching in corn. His presentation was one of several that was part of the Haskell Ag Lab's Family Day last summer. Patel is demonstrating how to use lysimeter to determine how much moisture is in the soil. His research determined that the use of mulch in dryland conditions can conserve moisture by providing cover on the soil surface and potentially improve yield in a dry year. Another aspect of the study was to determine the amount of nitrates from synthetic fertilizers that are leached into the soil.

## Dirt

(continued from page 1)

Upstream Farms was being used to feed livestock. Some of it was going to the elevator after every harvest. The Bruggers began to explore new ways to put that grain to use within their business.

"We fell in love with the idea that you can take grain and turn it into more than just a commodity," Joe said. "You can take corn and put it in a bin and it might go bad over time – or you can distill it, put it in a 53-gallon barrel and age it, and it will get better over time."

In January 2020, the Bruggers launched Upstream Farms Distillery, where their extra corn is used to produce whiskey.

"We weren't big drinkers in college," Matthew laughed. Renovating the old milk barn on their family farm and using it to house a shiny new still seemed like an unexpected direction to some of the Bruggers' friends, but they say the move makes perfect sense.

After Prohibition, their great-grandfather made wine in the basement of his farmhouse. The Bruggers are proud that – a century later – their business is able to connect with his legacy by bringing not only farm to table but also

grain to glass.

"The other thing that's really cool is that a byproduct of distilling whiskey is distillers grains," Matthew said. "That's another high-protein resource for cattle that we also feed to our animals. So it creates this kind of closed-loop system."

As a whole, the brothers are thankful they get to work together, breaking (literal) ground on new ideas, while building a business in the industry they grew up loving.

"We like to say we're putting new ideas on old dirt," Matthew said. "It's this connection of taking new, innovative solutions that create more economic and environmental sustainability within our farming ecosystem, and marrying them with some of these older ideas about farmers raising food."

The Bruggers say it's a model that allows them to connect with consumers in a unique way.

"Farm to table allows us to listen to the consumers," Joe said. "We always say, if we don't tell our story, somebody else is going to. I think it's a revolving door, and that relationship goes both ways. We're educating our consumers [and] they're educating us."

AMERICAN  
SINCE 1926



THANK YOU  
AREA FARMERS  
FOR CHOOSING  
PIONEER® BRAND SEED

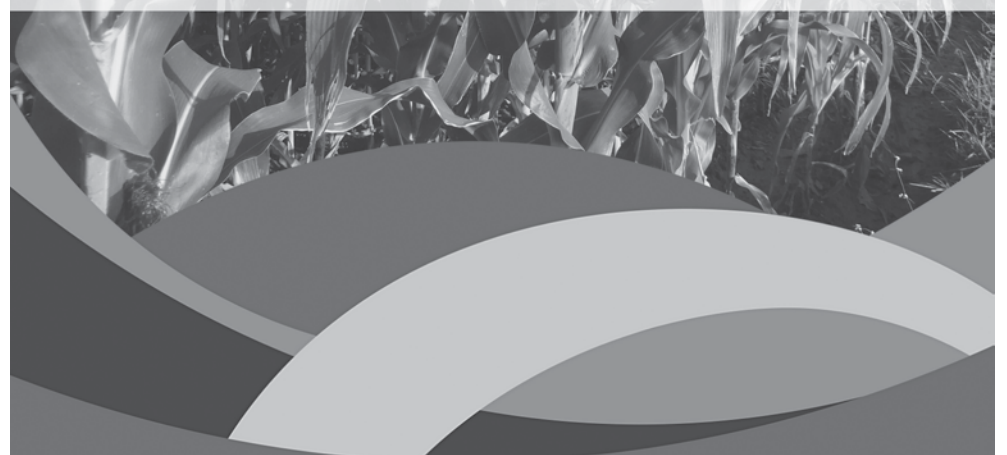
Koenig Enterprise Inc.  
402-375-1518



™, ®, SM Trademarks and service marks of Dow AgroSciences, DuPont or Pioneer, and their affiliated companies or their respective owners. © 2019 PHIL. 19D-1030



We focus on your finances,  
so you can focus on your farm.



F&M  
& Bank

321 Main Street . Wayne, NE . 68787  
800.235.5331 . fmbankne.bank

Member FDIC



# E85 vs. E15: What's the difference?

As environmental awareness grows, consumers' preferences are increasingly shifting towards sustainable and eco-friendly products. This trend is also evident in the fuel industry. More and more consumers are searching for alternative biofuels like E15 and E85 that not only power their vehicles efficiently, but also have a lower impact on the environment.

Both E15 and E85 are biofuel blends that contribute to an earth-friendly approach to fuel consumption. That's because they're each a blend of regular gasoline and ethanol, a renewable resource derived from corn or other plant materials, which helps reduce greenhouse gas emissions compared to traditional gasoline.

While there are some distinct differences between E15 and E85—they are not the same thing—both offer a greener alternative to traditional fuels. But, because of their differences, it's crucial to understand their unique characteristics to utilize them effectively and responsibly.

### What Is E15 Gas?

E15 gasoline is a blend of fuel that contains 15% ethanol and 85% gasoline. It burns cleaner than pure gasoline, reducing greenhouse gas emis-



sions and improving air quality. It's often cheaper than regular gasoline, making it an attractive option for many drivers.

The U.S. Environmental Protection Agency (EPA) approved E15 for use in light-duty vehicles, which includes cars, light-duty trucks and medium-duty passenger vehicles. That means E15 is safe for most of the cars and trucks on the road today.

### Is E15 the Same as Unleaded Gasoline?

While E15 may be at the same gas pump as regular unleaded gasoline, it is not the same thing. They are, however, both types of fuel that can be used in most vehicles.

Regular unleaded gasoline typically contains up to 10% ethanol, hence sometimes referred to as E10. This

blend is suitable for use in virtually all gasoline-powered vehicles on the road today. On the other hand, E15 is a blend that contains 15% ethanol and 85% gasoline and is often marketed as Unleaded 88 in many states due to its octane rating.

### Is E15 the Same as E85?

While they both contain ethanol, E15 is not the same as E85. In fact, vehicles that use E15 may very well not be able to use E85, so it's important to know which type of ethanol blend your car can handle.

Most cars that run on regular unleaded are able to run on E15, which is gasoline with a blend of up to 15 percent ethanol. On the other hand, E85 gas is a flex fuel that contains 51% to 83% ethanol, depending on the region and season. Because of the higher ethanol content in E85, it should only be used in vehicles designed to handle flex fuel and not in cars that only use regular gasoline or a lower ethanol blend like E15. Check your owner's manual to see if your car is suitable for E15 and E85.

### Is E15 Better Than E85?

Whether or not E15 is better than E85 depends on the type of vehicle you are fueling up. If you have a regular car or truck, E15 is a better choice because

regular vehicles are not designed to handle the higher concentration of ethanol in a flex fuel like E85.

However, if you have a vehicle designed to run on flex fuel, E85 would be a good choice because it burns cleaner, is even better for the climate and is often cheaper than other fuel blends.

While most flex-fuel vehicles that normally run on E85 can also use the lower-ethanol blend of E15, it doesn't work the other way around. Using E85 in a car not equipped to handle the higher-ethanol flex fuel blend can be bad for your vehicle. Always consult your vehicle's owner manual or manufacturer for information on what fuels are recommended for your specific vehicle.

### E15 and E85: Environmentally Friendly Fuel Choice

Even though E15 and E85 are not the same, they represent two innovative, climate-friendly fuel blends that combine environmental responsibility with efficient vehicle performance.

These biofuels not only contribute to the fight against climate change by producing fewer greenhouse gas emissions, but also ensures your vehicle runs smoothly, pairing practicality and sustainability.

**BECKER FLYING SERVICE, INC.**

**AERIAL CROP SPRAYING & COVER CROP SEEDING**

**Wayne Office**  
402-833-5110

**Hartington Office**  
402-254-7316

**Call us for competitive pricing!**

**Experienced ag and truck mechanics**

**We can service all your truck and ag needs**

- \*Heavy duty diesel repair
- \*Farm tractor & implement repair
- \*Competitive rates
- \*Pickup and delivery service

**We do service calls-- to the field or on the highway**

We do full inspections and repairs on:

- \*Combines
- \*Tractors/implements
- \* Semi trucks
- \*Trailers

**HANSEN**  
REPAIR & EQUIPMENT SALES

We sell great plains tillage equipment and bestway sprayers  
*We service what we sell!*

Laurel • 402-256-3960 • [www.hansenrepair.com](http://www.hansenrepair.com)

## Why California is among the top markets for Nebraska Ethanol

Biofuels like ethanol are the future of carbon-reducing, renewable energy solutions for our cars, trucks and sport-utility vehicles. Nowhere is the demand greater for ethanol than in the state of California.

The ethanol Californians use doesn't come from the Golden State. Much of it comes from Nebraska.

Why is Nebraska such a big supplier of ethanol for California? Here are several reasons corn farmers in the Cornhusker State have a key relationship with drivers in this West Coast market.

### Why does California use so much ethanol?

Californians are the biggest consumers of ethanol in the United States. In 2022, the state of California sold more than 103 million gallons of E85—a gasoline-biofuel blend containing up to 85% ethanol, according to the Renewable Fuels Association. That was up 66% from the previous year and more than double the amount sold in 2019, which was the pre-pandemic record.

Additionally, the California Air Resources Board requires that all

vehicle fuel in California must contain at least 10% ethanol.

This demand is a result of California's commitment to reducing greenhouse gas emissions and promoting clean energy sources. Ethanol, being a renewable fuel derived from corn and other plant materials, fits nicely with those climate-friendly goals.

Additionally, California has a large population and a high demand for transportation fuels. To meet this demand sustainably, the state encourages the production and consumption of alternative fuels like ethanol.

### Why is ethanol a climate-friendly fuel sought out by California?

Ethanol has been shown to significantly reduce greenhouse gas emissions from vehicle exhaust compared to regular gasoline—lowering harmful emissions by up to 43%.

Ethanol gasoline blends are widely used around the country to reduce pollution and increase savings for consumers. The vast majority of gasoline sold in the United States is a blend of up to 10% ethanol, called E10, which is approved for any passenger vehicle on the road. Higher ethanol blends, such as E85, can be used in flex fuel vehicles.

### How much ethanol does Nebraska make?

Nebraska is well-positioned to export

ethanol to California. It is the second-largest ethanol producer in the nation, generating more than 2.25 million gallons and an economic impact of more than \$4.5 billion, according to a 2022 report by the University of Nebraska-Lincoln.

Those numbers mean Nebraska makes enough ethanol to export it to other states.

### Why does Nebraska supply so much of California's ethanol?

California could get its ethanol from anybody, right? So, why buy from suppliers in Nebraska?

One reason is Nebraska's farmers provide a bountiful supply of field corn, which is used to make ethanol, and the state has the production facilities needed to turn that corn into renewable, emission-reducing ethanol.

Another important factor is Nebraska's farmers and leaders made significant investments in ethanol infrastructure, such as production facilities and transportation networks. This allows for efficient and cost-effective transportation of ethanol from Nebraska to California.

The Nebraska Corn Board also has offered infrastructure grants for California fuel retailers, further strengthening the relationship between farmers and the California market.



## KLEIN ELECTRIC INC.

**Mark Klein, Owner**

58211 Hwy 35, Wakefield, NE 68784  
mark@kleineu.com

**402-287-2884**

**Commercial, Farm, Residential, Industrial**



### Our farmers feed our future

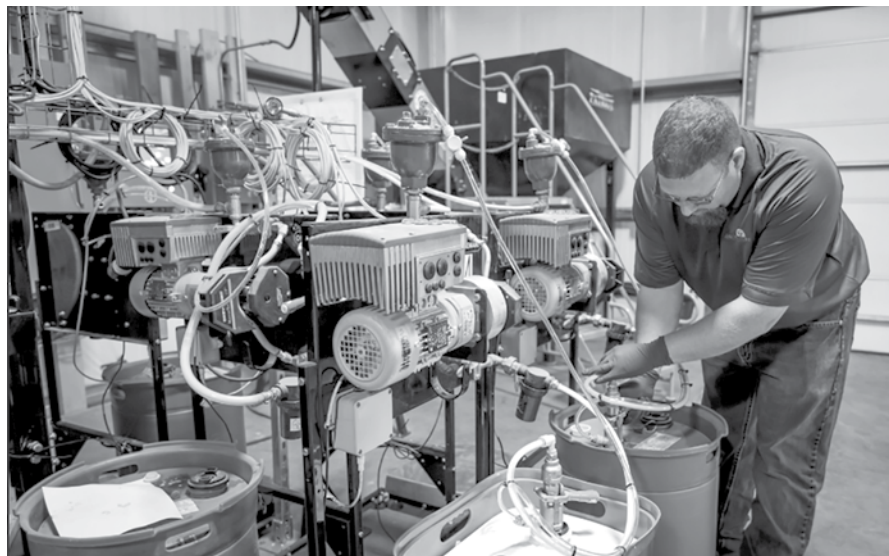
Thanks to our farmers, Nebraska is a leader in agriculture. Their passion for farming helps feed the future of our community. We believe in investing in this future. We've been making ag loans since we opened our doors, and we'll keep doing so for generations to come.



**STATE NEBRASKA BANK & TRUST**

HISTORY • PEOPLE • COMMUNITY SINCE 1892

122 Main Street 1010 Main Street Wayne (402) 375-1130 statenebank.com



## Elite Seed Treatments - The Ultimate Protection

Our extensive seed quality testing positions our seed to provide maximum yield potential in your fields.

**SEEDSOURCE**

1610 Chiefs Way • Wayne, NE

402-375-4715





# Revising estimates of crops' water loss could help conserve groundwater

*Editor's note: Pocket Science provides a glimpse at recent research from Husker scientists and engineers. For those who want to quickly learn the "What," "So what" and "Now what" of Husker research.*

**What?**

As the state sitting above the largest portion of the United States' largest aquifer, Nebraska relies on groundwater not just for hydrating but irrigating. In growing corn, soybean and other crops, Nebraska farmers irrigate roughly 60% of their fields — more than 8 million acres, the most of any U.S. state.

Though groundwater does get replenished by precipitation and snowmelt, human activity has begun to test just how renewable it is. In 2020, Nebraska U's Conservation and Survey Division reported that, while the volume of groundwater under the eastern half of Nebraska has generally increased over the past four decades, the aquifer under its semiarid western side has instead lost groundwater — in some pockets, 50-plus feet of it. Less groundwater means less irrigation and, by extension, lower crop yields, underscoring the importance of maximizing every drop.

To calculate the irrigation demanded by a given crop in a given locale, researchers rely on equations that factor in evapotranspiration: the water lost by evaporation and via transpiration, whereby water taken up by plants later escapes through leaf-coating



**Ivo Gonçalves**

pores. After consulting an evapotranspiration value for a so-called reference crop, researchers multiply that value by another number — a coefficient, usually between 0 or 1 — to determine the evapotranspiration (and irrigation needs) of other crops, including corn and soybean.

**So what?**

Some recent research has suggested that the coefficient should decrease when the atmosphere is especially thirsty — when temperature, humidity and other variables make it more prone to suck up moisture from the land below. If true, crops may be losing less water than expected amid higher temperatures, wind speeds and other condi-

tions characteristic of a water-sapping atmosphere, potentially because they close their pores in response.

Researchers from the Daugherty Water for Food Global Institute recently looked into whether the same phenomenon might hold in the Cornhusker State. Ivo Gonçalves and colleagues analyzed a decade of data from an irrigated Nebraska field that rotated between corn and soybean, as many farmers do. Though coefficients mostly agreed with their commonly accepted guidelines when evapotranspiration was low, those guidelines tended to overestimate the coefficient for both corn and soybean as evapotranspira-

tion surpassed a certain threshold — one crossed during roughly 40% of the analyzed timeframe. That was especially the case in 2002 and 2012, years stricken by drought.

**Now what?**

The team recommended revising the coefficient values for corn and soybean that are grown under conditions associated with particularly high evapotranspiration. Those revisions could help avoid overestimating the irrigation needed to successfully cultivate the crops, the researchers said — conserving groundwater, saving energy and minimizing agricultural runoff while maintaining yields.

**your farm is special.  
your coverage should  
be too.**

**simple human sense.**

**Northeast Nebraska  
Insurance Agency**  
Wayne 375-2696  
Wakefield 287-9150  
Laurel 256-9138 • Pender 385-6500

LIFE • HOME • CAR • BUSINESS | **Auto-Owners  
INSURANCE**

**Ekberg Auto Repair**      **Ekberg Auto Salvage**  
58485 859 Road                      58485 859 Road  
Wakefield, NE 68784                      Wakefield, NE 68784  
402-287-2387                              402-287-2950

**Ekberg Auto Parts**  
223 Main Street • Wakefield, NE 68784 • 402-287-9031

**People... Products... Knowledge®**  
Helena Agri-Enterprises, LLC

<b>WAYNE LOCATION:</b> 110 So. Windom Wayne, NE 68787 <b>402-375-1527</b>	<b>PENDER LOCATION:</b> 58395 849th Road Pender, NE 68047 <b>402-287-3500</b>
--	--

Quality Products • Competitive Prices • Proven Results

*We support the corn producers  
each and every day!*



## Eastern Nebraska Corn and Soybean Expo combines two events

New for 2024, the Fremont Corn Expo and the Nebraska Soybean Day and Machinery Expo will be combined into one expo — the Eastern Nebraska Corn and Soybean Expo. The expo will focus on both crops and will rotate between Saunders and Dodge County locations each year.

The 2024 expo will take place on Thursday, Jan. 25 at the University of Nebraska Eastern Nebraska Research,

Extension and Education Center (ENREEC near Mead,) located at 1071 County Road G, Ithaca. The program will kick off at 8:30 a.m. and will finish up at 3 p.m.

The event opens with coffee, doughnuts and the opportunity to view equipment and exhibitor booths at 8:30 a.m. Speakers start at 9:10 a.m.

“The Eastern Nebraska Corn and Soybean Expo will assist producers

in planning for next year's growing season,” Aaron Nygren, Nebraska Extension educator, said. “We hope you come and learn from a variety of speakers and vendors about important topics for corn and soybean production in 2024.”

This program is sponsored by Nebraska Extension in the university's Institute of Agriculture and Natural Resources, the Nebraska Corn Board, and the Nebraska Soybean Board.

Mike Zuzolo, president of Global Commodity Analytics and Consulting LLC, is the keynote speaker. He will speak on “Navigating 2024 Commodity Markets — Funds vs. Fundamentals”. His presentation will include:

- Assessing 2024 Prices For Grains and Cattle — Look at Top 3-5 Drivers.
- Factors To Focus Upon — U.S. and Global S/D Fundamentals (Micro-Conditions) vs. Funds and Investment Flow Drivers (Macro-Conditions).

- Project 2024 “Overvalue” and “Undervalue” Levels For Corn/Soybeans/Cattle Through March 31.

Other timely topics include:

- A Look Back at 2023 and a Look Ahead into 2024 — Eric Hunt, Nebraska Extension educator of agri-

cultural meteorology.

- Corn and Soybean Disease Update — Tamra Jackson-Ziems and Dylan Mangel, Nebraska Extension plant pathologists.

- Pros and Cons of a Precision Sprayer for Detecting Weeds and Spray Herbicide in Real Time for Weed Management in Corn and Soybean — Amit Jhala, Nebraska Extension weed management specialist.

- Drone Spraying — Terraplex Ag.

Updates will also be provided by the Nebraska Corn Board, Nebraska Soybean Board, Nebraska Corn Growers Association and Nebraska Soybean Association.

Producers can visit with representatives from a variety of ag-related companies during a 40-minute break at 10 a.m.

Complimentary noon lunch will be served.

Registration is available the day of the expo at the door; there is no registration fee.

For more information about the program or exhibitor information, call 402-624-8030 or email Aaron Nygren. Vendor spots are available. Visit the website for more.

# NORTHEAST TIRE SERVICE

Farm & Residential  
Roadside Assistance  
Lance 402-369-3772

E. Hwy. 35 Across from Wayne East • Wayne



## It all began with agriculture.

In 1985 CharterWest Bank began as a small West Point ag bank. Today you can find us all across Nebraska, but no matter how much we grow or how far we go, we are proud of our Northeast Nebraska roots.



#### BANKS:

West Point • Pender • Walthill • Elkhorn • Papillion  
South Omaha (LPO) • Gretna (LPO)

#### MORTGAGE CENTERS:

Columbus • Council Bluffs • Elkhorn • Grand Island • Gretna  
Hastings • Kearney • LaVista • Lincoln-South • Lincoln-East  
McCook • Norfolk • Omaha-West Center • Papillion • South Omaha

Nebraska born. Nebraska owned. Nebraska values.

CharterWest.com

Member FDIC



## The land market is in big demand!

### Call us today to discuss the possibilities.



**Wendi Schutte**  
Associate Broker/Branch Owner  
(402) 518-0115



**Steve Schutte**  
AFM/Agent  
(402) 518-0111



**103 W. 2nd Street • Laurel, NE • 402-256-9320**

**www.FarmersNational.com/Laurel**

Real Estate Sales • Auctions • Farm and Ranch Management  
Appraisal • Insurance • Consultation • Oil and Gas Management  
Forest Resource Management • National Hunting Leases  
Lake Management • FNC Ag Stock



# Five ways corn is used in Nebraska

Nebraska is one of the top corn-producing states in the nation. In 2022, Nebraska corn farmers harvested more than 1.46 BILLION bushels. That's a lot of corn!

What happens to all that corn? How is it used? It is used to make many important products, from food to fuel and much more. Here are five ways corn is used in Nebraska:

## 1. Ethanol

A large amount of Nebraska's field corn is used to make ethanol, a renewable biofuel commonly blended with gasoline to reduce pollution. Each year, roughly 900 million bushels of corn is used to make ethanol in Nebraska, which is the second-largest producer of the biofuel in the United States.

Much of Nebraska's ethanol is used in California, which is the largest market for renewable fuels in the country.

## 2. Livestock Feed

Another major destination for Nebraska's corn is as food for the state's livestock. Of the corn fed to livestock within Nebraska, more than two-thirds of that is used to feed beef cattle—which makes sense, considering Nebraska is a leading producer of beef. Many other livestock species, including hogs and chickens, also eat corn.

It's important to note that livestock don't just eat the corn kernels, they also eat silage—a chopped up mixture of fermented corn plants—as well as distillers grains and corn gluten meal, which are byproducts of the ethanol-making process.

## 3. Foods

In addition to being used to make livestock feed and ethanol, field corn is also used for human food products like cornstarch and corn syrup.

And, while most of the corn grown in Nebraska is field corn, the state also is the nation's No. 1 producer of white corn and popcorn in the country. Popcorn's deliciousness is fairly obvious, but white corn is found in many corn-based products—including many popular Frito-Lay snack chips.

## 4. Biodegradable Products

From an ingredient in deicer used on icy roads to biodegradable cat litter, corn is used in a variety of products with many more potential products currently under development. Experts are even exploring how to use co-products from the ethanol-making process to produce biodegradable plastics, which could play a big role in reducing



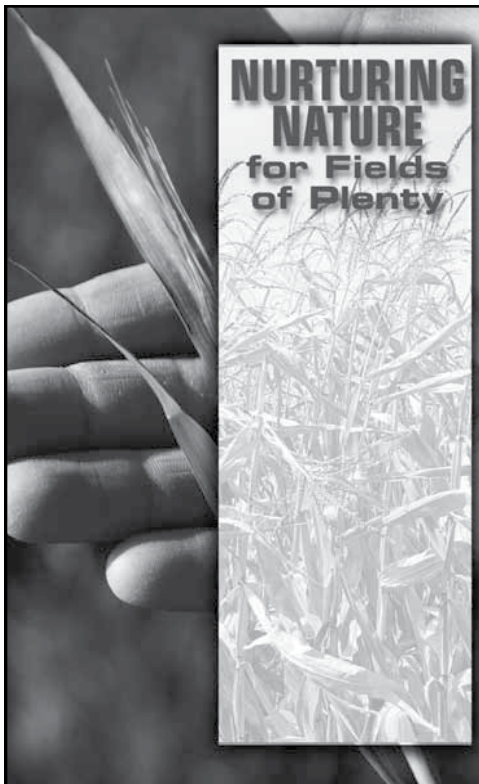
the problem of pollution from single-use plastics.

Corn also is used to make regular products such as paper, starch-based adhesives and is even found in diapers and in some vehicle tires.

## 5. Research

While most of the corn grown in Nebraska is used to fuel cars and feed animals or people, some of it is used for research purposes. Those projects include subjects such as exploring better ways to utilize fertilizer, understanding what influences corn yields and finding ways to combat com-

mon corn pests. By researching these important subjects, we can learn how to grow corn more sustainably and also find new uses for this exciting crop.



**Farmers Co-op**  
 WINSIDE • 402-286-4277  
 PILGER • 402-396-3414  
 STANTON • 402-439-2430

## WAYNE AUTO PARTS, INC.

**117 South Main  
Wayne, NE  
402-375-3424**

Locally & Family Owned  
in Wayne for 55 Years!

- Parts & Accessories, all makes of cars
- Medium & Heavy Duty Truck Parts
- Custom Battery Cables
- Custom Made Hydraulic Hoses

### Do You Have the Right Coverage for Your Crops?

With thin profit margins, it's more important than ever to have the right crop insurance coverage.

See your Rain and Hail agent to help ensure that you have the right protection to fit your risk management needs.

For details contact:  
**State National Insurance  
 Brian Bowers  
 Wayne, NE 68787  
 402.375.4888**

[www.RainHail.com](http://www.RainHail.com)

This institution is an equal opportunity provider and employer.

## We Salute the Area Corn Producers!

**Aschoff CONSTRUCTION, INC.**  
 Osmond, Nebraska  
[www.aschoffconstruction.com](http://www.aschoffconstruction.com)

**CHIEF BUILDINGS**  
 a division of Chief Industries, Inc.

**LESTER BUILDINGS**

**SENTINEL BUILDING SYSTEMS**  
 A Division of GLOBAL Industries, Inc.

**CALL TODAY & SAVE!  
 1-866-748-3551**

# bomgaars

**What You Need... When You Need It**

[www.bomgaars.com](http://www.bomgaars.com)  
 1400 West 7th Street  
 Wayne  
 402-375-2303



# How corn is used domestically and internationally

Corn grown in Nebraska and other states has important uses in the United States and around the world.

Corn is a major force in local and global markets, playing a vital role in countless industries worldwide. In the U.S., corn production not only fuels the domestic market, especially as feed grain for livestock and renewable bio-fuel, but also positions the country as a top exporter of corn and corn-based products globally.

Because corn farmers in Nebraska

and other states are able to generate a surplus of this versatile grain, the U.S. meets the demands of countries relying on corn imports for a variety of needs, including animal feed, food production and industrial applications. From cornmeal to corn oil, the U.S. holds a leading position for international corn exports.

## How Corn Is Used In The Us

Major uses of corn in the US

Most of the corn used in the U.S. is field corn used for animal feed and eth-

anol. According to the U.S. Department of Agriculture, about 40% of the corn used in the U.S. is fed to animals. Another 40-45% is used to make ethanol biofuel and the remaining 20% of corn used in the U.S. is made into human food products or used for other industrial purposes.

Common food products made from corn include high fructose corn syrup and other sweeteners, starch, corn oil, corn meal, tortilla chips and cereals. That's in addition to two forms of corn eaten fresh or whole in the U.S., such as sweet corn and popcorn.

A smaller percentage of corn grown in the U.S. is used in a wide variety of non-food products, ranging from vehicle tires to cat litter and even cutlery made from a corn-based bioplastic.

## How Much Corn is Consumed/ Used Domestically

Eighty to ninety percent of the corn grown in the U.S. is used domestically. The USDA estimates American farmers produced 13.7 billion bushels of corn in 2022, which means approximately 11-12 million bushels were used as food, animal feed or made into products here in the U.S.

## How Corn Is Used Internationally

How corn is used around the world

The U.S. is the world's largest exporter of corn, exporting 10-20% of the corn it produces each year. And, as it is in the U.S., a significant portion of corn exported by American farmers is used to feed livestock around the world.

In 2022, the U.S. exported an estimated \$18.57 Billion worth of corn.

## Who buys the most corn from the U.S. and what do they use it for?

The countries that buy the most corn from the U.S. include Mexico, China, Japan and South Korea.

In many of these countries, corn imported from the U.S. is mostly used to make corn-based animal feed for livestock such as cattle, hogs and chickens. For this reason, global demand for corn from the U.S. and other major corn-producing countries such as Brazil, Argentina and the Ukraine can be impacted significantly by the need from livestock-production industries in countries around the world.

In addition to buying U.S. corn for livestock feed, countries also import and eat corn. For example, approximately 20% of U.S. corn exports to Mexico is white corn intended for food products. Nebraska is the nation's leading producer of white corn.

## What corn-based products are exported internationally?

In addition to exporting corn to other countries, the U.S. also sells corn-based products to other countries. Nebraska is among the nation's leading producers of two of those products: ethanol biofuel and meat from beef and other livestock fed with corn.

According to the U.S. Meat Federation, a record 1.47 million metric tons of beef worth an estimated \$11.68 billion was exported to other countries in 2022. Another 244,718 million metric tons of pork was exported that year, worth an estimated \$687.3 million.

An estimated \$3.7 billion worth of ethanol biofuel was exported in 2022, with the top markets being Canada, South Korea and European Union countries, according to the USDA.



## FARMERS CO-OP

**325 WEST 1<sup>ST</sup> STREET  
PILGER, NE  
402-396-3414**

**Farmers Co-op**

**•Grain Storage •Fertilizer  
•Chemicals •Fuel •Propane •Oil**

**CONVENIENCE STORE**

**•Gas & Diesel •Grocery Items**

**Looking for a mechanic you can trust? Look no further!**

*Our team of friendly and highly skilled professionals ensure our customers receive the best practices in the industry.*

**Their years of experience guarantee high-quality service and a quick turnaround.**



We believe in treating our customers fairly because we want your business now, and far into the future.

## HANSEN BROTHERS

### PARTS & SERVICE

506 W. Industrial Rd. • Laurel • 402-256-8785



## HOSKINS MFG. CO., INC.



*Quality Doesn't Cost It Pays*

**LIVESTOCK WATERERS**

**SAVE 50% ON ENERGY OPERATING COST ON OUR WATERERS**

- CUSTOM SHEET METAL FABRICATION
- MACHINE SHOP
- WINCO GENERATORS

[WWW.HOSKINS-MFG.COM](http://WWW.HOSKINS-MFG.COM)  
 565-4420 • 800-658-4020  
 105 N MAIN • POB 101 • HOSKINS



# DINKEL'S



**NEW HOLLAND**  
AGRICULTURE

**"We can do the job for you"**

**Dinkel Implement Co.**  
3615 W. Norfolk Ave - Norfolk, NE 68701  
**402-371-5092**






[www.dinkels.net](http://www.dinkels.net)



# How corn-based deicer keeps roadways clear during winter

In much of the country, a blanket of snow is a welcome, picturesque site. Snow-covered hills and ice glistening on tree branches does make for a lovely photo op, but it also can make for dangerous or even deadly driving conditions.

Fortunately, a fleet of city, county and state road crews are armed with a variety of equipment and products to keep the roadways clear and free of ice so that traffic can move smoothly. And, as more municipalities and homeowners are concerned with potential side effects of traditional methods, some of them are turning to deicers and snow melts that utilize compounds surprisingly made from corn.

Considered less corrosive than traditional deicers, additives made using corn and other organic materials are increasingly being incorporated into traditional salt-based deicers and snowmelts.

## What is used to melt ice on roads in winter

Cleaning roads during snowy, icy winter weather involves two key components. First, crews use plows or other heavy equipment to remove piles and drifts of snow on the roadway and scrape off as much ice and snow as possible from the surface of the road. Second, they apply a salt-based brine to melt the ice on the road surface and help vehicles get traction on their tires. Some municipalities apply the brine before the storm to help prevent ice from forming, while others also spread sand to provide traction in problem areas.

Though recipes vary, the salt-based brine is often made primarily of sodium chloride, calcium chloride or magnesium chloride. Sometimes additional organic substances are added to help the solution stick to the road or reduce the overall salt load.

While salt-based products are widely used and are effective deicers under many conditions, they also damage the road surface and can corrode vehicles

and steel infrastructure such as bridges. Increasingly, some officials have expressed concern about the effects of these purely salt-based products on nearby waterways and vegetation. That's where corn comes in.

## Does corn melt snow and ice?

While a single kernel of corn does not melt ice on its own, products made from corn are already used in some deicers and research shows potential for more use.

One product on the market, Ice Ban, is made using residue from the wet milling of corn and alcohol production. It has already been tried in several states, including in the Midwest. Road crews in Missouri reported the product worked 25 percent better than other treatments, especially in colder conditions.

A 2021 study of the effectiveness of corn-based additives on roads found salt brine blends using additives made from corn juice and sugar alcohols performed well in melting ice and maintaining a low freezing point. In addition, some of the blends tested were less corrosive than the traditional salt brines.

That means mixing the corn-based compounds in with the salt-based deicers has the potential to reduce the overall salt load going on the road — and lessen the amount of damage to the road, bridges and vehicles.

As municipalities and consumers consider non-salt-based products for their winter ice-melting needs, additives and products made from corn and other crops are getting more attention

as customers seek alternative ways to keep people traveling on the roads safe. It's just one of the many unique uses for corn that make it such a versatile and important product.

N

EXTENSION

We are here to serve your educational needs!

## ENREEC – Haskell Ag Lab

The University's "Front Door" in Northeast Nebraska

**We provide educational programs to help citizens make more informed decisions.**

- Crops of the Future
- Livestock Systems
- Water, Climate and Environment
- Ag Economics
- 4-H/Youth Development
- Early Childhood

### Haskell Agricultural Laboratory (HAL)

57905 866 Road • Concord, NE 68728-2828  
Phone: (402) 584-2261 • Fax: (402) 584-3859  
Website: <https://hal.unl.edu>

Doug Zalesky, Director .....402-624-8089	Nicole Luhr, Research Technologist ..... 584-3853
Logan Dana, Farm Operations Manager.....584-3852	Sue Lackey, Asst Hydrogeologist..... 402-649-1538
Chad Lake, Ag Research Technician.....584-3860	Monty Larsen, Lecturer .....584-3808
Michael Kurtzhals, Grad Student, Agron....584-3822	Mary Jarvi, Office Associate ..... 584-3828
Jim Jansen, Ag Econ Educator .....584-3849	Wendy Winstead, Finance Coordinator..... 584-3824
Leslie Johnson, Animal Manure Educator..584-3818	Agnes Kurtzhals, Comm Assoc..... 584-3818
Sarah Roberts, Early Childhood Educator ..584-3830	Monica Ebmeier, Dixon Co Office Mgr ..... 584-3827
Mitiku Mamo, Crops & Water Educator ....584-3819	Nebraska Extension Dixon County ..... 584-2234

N



Located 3 1/2 miles east of Plainview, NE on Highway 20

To Sell Corn call  
**Husker Trading at**  
**866-348-7537**

To Purchase Distillers Grains call  
**Ryan or Todd at**  
**877-487-5724 ext 3 or 1**

# KNOWLEDGE PER ACRE

Contact Us Today!

402-254-9500

www.topcropinc.com



# Nebraska team aids first mapping of corn genome

By Geitner Simmons,  
IANR Media

University of Nebraska–Lincoln scientist James Schnable and interna-

tional colleagues have created the first complete map of the corn genome, a landmark achievement that can enable major long-term advances in crop health, resilience and productivity.



“These research findings can help us build tools to predict which new corn varieties will perform well in particular environments, because we will be better able to identify the functions of individual genes in corn,” said Schnable, Charles O. Gardner Professor of Agronomy.

Schnable and scientists from Iowa State University and China recently published their findings, titled “A Complete Telomere-to-Telomere Assembly of the Maize Genome,” in the journal Nature Genetics. Their findings come one year after the complete mapping of the human genome.

Scientists have devoted much effort this century to identifying the full breadth of the corn genome, the set of genetic material that plays a critical role in determining a corn plant’s physical characteristics, growth and health. Mapping the full breadth of corn’s genetic material has been a longtime challenge because the corn genome is large and immensely complex.

Technology used in the first draft of a corn genome, in 2009, identified a significant portion of corn’s wide variety of genetic material. Still, many genetic regions were too complex to be deciphered by the technology available at that time. In all, more than 100,000 gaps in the genetic sequence remained

to be filled.

“Our team drew on the latest technology, plus the particular expertise of the individual team members, and that finally made possible the mapping of the complete corn genome,” Schnable said. In that first study, scientists had been able to map the centromeres — the complicated middle portions of chromosomes — for only two of corn’s 10 chromosomes, for example. Schnable and his colleagues were able to sequence all 10.

Schnable focused on regions of the corn genome containing genes called nearly identical paralogs: two or more genes located next to each other that are so similar it was hard or impossible to tell them apart in previous genomic-mapping efforts. Genetic repetition takes on extraordinary complexity in the corn genome, resulting in large areas of chromosomal material packed together in ways that have defied individual identification and analysis.

With this new complete analysis of a much-studied corn line known as Mo17, Schnable said, “we’re now able to resolve each of those individual genetic copies and start to do a better job of figuring out what individual genes do, rather than having all this combined into a mishmash where it’s hard

See **GENOME**, page 11

## Fielding questions

Among the presenters at the 2023 Agriculture Outlook Seminar and Appreciation Luncheon was Jordan Dux with the Farm Bureau. Dux shared information with those in attendance on legislative updates that will impact the agriculture seminar. The annual ag seminar, sponsored by a number of local businesses, is designed to provide relevant information for the coming year and serve as a 'thank you' to those in the agricultural sector.



Serving the Ag Needs  
of Wayne County  
Since 1943



[www.elkhornvalleybank.com](http://www.elkhornvalleybank.com)

Northeast Nebraska's Locally Owned,  
Independent, Community Bank

**WE GREW UP ON THE FARM**

SINCE 1859, GEHL HAS CREATED INNOVATIVE SOLUTIONS FOR EQUIPMENT OWNERS AND USERS IN AGRIBUSINESS. Today, Gehl carries the tradition forward with a complete line of skid loaders, track loaders, articulated loaders and compact excavators designed with productivity and efficiency in mind. A full line of EDGE attachments are available for Gehl loaders and compact excavators for added versatility around the jobsite.

**EDGE**

**CALL YOUR LOCAL GEHL DEALER TODAY!**

**Steiny's Farm Repair**  
 2408 Highway 51 • Bancroft Nebraska • 866-648-3497  
*Where we sell the best and service the rest*  
 Diesel Truck, Tractor, Skidloader, Trailer Repair



# Genome

(continued from page 10)

to figure out which gene is doing what.”

The idea for this international project originated with Chinese researchers. Schnable has known Jinsheng Lai, a Chinese scientist and the paper’s lead author, for more than a decade, going back to when Schnable was a postdoctoral researcher at the Chinese Academy of Agricultural Sciences. “When he was putting this project together, he reached out to me to participate because of my expertise in this field,” Schnable said. This new corn genome sequence has particular long-term value for developing improved corn varieties by strengthening the scientific understanding of how differences in corn genetics affect varieties. “Rather than conducting selection, we will have the potential to design and engineer corn varieties to adapt to changing climates and grow in more nitrogen-limited conditions,” Schnable said. “We can be more nimble in adapting corn to future challenges in terms of increasing yield and using less nitrogen and water.”

New opportunities also are possible, long term, for creating higher-value secondary products, such as additional value for dried distillers grains from

ethanol plants.

This groundbreaking research connects to the university’s long history of cutting-edge study of corn genetics, Schnable noted. At the start of the 20th century, corn geneticist Rollins A. Emerson did pioneering work on the Nebraska faculty in rediscovering the laws of genetic inheritance established by Gregor Mendel.

Emerson later was a professor at Cornell University and in the 1920s was a mentor to doctoral student George Beadle, a Nebraska native and Husker alumnus who in 1958 received a Nobel Prize for his innovative work in genetics. The university’s Beadle Center, which facilitates research in biochemistry and biological sciences and includes the Center for Biotechnology, is named after him. Emerson also mentored another, later Nobel Prize recipient, Barbara McClintock, one of the 20th century’s central figures in corn genetic science.

In the 1960s and ’70s, Charles O. Gardner, the Husker scientist for whom Schnable’s professorship is named, was a leader in quantitative genetics and plant breeding. Gardner, a Regents Professor of Agronomy, served as president of the Crop Science Society of America and “developed new breeding methodologies and trained

a whole generation of students,” Schnable said.

With the complete corn genome now sequenced, scientists will be able to proceed to important follow-up research to study and determine the function of individual genes that weren’t identified in previous genomic research. “Many of these genes are likely involved in corn’s ability to adapt to different environments and different stresses,” Schnable said.

The university “is well positioned to study this,” Schnable said, “because we have such a powerful research and Extension network and we’re able to grow corn varieties all across the state.

One of my research groups here at the university is testing hundreds of corn hybrids across the 400-mile breadth of Nebraska and into Iowa.”

These Husker research initiatives, he said, “can help us build better models of how corn plants respond in different environments so we can develop those varieties that will thrive.”

James Schnable, Charles O. Gardner Professor of Agronomy at Nebraska, worked with an international team of researchers to create the first complete mapping of the corn genome. That achievement opens the way to long-term advances in developing more resilient corn varieties.

## Corn Board to meet

The Nebraska Corn Board will hold its next meeting on Tuesday, January 30, 2024, at the Hall County Extension Office (3180 W. Hwy 34) in Grand Island.

The board will conduct regular board business. The meeting is open to the public, providing the opportunity for public comment.

A copy of the agenda is available by writing to the Nebraska Corn Board, 245 Fallbrook Blvd. Suite 204, Lincoln, NE 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 ½-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 to increase the value and sustainability of Nebraska corn through promotion, market development and research.





**Stop in to check out our complete line of new and used John Deere equipment.**

See one of our skilled Service Managers for all your service needs!



[www.grossenburg.com](http://www.grossenburg.com)

**WAYNE, NE**  
402.375.3325

**BLOOMFIELD, NE**  
402.373.4449

**HARTINGTON, NE**  
402.254.3908

5 Locations in South Dakota and 1 Location in Wyoming



**SPECIALIZING IN ALL MAKES AND MODELS OF TRAILERS: FLATBED, GRAIN, LIVESTOCK, BELT, VANS & TANKERS**

- DOT inspections
- Welding
- aluminum
- stainless steel
- plastic
- Wreck Repair
- Warranty work

- ABS Systems
- Tarps
- installations
- repair
- Alignments
- Parts Sales
- Service

# 402-379-6782

84650 HWY 81, LOT B, NORFOLK



# Seeking new opportunities through collaborative corn research

Research answers the “what if” questions that lead to new uses, new markets, new opportunities and new ways to grow corn even more efficiently and sustainably.

Nebraska Corn Board (NCB)

The majority of Nebraska Corn research dollars are invested in partnership with the Institute of Agriculture and Natural Resources at the University of Nebraska-Lincoln. Nebraska Corn also collaborates on

fuel or feed. In order to sustain the economic viability of corn farmers, it is critical that we discover new uses and markets for Nebraska’s corn crop that meet the needs of a growing and evolving world. NCB seeks to encourage research that will give the highest return to Nebraska corn producers through:

- Innovative research to find new uses for corn and corn products;
- Identify value-added uses of the chemicals/components of corn;
- Corn focused projects that result in commercialization of corn-based products or technology;

Expanding/developing commercially significant markets for corn utilization.

### Ensuring Sustainability

Nebraska corn farmers are faced with the challenge of producing crops necessary to meet local, national and international demands while maintaining the quality and quantity of resources for future generations. NCB supports research leading to regionally integrated system of plant and animal production practices designed to produce long-term results such as:

- Sustained economic viability of corn production in Nebraska;
- Improved efficiency of inputs;
- Enhanced carbon sequestration

and improved measurement, reporting and verification;

Minimizing threats from pests and diseases;

- Improved quality of surface water and groundwater resources;
- Improved soil health;

Increased resilience to changing climate conditions and weather extremes.

### Supporting Agriculture and STEM Education

The future of farming in Nebraska depends not only on continuing to advance research-based technologies and production practices, but also on improving consumer appreciation of the importance of food, fuel, and feed production to human and animal health and sustainability.

NCB seeks proposals that include education and outreach as components of the research project. Education and outreach components might include:

- Promoting linkages among Pre-K through 12, two-year postsecondary and higher education programs in STEM (science, technology, engineering and math) disciplines related to food and agricultural sciences;
- Teacher preparation and professional development programs;
- Communicating agriculture research to non-ag audiences.



research dollars are continually seeking new opportunities for corn farmers. What is the “next” ethanol? The emerging new use for corn that will again change the game for Nebraska farmers? What breakthrough will lead to significant change in the way farmers grow their crops, to use even less water, less fertilizer?

research projects with fellow corn states, cooperators and other stakeholders.

### Research Priorities Enhancing Demand & Adding Value

Nebraska’s corn farmers have the ability to grow more corn than consumers can currently utilize as food,



**WE ARE CVA**

**EMBRACING THE COOPERATIVE SPIRIT  
TO DELIVER VALUE TO OUR MEMBERS.**

[cvacoop.com](http://cvacoop.com)