

# C MAGAZINE

## Water Worries

Thirsty soils trigger new strategies

18  
Containers Carry  
Specialty Grains

22  
Smarter  
Oil

25  
Dig with  
Confidence



**KICK  
COMPLACENCY  
IN THE PANTS.**

You're only  
as good as your  
equipment. Cenex®  
Maxtron® Diesel Engine Oil  
gives you the smartest oil for  
the toughest conditions, so you  
can be your best all season long.

**LEARN MORE AT [CENEX.COM](http://CENEX.COM)**

**CENEX** SYNTHETIC BLEND DIESEL ENGINE OIL  
**MAXTRON**  
**DEO**

Oil that runs smart.

**CHS**

© 2020 CHS Inc.

# CONTENTS

WINTER 2021

Visit us online at [chsinc.com/c](https://chsinc.com/c)

## FEATURES

### 14 Straight from the Source

Sulfur supply chain adds value for farmers and cooperatives.

### 18 Stacking Up Value

Containers open doors for specialty grain markets.

### 22 Running Smart

The right oil protects diesel engines in the toughest conditions.



### 25 Threats Below the Surface

Reduce uncertainty before you dig with one simple step.



## DEPARTMENTS

### 16 View

Winter is time to recharge in the Rockies.

### 28 Briefs

The latest news from CHS.

### 30 People

Superintendent helps build trades workforce.

## No Water to Waste

# 6

Water supply challenges prompt growers to do more with less.

**ON THE COVER:** Farmers and ranchers across the Great Plains are adapting to declining freshwater supplies with insights from their cooperative partners.

FOLLOW CHS AT:



# TURN YOUR NUTRIENTS ALL THE WAY UP

You wouldn't let a paycheck go uncashed — just like you wouldn't let the zinc in your soil go unused. Ensure your plants get this critical micronutrient with Levesol® Zn. A groundbreaking patented ortho-ortho EDDHA chelating agent that provides full-season zinc availability, it disrupts nutrient tie-up and takes your applications to the next level.

Ask your retailer about it, or visit  
[CHSAgronomy.com/Levesol](https://CHSAgronomy.com/Levesol)  
to get the most out of your nutrients.

## LEVESOL®·ZN



©2020 CHS Inc.  
Levesol is a registered trademark of CHS Inc.

## EDITORIAL STAFF

Cynthia Clanton / editor  
Sarah Haugen / content strategist  
Jennifer Chick / writer  
Kate Haggith / writer  
Rebecca Lentz / writer  
Adam Hester / photographer  
Linda Tank / publisher / senior VP

## OFFICERS AND DIRECTORS

Chair  
**Dan Schurr**, LeClaire, Iowa  
First Vice Chair  
**C.J. Blew**, Castleton, Kan.  
Secretary-Treasurer  
**Russ Kehl**, Quincy, Wash.  
Second Vice Chair  
**Jon Erickson**, Minot, N.D.  
Assistant Secretary-Treasurer  
**Steve Riegel**, Ford, Kan.

**David Beckman**, Elgin, Neb.  
**Hal Clemensen**, Aberdeen, S.D.  
**Scott Cordes**, Wanamingo, Minn.  
**Mark Farrell**, Cross Plains, Wis.  
**Steve Fritel**, Barton, N.D.  
**Alan Holm**, Sleepy Eye, Minn.  
**David Johnsrud**, Starbuck, Minn.  
**Tracy Jones**, Kirkland, Ill.  
**David Kayser**, Alexandria, S.D.  
**Perry Meyer**, New Ulm, Minn.  
**Kevin Throener**, Cogswell, N.D.  
**Cortney Wagner**, Hardin, Mont.

Copyright 2021 CHS Inc.

All rights reserved. Vol. 14, No. 1

C is sent to you courtesy of CHS to connect you with its broad world of resources and solutions. CHS is the nation's leading farmer-owned cooperative and a global energy, grains and foods company. C is published quarterly by CHS, 5500 Cenex Drive, Inver Grove Heights, MN 55077. Subscription cost is \$6.00 per year.

Please send address changes to C magazine, CHS, 5500 Cenex Drive, Inver Grove Heights, MN 55077; call 630-524-4489; fax 630-524-4732; or email [cmagazine@chsinc.com](mailto:cmagazine@chsinc.com).

For editorial requests, call 800-232-3639, ext. 4584, or email [cmagazine@chsinc.com](mailto:cmagazine@chsinc.com).



*Jay Debertin, president and CEO, CHS*

## A Seat at the Table

We often say farmers and ranchers are the world's original conservationists. That statement reflects the care and concern those who live on the land give to our soil, water and air. And it acknowledges the innovation this industry has long applied to help improve soil health and water quality.

But there's much more to be done.

Conversations about carbon sequestration, water management and emission control are occurring across the world, especially in the U.S. as a new administration takes shape and more voices raise their concerns.

While we may not all agree on the path to take, we agree on the desire to preserve our natural resources and pass along fertile soil, clean water and fresh air for future generations. Agriculture needs to have a seat at the table as those conversations take shape.

As a member of the National Council of Farmer Cooperatives and industry organizations including The Fertilizer Institute and as a voice on Capitol Hill, CHS is speaking up for agriculture and cooperatives. We want to ensure their needs are understood and addressed as environmental programs evolve. We also continue to develop new products that make fertilizer more efficient so nutrients are available when crops need them.

The CHS sustainability program has three foundations: environmental stewardship, economic viability and community well-being. We are focused on providing value in all of those areas, working to support our owners in their own sustainability efforts as we keep CHS strong.

All of these efforts will require change, but we in agriculture have been driving change since the first seed was planted centuries ago. I'm confident we can continue to find new solutions that support our owners for the future. Let's keep talking.

A handwritten signature in black ink that reads "Jay D. Debertin". The signature is written in a cursive, slightly slanted style.

**Have a question or feedback for the CHS management team? Get in touch with us at [feedback@chsinc.com](mailto:feedback@chsinc.com).**

# NO WATER

*By Peg Zenk*

**With declining freshwater supplies, irrigators look to agronomic strategies to get more from every drop**

*Jim Hutchinson, left, sales agronomist with Farmer's Co-op Elevator Company, Hemingford, Neb., discusses moisture-saving strategies with Tom Cullan, center, and Chris Cullan.*

# TO WASTE

Average annual rainfall around Hemingford, Neb., is 16 inches. Last season, many acres in the Nebraska Panhandle saw only 10 inches of precipitation. “Despite that, we managed to produce some fairly good dryland crops,” says Chris Cullan.

“We had good moisture early in the season and benefited from carryover moisture from the wet fall in 2019.”

Keeping water use on the farm’s irrigated acres within the five-year allocation of 65 inches can be challenging, he says. >



> “Last season, a few pivots went over the 13-inch yearly average allotment.”

Cullan is thankful the three growing seasons just before 2020 delivered better-than-average rainfalls. “Those years we only needed to use 2 to 3 inches of water on some fields throughout the growing season, which helps balance our five-year average use.”

### Lower Aquifer Levels

In Nebraska and much of the western U.S., water use from aquifers is a growing concern. Overall, water demand has been pumping out gallons faster than rain and snowmelt can replenish them. Within 50 years, many regions could see freshwater supplies reduced by one-third, according to U.S. Forest Service projections.

That’s a sobering trend, but it’s one Cullan and other Great Plains farmers and ranchers have been dealing with for years, as Ogallala Aquifer levels decline. One of the world’s largest freshwater aquifers, it lies under a 174,000-square-mile area stretching from southern South Dakota to western Texas and supplies water for almost 30% of the irrigated crops and livestock in the U.S.

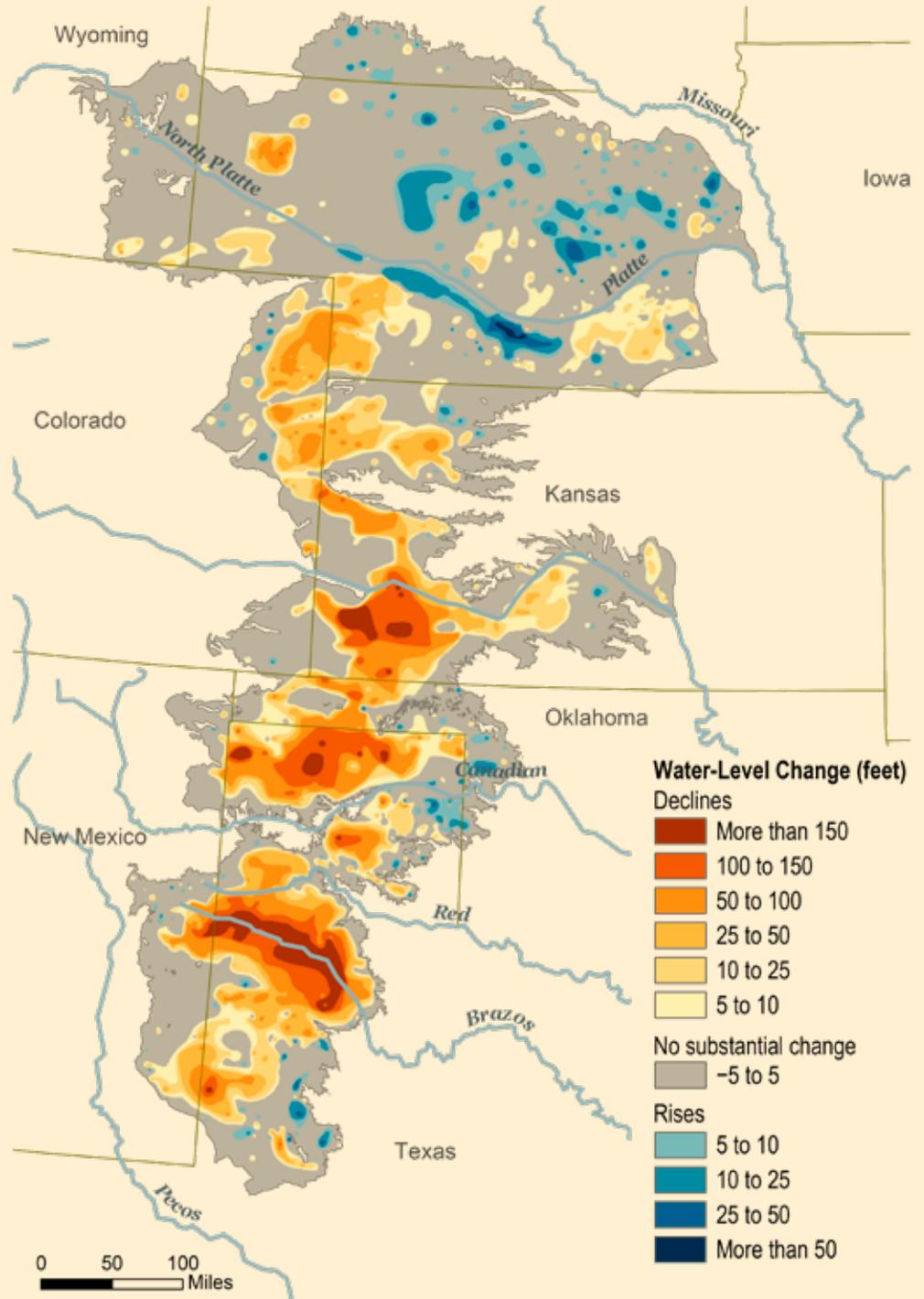
### Retaining Soil Moisture

Nebraska leads the nation in irrigation acres. While farmers there have always looked for ways to reduce water use and related costs, changing weather patterns and long-term climate predictions are driving more farm management decisions.

Cullan has always focused on maximizing soil moisture in the cropping operation he runs with his cousin Tom Cullan. With about 60% of their acres in dryland production, a crop rotation that maximizes residue is a key

## Ogallala Aquifer Levels Declining

Strategic dryland and irrigation management and precision irrigation technologies are helping growers adjust for drought conditions and related crop stress, but water levels in the Ogallala Aquifer remain a concern. The map below shows changes from the time before the aquifer was tapped to 2015.



Source: National Climate Assessment, 2018

## Potential Climate Changes in Nebraska by 2050

Average  
temperatures  
**2 TO 5  
DEGREES F**  
warmer  
than today

Twice as many  
days with  
temperatures  
exceeding  
**95  
DEGREES F**

**20-25%  
MORE**  
growing  
degree days

**2- TO 3-  
WEEK**  
longer  
growing  
season

More extreme  
**RAIN**  
events and  
frequent  
**LARGE HAIL**

Source: Nebraska State Climate Office

element in maximizing moisture.

“Our dryland acres are now mostly no-till, so we’re used to planting into stubble,” he says. “Corn is planted into wheat stubble and the next year sunflowers are seeded into cornstalk stubble.”

Sugarbeets, alfalfa, edible beans and corn are planted in rotation on irrigated acres, along with certified wheat seed. “We produced nine varieties of wheat seed last year, which we process at our cleaning and conditioning facility, then sell to

ag retailers and other farmers,” Cullan says. “Some varieties are better suited to irrigation, while others are intended for dryland use, but every variety we produce is chosen to fit local growing conditions.”

### Cover Crops Catch On

Because wheat requires significantly less water than most row crops, its popularity in the state tends to ebb and flow with yearly rainfall, says Jim Hutchinson, sales agronomist for Farmer’s Co-op Elevator >

*For the Cullans, maximizing crop residue is key to maintaining soil moisture on dryland acres.*



# Drought Trackers

Weather statistics over the last several decades prove weather patterns are becoming more volatile.

“We’re seeing more drought in some areas and more rainfall and flooding in others, with more variability in those extremes,” says Brian Wardlow, director of the University of Nebraska-Lincoln Center for Advanced Land Management Information Technologies.

Wardlow and other climate researchers are looking for ways to more accurately predict weather and its potential impact on soil, water and vegetation. Several important tools are helping assess current and future drought threats.

## Seeing aquifers from space.

Satellites provide an eye in the sky to monitor many things on Earth, including soil moisture and groundwater levels. Now those technologies allow NASA’s Gravity Recovery and Climate Experiment (GRACE) satellites to produce maps with new insights into subsurface moisture conditions across large areas, including moisture maps of topsoil (upper 4 inches),

root zone (upper 6 feet) and groundwater (many feet under the soil surface).

Using remote sensing, the GRACE satellite sensors can detect fluctuations in the gravity field across different parts of the planet, explains Wardlow. “Mountains have more pull than plains. There is drag from water stored under the surface, and the more water there is, the greater the drag. This allows measurements to be taken in parts of aquifers that can’t be reached on the ground. It fills in the spatial gaps where ground measurements are lacking.”

## Mapping drought conditions.

Other satellite-gathered data helps scientists populate the weekly U.S. Drought Monitor map. Jointly produced by the National Drought Mitigation Center (NDMC) at the University of Nebraska-Lincoln, the National Oceanic and Atmospheric Administration and the U.S. Department of Agriculture, it shows regions affected by drought and severity.

“The map is produced with a consensus-building process, not a model,” says Wardlow.

“Ten authors consult with local drought experts across the U.S. each week and take turns generating the map, drawing from 60 to 70 data sources, including remote sensing, modeling and ground-based measurements and expert observations of local conditions.”

Combining biophysical, climate and satellite data gives a more accurate picture of plant health.

The map is used by federal agencies to trigger disaster declarations and determine eligibility for loan programs, livestock forage programs or tax deferrals. State and local agencies also use it to trigger drought responses.

## Watching for plant stress.

Early signs of drought stress in a crop can be difficult to detect because many factors

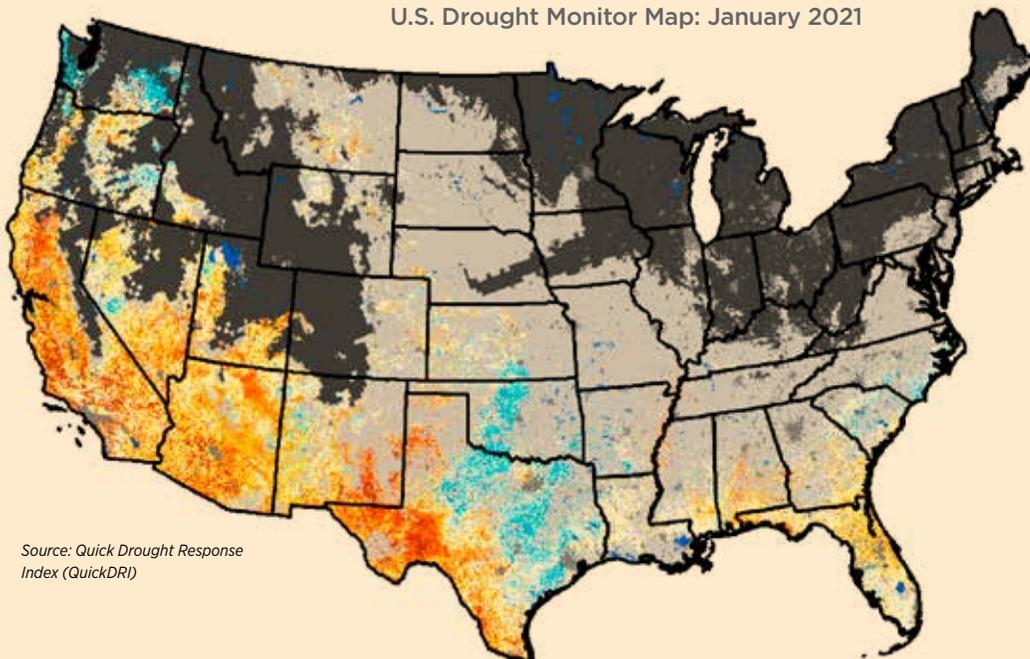
contribute to stress, including precipitation, soil moisture, plant health and atmospheric conditions. Combining biophysical, climate and satellite data about those conditions gives a more accurate picture of plant health, which is what Wardlow and colleagues at NDMC, the U.S. Geological Survey and the High Plains Regional Climate Center did by developing the Vegetation Drought Response Index.

VegDRI, for short, is a map that depicts degrees of drought stress in crops and vegetation at county and sub-county levels. Updated each week, VegDRI provides farmers with another tool to manage irrigation.

Complementing VegDRI, the Quick Drought Response Index (QuickDRI) tracks worsening conditions within short-term droughts and serves as an alarm for rapidly developing conditions that can produce extreme flash drought events.

**LEARN MORE:** Find details at [droughtmonitor.unl.edu](http://droughtmonitor.unl.edu).

U.S. Drought Monitor Map: January 2021



Source: Quick Drought Response Index (QuickDRI)

> Company at Hemingford, Neb., who works with the Cullans. “In years with more rain, many growers tend to plant less wheat and more acres of row crops. When it’s dry, more wheat is planted, like we saw last fall.”

Planting winter wheat as a cover crop, often after sugarbeet harvest, has become more common in the area, Cullan says, and growers who manage cattle are experimenting with planting a cover crop of turnips that can later be grazed.

“Cover crops, including turnips and ryegrass, are definitely being talked about by more growers around here,” adds Hutchinson. “They help preserve soil moisture, improve tillth and reduce wind erosion.

Currently, less than 20% of growers here use cover crops, but I expect that to increase.”

In Nebraska, wind erosion is often a bigger problem than water erosion, so ground cover in the form of cover crops or crop residue is essential, notes Cullan. “We’re always only one week away from a drought.”

For many growers in the region, the 2012 drought was an agronomic turning point. A multibillion dollar agricultural disaster, that year’s ultra-dry summer was compounded by temperatures topping 100 degrees Fahrenheit on 37 days in southwestern Nebraska.

“After that season, farmers started to focus on drought tolerance when choosing dryland corn hybrids,” says Cullan. “It’s not the number

one trait for many growers, but it’s higher on the list.”

The cousins have been working with Hutchinson to fine-tune planting populations for dryland crops, cutting corn populations to between 9,000 and 15,000 seeds per acre to maximize yields and profitability.

Using wireless technologies and apps on their phones, the Cullans closely monitor water use on each pivot and say they’re willing to consider adding new irrigation technologies that will pencil out.

“We do what we can to minimize water use and make the most of the water we do use.” ■

*Chris Cullan focuses on doing more with less water on his western Nebraska operation.*



## Aquifer Allies

East of the Ogallala Aquifer lies the smaller Equus Beds Aquifer. About a half million people in south-central Kansas, including Wichita residents, rely on this aquifer for drinking water. Irrigation systems tap it to deliver water to thirsty crops.

For years, the CHS refinery at McPherson, Kan., also used the aquifer for some of the 3 million gallons of water it needs every day to heat and cool refinery processes that turn crude oil into diesel, gasoline and other products.

By 2015, it became clear that aquifer water levels were declining.

To reduce its demand on the aquifer, the CHS refinery opened a water treatment facility that allowed the refinery to use treated city wastewater instead of fresh groundwater from the aquifer.

The treatment facility has reduced demand on the aquifer by 30%, says Alan Burghart, process engineering supervisor at McPherson, and the aquifer is recharging.

The unique partnership between CHS and the city of McPherson has gotten attention as an example of creative water management, says Burghart. “We’re proud to do our part in water conservation efforts to ensure the aquifer remains healthy and our communities have water for generations to come.”

# River Issues Rise

Weather extremes are the biggest cause of freight disruptions on the U.S. river system and those disruptions are increasing, says Ben Doane, CHS grain marketing barge freight coordinator.

“In the past two years we’ve had to deal with weather-related issues along nearly all segments of the Mississippi River,” he says. “In both 2019 and 2020, the New Orleans, La., corridor at the southern end was at or near flood stage for nearly half of the year. In 2019, spring flooding completely cut off barge traffic north of St. Louis for three months. Last fall and this winter, we had to deal with low water levels on parts of the mid-Mississippi that have slowed barge transit.”

## Reduced Passage Increases Costs

Those slowdowns can have a significant impact on freight costs, he notes. “Last year, when the Mississippi River south of St. Louis was experiencing high water levels and fast currents, tow sizes were reduced from 40 to 25 barges for safer navigation.

That 37% decrease in volume hauled per tow increased transportation costs.”

When river levels drop, the amount of grain or fertilizer that can be loaded onto each barge is often reduced to decrease draft (depth of the barge below the water surface).

## Constant Adjustment

All navigational requirements can be adjusted by the U.S. Coast Guard to suit river conditions, explains Doane. “Smaller barge drafts, fewer barges per tow and slower tow speeds all impact the river supply chain. We often see huge bottlenecks where tows are being built or broken down.”

St. Louis is a prime example, he says. “It’s the biggest harbor outside of the Gulf in terms of commodity volumes passing through. Just to the north is the exit and entry point for the Illinois River and to the south at Cairo, Ill., is the mouth of the Ohio River. High or low water issues within that stretch of the river can bog down barge movement to a significant portion of the country.”

# Waterways in Need

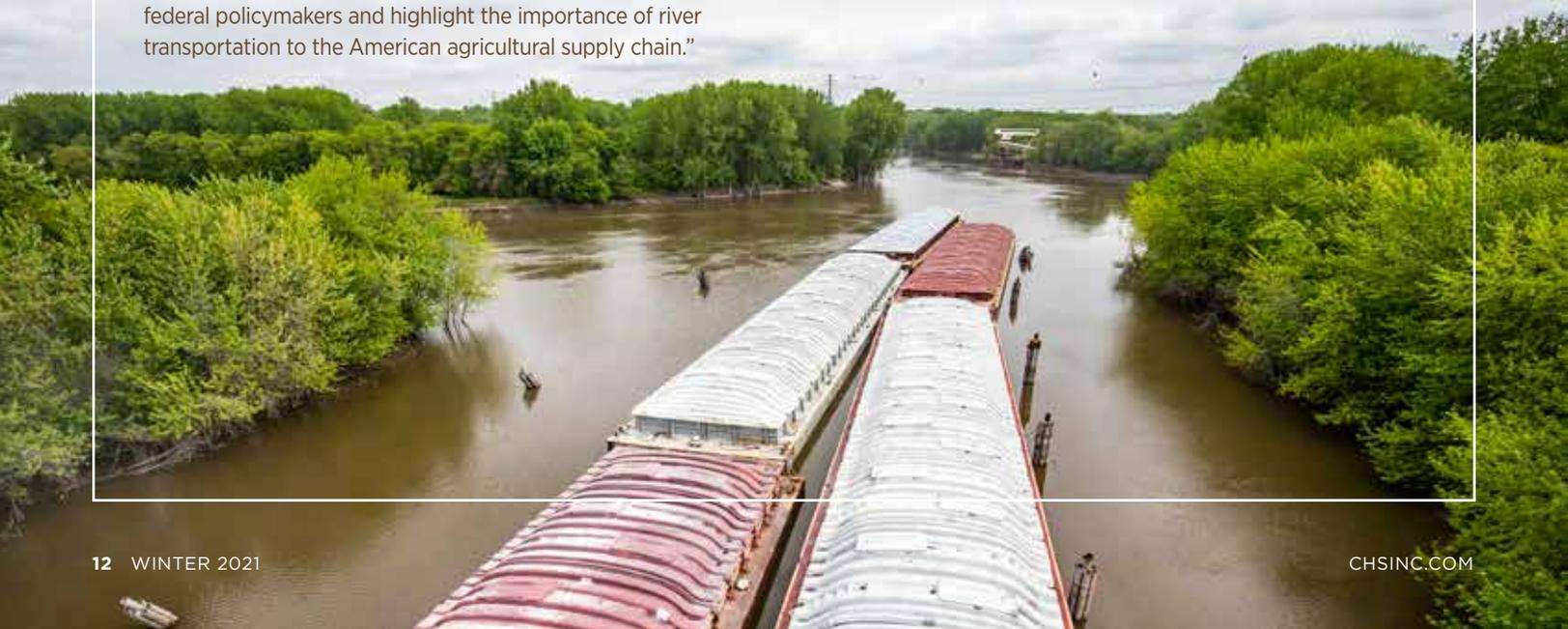
With 60% of U.S. grain exports shipped on inland waterways, maintaining the aging lock-and-dam system is essential for agriculture and other industries that rely on the river to move goods. Federal funding has been increasing since 2014, but not fast enough to make up for years of neglect, says John Engelen, vice president, CHS Government Affairs.

“CHS has worked hard to raise awareness of the magnitude of challenges facing the U.S. inland waterways system and to support increased federal funding for construction, operation and maintenance of vital waterway infrastructure,” says Engelen.

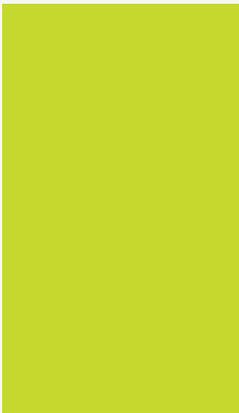
“CHS has repeatedly brought business leaders and members of our Board of Directors to Washington, D.C., to meet with federal policymakers and highlight the importance of river transportation to the American agricultural supply chain.”

CHS has joined with other major shippers, commodity organizations, labor unions, barge operators and other groups to form the Waterways Council, an advocacy organization, says Engelen, who serves on the council’s board of directors.

CHS is also active in other industry groups that advocate for investment in maintaining the country’s river system, notes Ben Doane, CHS grain marketing barge freight coordinator. He’s a member of the Waterborne Commerce Committee of the National Grain and Feed Association and involved in the Upper Mississippi Waterways Association. “These organizations help communicate to policymakers and the public the importance of maintaining our river resources. U.S. rivers are a critical, yet often overlooked, part of our infrastructure.” ■



**WITH CO-OP  
OWNERSHIP  
LIKE THIS**



**YOU OWN  
EVERY DAY.**



As a co-op owner, you own a world of opportunities powered by local expertise. You gain options and value with access to global markets and a powerful supply chain. And you can do more every day using inputs from teams who know what you need, when you need it. Learn more at [cooperativeownership.com](https://cooperativeownership.com).

# STRAIGHT FROM THE SOURCE

Streamlined sulfur supply creates value for growers

By Sarah Haugen

To make the most of early season nitrogen applications, many growers add sulfur, a secondary nutrient that helps plants process the nitrogen. Now, farmers and cooperatives can benefit from a change in sulfur supply that brings the nutrient to crop input suppliers directly from a farmer-owned oil refinery.

In the process of creating diesel and gasoline, the CHS refinery at McPherson, Kan., removes and recovers sulfur. This sulfur is then combined with ammonia to create ammonium thiosulfate (ATS), a crop nutrient that helps boost yield for corn and other crops.

“Because sulfur isn’t stable, it needs to be applied every year,” says Todd Dysle, product manager for CHS Agronomy. “Crops need sulfur,

but sulfur isn’t as available in the atmosphere because of a decrease in acid rain in the past 40 years. It’s good news for the environment that we have to apply sulfur, but it does require growers and agronomists to plan for it in a crop nutrition program.”

With CHS Agronomy now moving ATS directly from the refinery to cooperatives,

Producing about 400 tons of ATS per day, the CHS refinery at McPherson, Kan., is one of the largest U.S. ATS producers.



ATS is produced at the CHS refinery at McPherson, Kan., by combining ammonia with sulfur that is removed and recovered from crude oil in the refining process.



ATS is delivered to cooperatives via rail or truck.

this streamlined supply chain delivers reliability and added value to cooperative owners.

“Now that the cooperative system manages the supply chain from start to end, we have more reliability for getting ATS to our owners,” says General Manager Jason Hovey, whose CHS retail unit sells about 7,000 tons of ATS per year to corn growers out of its fertilizer plants in Yuma and Holyoke in northeast Colorado.

“We’ve had times where getting ATS supply was a struggle. By having more control over production and a better link to the supply chain, we don’t have to worry about running out of ATS for our owners,” says Hovey.

### Increasing Options

ATS moves as a liquid to cooperatives via rail or truck. It is blended at co-ops, most

often with UAN or nitrogen solution. “Producers work with their agronomists or crop consultants to determine the mix that is right for their crops,” says Hovey. The blend is generally applied preplanting or preemergence or sometimes to developing crops through irrigation systems.

And while producers may not need to know where their sulfur comes from, having CHS as a supplier provides more options for cooperatives and other input suppliers, which can affect price.

“Having another ATS supply option not only guarantees availability, but competition among suppliers helps us on pricing,” says Larry Lankford, procurement manager for Valley Agronomics LLC, a jointly owned venture that includes Valley Wide Cooperative in Idaho. Valley Agronomics sells about

10,000 tons of ATS per year in six states across the Pacific Northwest, mostly to potato producers. “Our soils are high in calcium and lime, which tie up phosphates, so producers need sulfur to maintain those elements in soil,” says Lankford.

“By selling directly to the cooperative, CHS is working across business units to increase value for our owners,” says Dysle.

Direct ATS supply also creates another opportunity for cooperatives to earn patronage to pass on to farmer-owners. “When considering suppliers, patronage is a big plus for us and for our owners,” says Lankford. ■

## What’s ATS?

Ammonium thiosulfate, or ATS, supplies sulfur essential for plant growth and yield. It also improves phosphorus uptake and stabilizes nitrogen so the fertilizer investment isn’t lost into the atmosphere and soil.

**SEE MORE:** Find a video at [chsagronomy.com/croplnutrients](https://chsagronomy.com/croplnutrients).



Cooperatives blend ATS with UAN or nitrogen solution to meet farmers’ crop specifications.



ATS helps farmers maximize their fertilizer investment and crop yield.





## Winter Calm

Excessive heat and drought have had a significant effect on the Rocky Mountain region. Hot, dry conditions in 2020 fed wildfires that swept across the Rocky Mountain National

Park and the headwaters of the Colorado River.

Since much of the river's flow begins as snow and rain in the mountains, a wintry landscape and snow-capped

peaks are welcome signs for both agriculture and recreation. Last year's extreme conditions here and throughout much of the western U.S. have farmers, ranchers and their advisors

watching 2021 weather closely, hoping for more moisture to come from the sky and looking for ways to get more from every drop.

— *Cynthia Clanton*

# STACKING UP VALUE



# DEMAND FOR CONTAINERIZED AND SPECIALTY GRAIN CREATES OPPORTUNITIES FOR U.S. CROPS

By Kate Haggith

In 2019, as the U.S.–China trade dispute continued to unfold, grain traders across America were busy looking for new market opportunities to offset export losses to China and find buyers for U.S. crops. Southeast Asia proved to be a viable option, particularly for containerized and specialty grains. Those new relationships, coupled with improved trade with China, have U.S. growers and traders optimistic about the year ahead.

“I know producers who are planning to plant milo for the first time or expand their acres this year,” says Nathan Jacobs, who raises milo (grain sorghum), corn, soybeans and wheat with his

father near Smith Center, Kan.

“Milo typically trades at 20 to 30 cents per bushel less than corn, but today it’s trading at a \$1.50 to \$2 premium.”

Much of the higher demand and related price strength is due to China’s growing alcohol market, says Yuxi Weng, a grain merchandiser for CHS Global Grain & Processing.

“Baijiu is one of the most popular spirits in China. It’s a clear, high-alcohol liquor made from sorghum,” she says. “To keep up with demand, China heavily relies on U.S. sorghum.” Nearly 90% of China’s sorghum imports come from the U.S., according to the USDA.

“In the U.S., sorghum usually

goes to a handful of ethanol plants that process sorghum in place of corn, but containers have provided additional markets,” says Jacobs, who works with the CHS grain marketing team based in Lincoln, Neb., to truck his sorghum 200 miles to western Iowa, where it’s loaded into containers and transported to Los Angeles by rail for export.

“CHS is a top container exporter and handler of sorghum. We’re part of the entire supply chain from Kansas to China, which is appealing to buyers,” says Weng. “Grain loaded via container better preserves crop identity during transit overseas. And containers can be easily

transported inland by smaller vessels, rail or trucks, reaching more customers and markets. Buyers are willing to pay a premium for identity-preserved grain and shipping flexibility.”

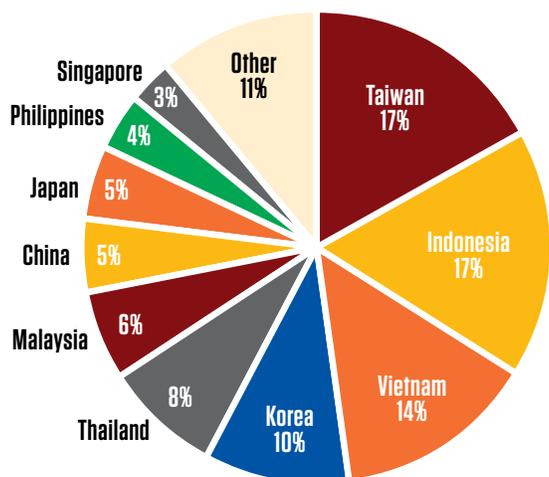
With sorghum trading at a premium, Jacobs, who worked as a grain trader before turning his attention to his family farm full-time, expects to see an uptick in sorghum acres this year in the top sorghum-producing states of Kansas and Texas.

“The demand is there, and the weather has been dry,” he says. “Sorghum is drought-tolerant and needs fewer inputs than soybeans or corn. While >



## Destinations for U.S. Containerized Grain Exports

(percent of total)



Source: USDA

> sorghum yield isn't always as high as corn, you almost always have a crop at the end of the season."

### Grain to Glass

Demand for malt barley is also brewing in China. In May 2020, China announced a five-year anti-dumping duty of about 80% on Australian barley. At about the same time, China approved imports of U.S. barley.

"With China's primary supplier of barley basically out of the picture, we could see more options for U.S. producers," says Matt Kadrlík, barley merchandiser, CHS Global Grain & Processing.

Maintaining specific quality characteristics of malt barley is key to producing consistent, high-quality beer. To preserve those characteristics, containers will likely be a popular option among Chinese buyers, says Weng. China imports 5 million to 10 million tons of barley each year, with 1 million to 2 million tons destined for the beer and malting industry and the rest for livestock feed, according to U.S. Grains Council data.

"In the U.S., nearly all malt barley produced is contracted

by malting companies," says Kadrlík. "Any overrun is usually sold to domestic feed companies at a lower price, but with China as an export option, producers have an avenue to sell excess barley for a similar or better price than they would receive from domestic malting and brewing companies."

### Containers Count

Not only are grain exports to China trending upward, but more containerized grain and specialty crops are making their way to Southeast Asia. Taiwan, Indonesia and Vietnam were the top three destinations for U.S. containerized grain exports in 2020, accounting for nearly half of all grain shipped by container, according to the USDA.

Further alignment between CHS grain marketers and processing experts has helped expand the CHS container program.

"Our specialty grain trading group is working hand-in-hand with our container group to export food and animal feed ingredients produced at CHS processing facilities using our

farmer-owners' crops," says Dave Mack, director of risk management, CHS Global Grain & Processing. Some of those ingredients include flax, sunflower seed, soy flour and specialty oils.

"Containers have become a popular option among customers looking for specialty grains, a specific grade of grain or food ingredients," says Weng. "In the past year, we've worked with

producers and cooperatives to ship club wheat to Taiwan, millet to Indonesia and yellow peas to China, to name a few examples."

U.S. cottonseed is feeding South Korean dairy cattle. "We import a lot of containers filled with consumer goods in the Charleston, S.C., area. When we can fill them with cottonseed or other grains and oilseeds, rather than shipping them back empty,



Millet is a common ingredient in bird food in the U.S. and overseas.



Sorghum is steamed, fermented and distilled to produce baijiu, a popular spirit in China. Image provided by Yuxi Weng.

it helps farmers get higher prices for their crops,” says Hunter Carson, who raises cotton, peanuts, corn and cattle near Lone Star, S.C., with his father, brother, great uncle and cousin.

Weng and Carson have worked together to partner with cotton gins in South Carolina and Georgia to load cottonseed-filled containers and transport them to ports in Charleston and Savannah, Ga.

“The export market creates competition for the domestic market,” says Carson, “which results in better prices for farmers and provides gins another option.”

### Cooperative Benefits

While containerized grain exports continue to grow, the COVID-19 pandemic has triggered a major shortage of containers.

“The U.S. saw a record year in imports for consumer goods, most of which are shipped via container,” says Weng. “Ocean shipping lines canceled many

“Buyers are willing to pay a premium for identity-preserved grain and shipping flexibility.”

— Yuxi Weng

U.S. export bookings to return empty containers to China so they could be refilled faster.” Freight rates from China to the U.S. were much higher than the reverse trip due to the surge in demand, incentivizing carriers to return containers to China quicker for a greater financial return.

“The shortage affected grain exporters and elevators that rely on containers for export,” says Weng. “Many trading houses use forwarders and shipping agencies to manage ocean freight, but CHS

contracts directly with major shipping lines, so we’ve had access to allocated containers and vessel space during the shortage.”

As a major exporter, CHS leverages size, scale and expertise to connect growers with grain customers, says Weng. “We can negotiate better freight rates because we ship large volumes of DDGS [distillers dried grains with solubles] and soybeans.”

CHS also has the ability to speed up the export documentation process, she says. “Exports require specific documentation from the USDA and ocean carrier, but CHS can submit them electronically, making for a quicker and easier process.

“Over the last couple of years, we’ve made a concentrated effort to ramp up the CHS container program,” says Weng. “It has provided access to a larger mix of buyers and is creating more opportunities for our farmer-owners.” ■



## EXPORT QUALITY MEASURES

The USDA sets commodity standards and grades to measure levels of quality and value for agricultural commodities. Maintaining markets — and happy customers — requires meeting quality expectations. The most common quality measures are:

### No foreign material

Levels should be less than 1%.

### Minimal toxins

- > Vomitoxin, common in wheat and barley, less than 1 part per million
- > Aflatoxin, common in corn, less than 10 parts per billion
- > Ergot, common in wheat and barley, no trace

### Limited moisture

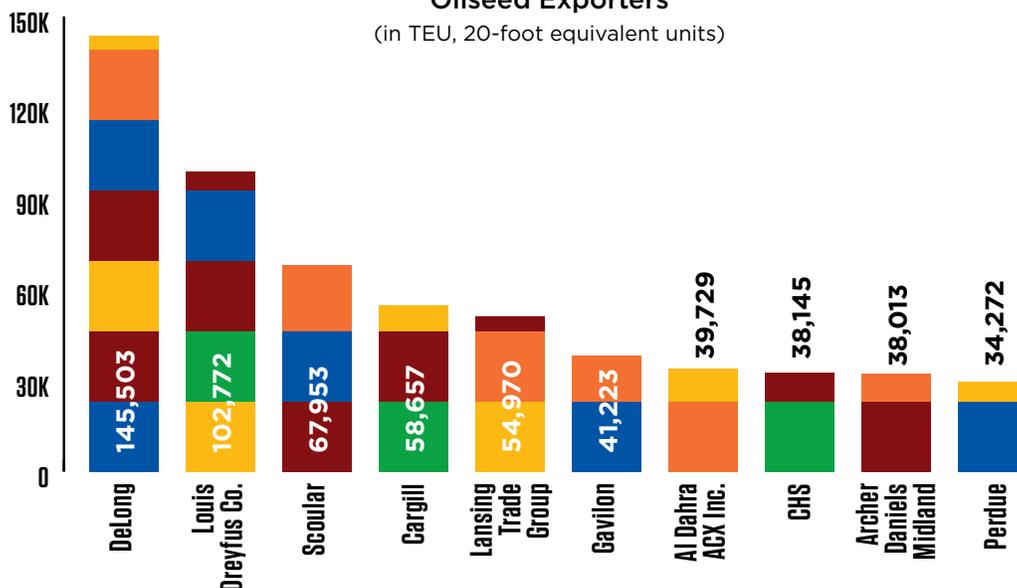
Optimum moisture content for most grain is between 10% and 12%.

### Nutrition

Since this indicates the nutritional value of grain, the higher the percentage of protein and fat, the better.

### Top 10 U.S. Container Grain and Oilseed Exporters

(in TEU, 20-foot equivalent units)



Source: Journal of Commerce, 2019



# Running Smart



Producer Chuck Nelson relies on Cenex® lubricants, fuels and the Cenex Total Protection Plan® warranty to keep his equipment performing in tough conditions.

Cenex® Maxtron® diesel engine oils increase fuel economy up to **3%** in extreme conditions and up to **2%** in normal conditions.

## Protect your equipment investment with the right diesel engine oil

It's the middle of February. The thermometer already reads minus 5 degrees Fahrenheit, and you know it's going to hit 20 below overnight. You head outside to get some work done and you're hoping your truck starts. It's an everyday task, but it can go one of two ways: a trusty start or a dead engine.

### Engineered for Tough Conditions

North Dakota producer Chuck Nelson knows this situation all too well. "We have to run our diesel pickups when it gets really cold and, with Cenex® full synthetic lubricants, they always start."

Nelson's tractors, combines, farm trucks and semi-trucks all run on Maxtron® Enviro-EDGE® full synthetic diesel engine oil. "When it's cold or dirty or wet, we need our equipment to perform," he says. "By using Cenex full synthetic oils, I know we can trust that our equipment will work." Nelson raises sugarbeets, wheat, barley, oats, corn, soybeans and edible beans on his 6,000-acre operation based at Thompson, N.D., near Grand Forks.

The right oil helps keep engines clean in tough conditions, says Brian Schwartz, district manager for Cenex lubricants. Reliability is due to three factors: synthetic base oils, a balanced additive package designed to extend engine life and EnduroVis™, an industry-leading polymer technology that

helps oil retain its viscosity.

"EnduroVis is the key differentiator for Cenex lubricants. It helps the oil from breaking down under shearing stress," says Schwartz. "Because of the unique star shape of the EnduroVis polymer, Maxtron diesel engine oils retain 80% of their original viscosity between oil changes."

Full synthetic lubricants flow better as temps drop. That benefit was obvious to Nelson, who says that before switching to Enviro-EDGE, oil stored in cold weather "moved like molasses." Needing more effective lubrication in extremely low temperatures and consistently year-round, he made the switch to full synthetics and has never looked back.

"When our equipment starts with no issues, it tells me lubricity is better, which is important for maintaining engine life and decreasing wear on engines," says Nelson.

### Protecting Equipment

Regular LubeScan® used oil analyses help make Nelson's equipment ready for any conditions.

"You can easily see if your equipment has issues, which can save large repair bills if you catch it early," says Nelson, who works with Tom Prout, certified energy specialist at CHS Ag Services to conduct tests and review the results.

"LubeScan used oil analysis puts the power in your hands," says Nelson. "You can do >

> preventive maintenance and often can plan ahead to fix issues in the off season.”

The LubeScan used oil test, plus use of Cenex premium diesel fuels and lubricants, qualifies much of Nelson’s equipment for the Cenex Total Protection Plan® warranty, which covers engine and transmission repairs on used equipment for up to eight years or 8,000 hours and new equipment for up to 10 years or 10,000 hours. The plan covers thousands of pieces of agricultural equipment and has no deductible.

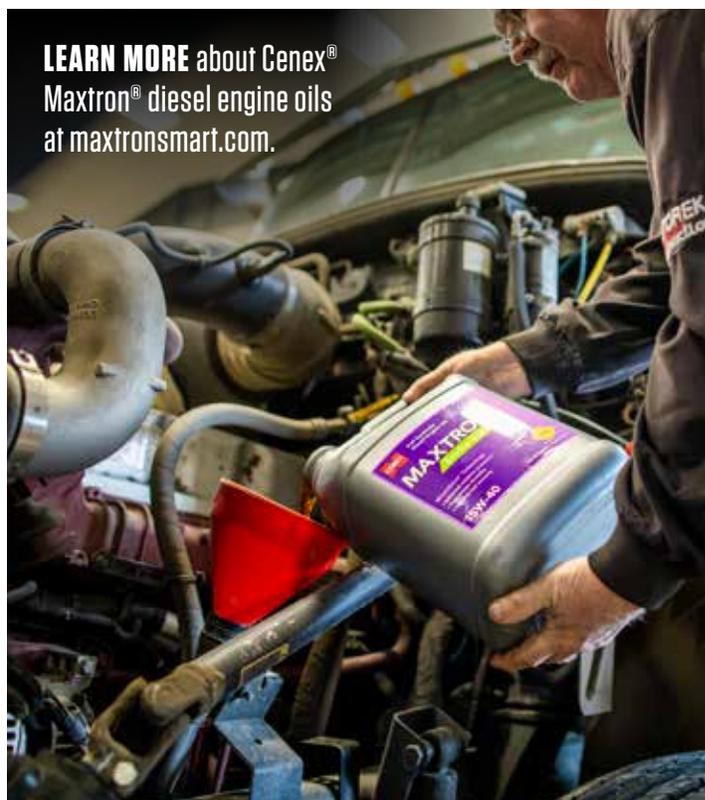
“The warranty has saved us thousands of dollars and tells me I’m using a premium product with credibility,” he says.

### Expert Advice

Having a trusted local expert in Prout is another benefit for Nelson. “The co-op has gone over and above to provide me with information and make sure I have the products I need when I need them. Their expertise and reliability has a lot of value to me.”

Proven Cenex products and cooperative partnership gives Nelson peace of mind. “Loss of time is more costly than most repair jobs,” he says. “Preventing breakdowns in the heat of the battle is one of the most important things I can do for my farm.” ■

**SEE MORE:** See a video at [chsinc.com/c](http://chsinc.com/c).



**LEARN MORE** about Cenex® Maxtron® diesel engine oils at [maxtronsmart.com](http://maxtronsmart.com).

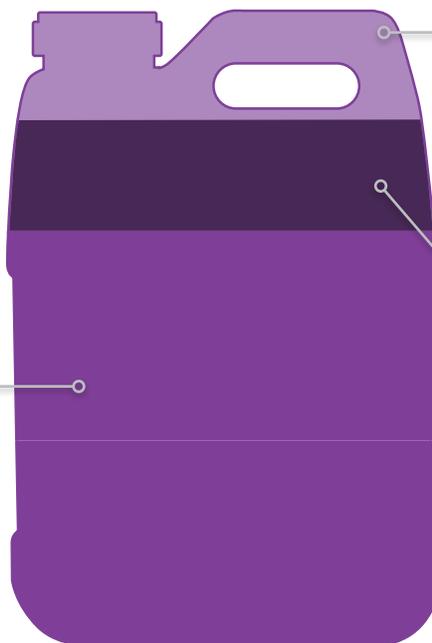
*Cenex® Maxtron® diesel engine oils hold 80% of their viscosity between oil changes.*

## Anatomy of a Lubricant

Lubricants are a critical component of equipment maintenance. Choosing the right lubricant can improve performance.

### BASE OIL

The **base oil** makes up **70% to 90%** of a lubricant’s overall composition, so quality is critical. Full synthetic base oils feature uniform base molecules, which enhance oil stability, especially in extreme temperatures.



### ADDITIVE PACKAGE

Products have distinct **additive packages** based on the functions they need to perform. Additives include things like detergents to keep engines clean, anti-wear to protect moving parts and cold flow improvers to help oil flow during cold startups.

### VISCOSITY MODIFIER

Cenex® Maxtron full synthetic and synthetic blend diesel engine oils use a unique **viscosity modifier** called EnduroVis™. This technology helps oil hold **80%** of its original viscosity throughout the drain interval to increase lubricity for longer engine life.

**SEE MORE:** Watch a video about EnduroVis at [bit.ly/endurovis](http://bit.ly/endurovis).

Markers help identify the presence of underground utilities. Despite these markers, you should always call 811 or visit [call811.com](http://call811.com) to have utilities marked before breaking ground.



# THREATS BELOW THE SURFACE

Prevent disaster  
before you dig

A warm fall was finally bringing the right kind of weather for Austin Broden to install drain tile in a few spots on his fields. His tile plow had been sitting dormant for a number of seasons waiting for the right moment. In early December 2020, he had his chance. Broden knew he had to hurry because cold weather was on the way.

Broden, who grows corn, beans, edible beans, wheat and sugarbeets on land that straddles the Minnesota-North Dakota border north of Fargo, knows the right steps to take before digging: He called 811 on a few fields to have underground utilities marked before he broke ground.

But in one spot, where he would be trenching away from

the road and along a river, he assumed utilities weren't nearby, so he didn't make the call.

Then, as he broke ground to install the last of four drain tiles within an 80-foot area, his tile plow hit metal. He was scraping the top of the Cenex Pipeline, a refined petroleum pipeline.

"If I had known I was so close to that pipeline, I wouldn't have attempted it," he says. "We were almost done with the job and I was already thinking about the work we had to do on the next field down the road. It was a race against time."

## Know What's Below

Under much of America's farmland lie buried utilities. From water to natural gas to oil and electricity, these utility lines carry resources to residents.

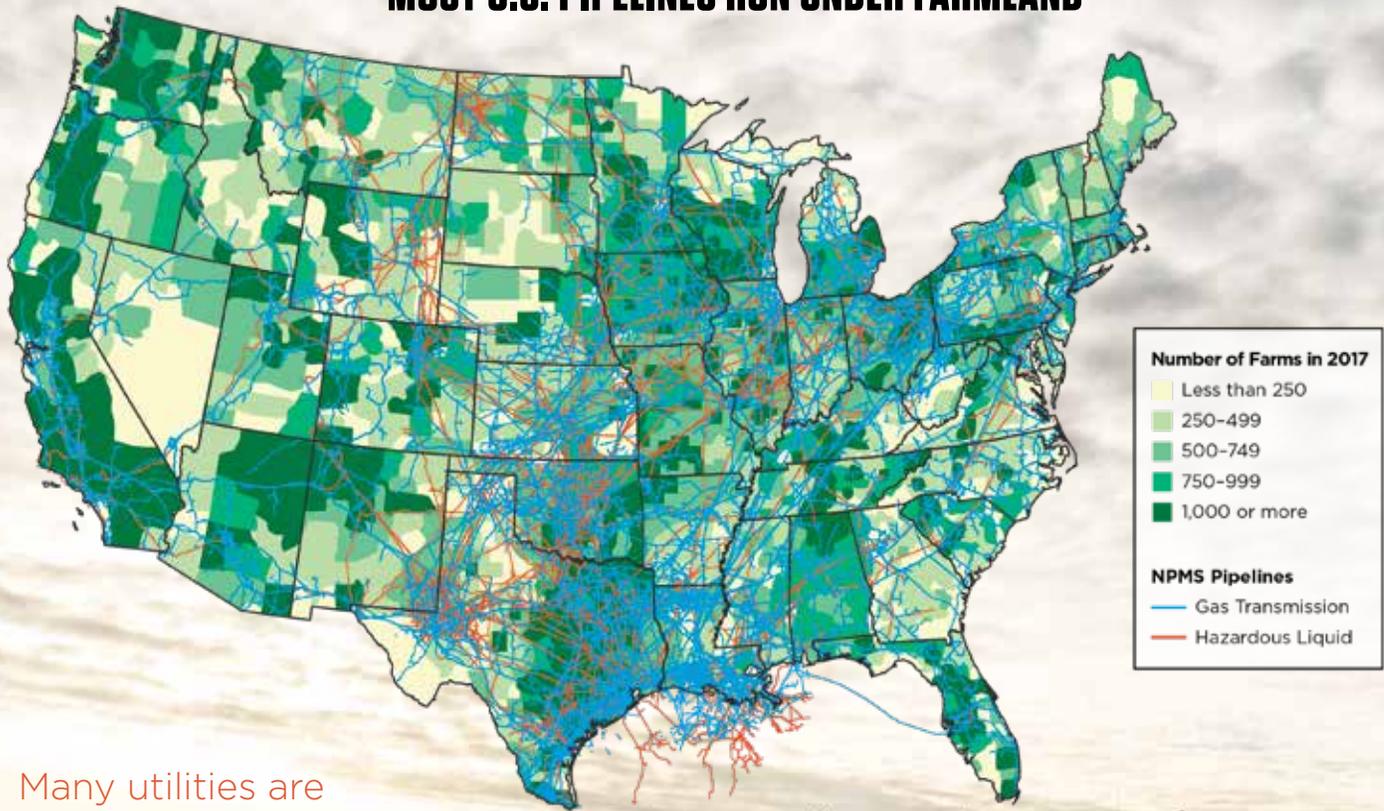
But they also carry dangerous consequences if they're damaged.

"Hitting an underground utility is a serious safety hazard and can even cost a life," says Tina Beach, public awareness specialist for CHS. She says the best course of action is to call 811 before breaking ground, >

## Here's what to do before breaking ground:

1. Two to three days before a digging project, call 811 or visit [call811.com](http://call811.com)
2. Wait for underground utilities to be marked
3. Do not dig within 2 feet of markers

# MOST U.S. PIPELINES RUN UNDER FARMLAND



Many utilities are less than a foot underground.

Source: Common Ground Alliance



Sources: U.S. Department of Agriculture, National Pipeline Mapping System



An underground utility is hit every nine minutes.

Source: Common Ground Alliance

> no matter the depth. “Never assume you know the location of a buried utility. It’s important to go straight to the source for information on utilities and call or click 811,” she says.

Even a small scratch to a pipeline or other utility line can have serious consequences, Beach says. Pipelines are inspected from the air by plane, checking for indications of excavation.

“All incidents with a pipeline need to be reported immediately,” says Beach. “It’s not just the immediate impact to the utility line that matters.

Accidents can lead to corrosion and then safety or performance issues, so every incident must be reported and repaired.”

### Safety First

“I was lucky,” says Broden, who was digging 52 inches below the surface. “When you’re busy, it can be hard to plan ahead and slow down to make sure every step is taken. I’ve learned firsthand that safety must be first on the list.”

By calling 811 to have utility lines marked before you dig, you can reduce your liability for

damages. Even more important, you help ensure that everyone will go home safely at the end of the day.

“It takes a lifetime to build a farm,” says Beach. “It takes just one free call to 811 to keep it safe.” ■

**LEARN MORE:** See a video at [chsinc.com/c](https://chsinc.com/c).

More than 100 billion feet of underground utilities and enough pipeline to wrap around the equator 88 times lie under U.S. soil.

Source: Common Ground Alliance

*Grower Austin Broden scraped a pipeline while installing drain tile.*



## GET TO KNOW 811

**MYTH:** 811 is only for digging.

**TRUTH:** Calling 811 before any soil-related project is always the safe thing to do. Other projects that might require calling 811 include installing drain tile, subsoiling, building a waterway, digging fence post holes and drilling irrigation wells. If you're going to break ground, call 811.

**MYTH:** I don't need to call 811 because I remember when the utilities were put in and I've called 811 before.

**TRUTH:** The depth of pipelines and utility lines can change over time due to erosion, frost heaves and other activities. Don't assume you know where utilities are.

**MYTH:** I'm not digging that deep; I don't need to call 811.

**TRUTH:** Many utilities are less than a foot underground. Better to be safe than sorry, even for a small project.

**MYTH:** Calling 811 will cost me time and money.

**TRUTH:** Calling 811 is free to you. The cost is paid by utility companies. All work is done by professional locators.

**MYTH:** If I hit a pipeline and nothing happens, there's nothing to worry about.

**TRUTH:** Even if it appears the utility line isn't damaged, always call and notify the utility company. Even minor damage can cause a major problem in the future.

**LEARN MORE:** Call 811 or visit [call811.com](http://call811.com) before you dig.

# CHS REPORTS \$69.7 MILLION IN FIRST QUARTER FISCAL 2021 NET INCOME

CHS has reported net income of \$69.7 million for the first quarter of fiscal year 2021 that ended Nov. 30, 2020. This compares to net income of \$177.9 million in the first quarter of fiscal year 2020.

The results for the first quarter of fiscal year 2021 reflect:

- Revenues of \$8.7 billion compared to revenues of \$7.6 billion for the first quarter of fiscal year 2020.
- Impacts in the CHS Energy segment that included:
  - Exceptionally low crack spreads and other unfavorable market conditions in our refined fuels business, driven primarily by the COVID-19 pandemic, resulted in volume and price declines that significantly reduced earnings in our Energy segment compared to the same period of the prior year.
  - Decreased propane demand that resulted from warmer and drier fall weather during the first quarter of fiscal 2021 compared to the same period of the prior year.

- Impacts in the CHS Ag segment that included:
  - Improved relations between the United States and foreign trading partners that drove increased volumes and margins for grain and oilseed.
  - Favorable weather conditions during fall harvest compared to the prior year that drove increased volumes and margins across much of our Ag segment.

“A good growing season led to a good harvest season, and we saw commodity price rallies from spring and summer carry into fall,” says Jay Debertin, president and CEO of CHS. “Those good weather conditions led to the highest volume fall fertilizer season we’ve seen since 2013 despite volatility in the nitrogen and phosphate markets.

“Improved trade opportunities with China and improved trade activity in Europe and Africa helped drive first quarter improvement in our global grain business. Our animal

nutrition volumes also saw growth in the first quarter of fiscal year 2021.

“We saw year-over-year increases in premium diesel sales with rural America continuing to rely on us for their energy needs. However, our overall Energy segment experienced ongoing challenges on refined fuels margins as the pandemic

continues to challenge the energy industry.

“Throughout the remainder of our fiscal year, we will remain focused on our key priorities, including protecting the financial health of CHS, caring for those who depend on us and bringing efficiencies to how we run our businesses and deliver products.”

## CHS INC. EARNINGS\* (in thousands \$)

	Three Months Ended November 30	
	2020	2019
Energy	\$(67,176)	\$162,153
Ag	83,010	(13,862)
Nitrogen Production	4,468	16,450
Corporate and Other	24,738	20,660
Income before income taxes	45,040	185,401
Income tax (benefit) expense	(24,329)	6,664
Net income	69,369	178,737
Net (loss) income attributable to noncontrolling interests	(302)	855
<b>Net income attributable to CHS Inc.</b>	<b>\$69,671</b>	<b>\$177,882</b>

\*Earnings is defined as income (loss) before income taxes.

## RESOURCES FOR HEALTH AND WELL-BEING

As part of the CHS sustainability focus on community well-being, we have developed an online resource tool with links to national, regional and state health and well-being resources. The tool is designed to help farmers, ranchers and others in the cooperative system find support for recognizing and managing anxiety and stress. Visit [chsinc.com/rural-health](https://chsinc.com/rural-health) to access the tool.



## ONE DIRECTOR JOINS CHS BOARD, SIX DIRECTORS REELECTED

Cortney Wagner of Hardin, Mont., has been elected to a three-year term on the CHS Board of Directors. Wagner succeeds Ed Malesich, who retired from the Board on Dec. 3, 2020.

Wagner was elected in Region 2, which includes Montana and Wyoming. Re-elected were C.J. Blew, Castleton, Kan.; Scott Cordes, Wanamingo, Minn.; Jon Erickson, Minot, N.D.; Tracy Jones, Kirkland, Ill.; Perry Meyer, New Ulm, Minn.; and Dan Schurr, LeClaire, Iowa.

Schurr was re-elected chair for 2021. Other officers are Blew, first vice chair; Erickson, second vice chair; Russ Kehl, Quincy, Wash., secretary-treasurer; and Steve Riegel, Ford, Kan., assistant secretary-treasurer.



*Cortney Wagner was elected to the CHS Board of Directors at the 2020 CHS Annual Meeting.*

## CHS FOUNDATION PARTNERS WITH NATIONAL FFA

The CHS Foundation will commit more than \$4 million over the next three years as part of ongoing support of FFA, teachers and agricultural education.

The multiyear commitment will include annual funding for programs the CHS Foundation has historically supported, including the Teach Ag Campaign, which focuses on ag teacher retention and recruitment; educating students on the value of the cooperative system through My Local Cooperative curriculum; participation in proficiency awards and National FFA Convention; and support of 17 state FFA associations. New focus areas for the CHS Foundation include

dedicated funding for student supervised agricultural experiences (SAEs) and state officer leadership programs.

“By supporting FFA, we are living out our purpose and creating connections with the next generation that will empower agriculture far into the future,” says Nanci Lilja, president, CHS Foundation. “We are continuously impressed by the caliber of agricultural educators and students who are involved with FFA at all levels and look forward to sharing the impacts of this continued partnership across the agriculture industry and cooperative community.”



*Through its ongoing relationship with National FFA, CHS Foundation helps students find their passion in agriculture.*

## ARE YOU AN OWNER OF UNCLAIMED PROPERTY?

Every year, CHS is unable to locate owners of liabilities such as outstanding checks and credits on accounts. As legally required after a set period of time, CHS must escheat (revert) unclaimed funds to the state. Even though the state has possession of the funds, the owner is still legally entitled to claim those funds.

If you think you may be the owner of unclaimed funds that were escheated to the state, go to the official state website in which

the funds were escheated, then find the unclaimed property section of the website. In most instances, there will be a portal/ listing of unclaimed funds. Search the database for your funds and then download and submit a claim form as indicated. If there's no claim form, contact the department that handles unclaimed funds.

To find out if you have unclaimed property in another state, visit [unclaimed.org](http://unclaimed.org).

**GET MORE:** Sign up to receive CHS press releases by email or RSS feed at [chsinc.com/news](http://chsinc.com/news).

## Building a Workforce

Replacing 200,000 skilled tradespeople is a lofty goal. That's how many people will exit the Minnesota workforce in the next two years due to retirement. But it's a goal that Joe Brown is ready to help tackle.

The superintendent of Fairmont Area Schools in south-central Minnesota is taking action to fill those critical roles by creating a construction trades academy.

Housed at Fairmont High School, the academy will offer a full suite of training opportunities, including HVAC certification and a woodshop where students build houses for Habitat for Humanity.

"We're giving students a way to enter the workforce without college debt," says Brown.

CHS, which relies on tradespeople at its 95 facilities throughout Minnesota, including

a soy-processing plant in Fairmont, provided a \$100,000 gift to help open the school. "The private sector and schools have to work together to build a trained workforce," says Brown. "It's in the business community's best interest."

When it opens in summer 2022, the academy will join other specialized training at the high school, including welding, automotive, agriculture and

culinary arts academies.

"We are a comprehensive high school, like a community college," says Brown. "Offering our students specialized training allows them to be ready for the workforce, including gaining necessary certifications, as soon as they graduate."

— Sarah Haugen

**SEE MORE:** Hear from Joe Brown at [chsinc.com/c](https://chsinc.com/c).



*Joe Brown, superintendent of Fairmont (Minn.) Area Schools, is helping prepare students to enter the trades workforce.*



5500 Cenex Drive  
Inver Grove Heights, MN 55077

PRESORTED STANDARD  
U.S. POSTAGE  
**PAID**  
LONG PRAIRIE, MN  
PERMIT NO.17

Update your contact information  
at [cmagazine@chsinc.com](mailto:cmagazine@chsinc.com)

## C TOMORROW

### Ramping Up Renewables

To increase demand for ethanol-enhanced gasoline, the U.S. Environmental Protection Agency (EPA) ended seasonal restrictions on the sale of higher ethanol blends in mid-2019. While that move made E15 available year-round, getting E15 into retail pumps for consumers isn't simple.

"The steps necessary to sell E15 at a retail location are complex and costly," says Akhtar Hussain, director of CHS refined fuels marketing. One major hurdle was the requirement for retailers to have an EPA-approved misfueling mitigation plan, which prevents consumers from using E15 for unauthorized purposes.

To help clear that hurdle and make ethanol-enhanced gas more available, CHS became the only refiner with a mitigation plan that covers its entire retail fuels network, including 1,450 Cenex® brand retail locations.

"Having a networkwide plan alleviates the need for independent Cenex retailers to perform the task on their own," says Hussain. "That removes a significant barrier for Cenex retailers, gets E15 into consumers' gas tanks more easily and helps grow demand for ethanol."

— Sarah Haugen



**LEARN MORE** at [chsinc.com/our-businesses/renewable-fuels](https://chsinc.com/our-businesses/renewable-fuels).