

Q MAGAZINE

New Age for Ethanol

Renewable fuels look to a brighter future

12
Horse
Passion

18
Will There Be
Enough Soybeans?

26
Hard-working
Tank Mixes



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CONTENTS

SPRING 2021

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FEATURES

12 Passion Makes Perfect

Generations work together to create a horse legacy.

18 Bean Balancing Act

Growing soybean demand could outpace acres.

22 Look First

Use your eyes to increase safety while on the move.



26 The Final Touch

Get more value from herbicides with the right adjuvant.



DEPARTMENTS

16 View

Spring fieldwork marks the new growing season.

28 Briefs

The latest news from CHS.

30 People

A Kansas cooperative stepped up during the polar vortex.

A New Era for Ethanol

6

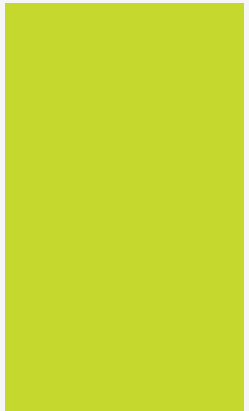
Growing demand, increased exports and easier access create promise for renewable fuels.

ON THE COVER: Ethanol production is recovering from historic demand drops during the pandemic. Illinois producer B.T. Carmichael loads out grain destined for the CHS ethanol plant at Rochelle, Ill. Above, the CHS terminal at Peru, Ill., sends corn to global markets, providing more opportunities for crops when ethanol demand declines.

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Jay Debertin, president and CEO, CHS

Built for You

The combined strength of the cooperative system delivers value to its owners every day. Because that strength was built over time, we can lose sight of how remarkable it is.

The core of strength builds on the assets CHS has created to serve our owners. We continue to develop those assets with a long-term view to the needs of our owners and customers around the world.

This issue touches on our Illinois ethanol manufacturing facilities, which weathered the pandemic, turning owners' corn into ethanol, DDGS and other byproducts.

In Fairmont, Minn., we are near completion of a 30% expansion of our soy processing facility, which produces crude soy oil to be refined at our Mankato, Minn., plant for food uses, plus soybean meal and soy hulls for livestock feed.

We have begun work on our Myrtle Grove, La., export terminal that will increase grain-handling capacity by 30%.

Our deepwater port at Galveston, Texas, is one of a few U.S. ports on the Gulf of Mexico to accept large incoming vessels carrying urea and phosphate from around the world.

The CHS Energy business includes two domestic refineries that produce the most diesel fuel possible from every barrel of crude oil and our lubricants plants manufacture top-quality products for ag, fleet and industrial uses.

Linking the entire system is a strategic network of terminals and warehouses built to supply member cooperatives and a dedicated transportation and logistics team delivering products safely and on time day after day.

Those are just some of the ways you benefit from cooperative ownership when you belong to the system connected to CHS. We'll keep strengthening our assets to meet your needs as we continue creating connections to empower agriculture.

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.

A large industrial machine, likely a corn mill, is shown in operation. A massive volume of yellow corn kernels is being processed, creating a thick, cascading stream of grain. The machine's components, including a large metal grate at the bottom, are visible. The scene is set in a dark, industrial environment with bright lighting highlighting the golden color of the corn. The text "A NEW ERA FOR" is overlaid in large, white, bold, sans-serif capital letters across the center of the image.

A NEW ERA FOR



ETHANOL

By Sarah Haugen

With historic demand drops in the rearview mirror, the ethanol industry looks toward a brighter future

In March 2020, lockdowns began across the United States as coronavirus infections spread. Stay-at-home orders and shuttered schools and businesses created an unprecedented drop in traffic — in some states, miles

traveled plunged 60% below prepandemic levels — and an immediate drop in gas demand.

“When gas demand changes, ethanol demand goes right with it,” says Eric Brandt, manager, renewable fuels marketing, CHS. >



Illinois producer B.T. Carmichael sells 90% of his crop to the CHS ethanol plant in Rochelle, Ill.

> By April 2020, more than half the nation’s ethanol production capacity was halted and total output in 2020 hit a seven-year low, according to the Renewable Fuels Association.

Weathering the Storm

With nearly 40% of corn produced in the U.S. going to renewable fuel, farmers felt the change. “Everything shut down as far as ethanol demand,” says B.T. Carmichael, an Illinois producer who grows mostly corn on 4,000 acres with his father, Jim. “Our industry relies on ethanol and without it, we don’t have a spot for all our corn.”

Carmichael works with CHS grain originator Steve Meisch, based in Elburn, Ill., to find the best corn market opportunities. The farm produces about 750,000 bushels of corn

annually and 90% goes to the CHS Rochelle ethanol plant. “The two CHS ethanol plants in Rochelle, Ill., and Annawan,

“When gas demand changes, ethanol demand goes right with it.”

— *Eric Brandt*

Ill., are in perfect spots,” says Meisch, who has worked with Carmichael for about five years. “With Chicago nearby and large cities to the east, we continued to have a market for ethanol even through demand declines.”

By summer 2020, the ethanol market began to see increased

demand as lockdowns were lifted and summer travel took place largely by car. That demand held through the fall, and by April 2021 the ethanol market was running at 95% capacity.

The two CHS plants were able to meet the recovering demand because they kept running all spring, even while many plants shut down. “We continued running our CHS ethanol plants, although at a reduced rate, which helped us recover and get back up to speed quickly,” says Brandt.

“Because the Rochelle plant stayed open, we were able to keep moving our corn,” says Carmichael. “This fall, the markets perked up and we were able to get a decent price for our crop.”

Market Options

In 2020, U.S. corn volume used

for ethanol production was down 10% from 2019 due to reduced blending and higher corn prices, according to the USDA.

“Corn prices closely follow what’s happening in the ethanol market,” says Brandt. “When there’s tightness in the corn market, we typically see higher prices in ethanol. And when there’s an abundance of ethanol, we see lower corn prices.” In July 2020, corn hit its lowest price in 15 years.

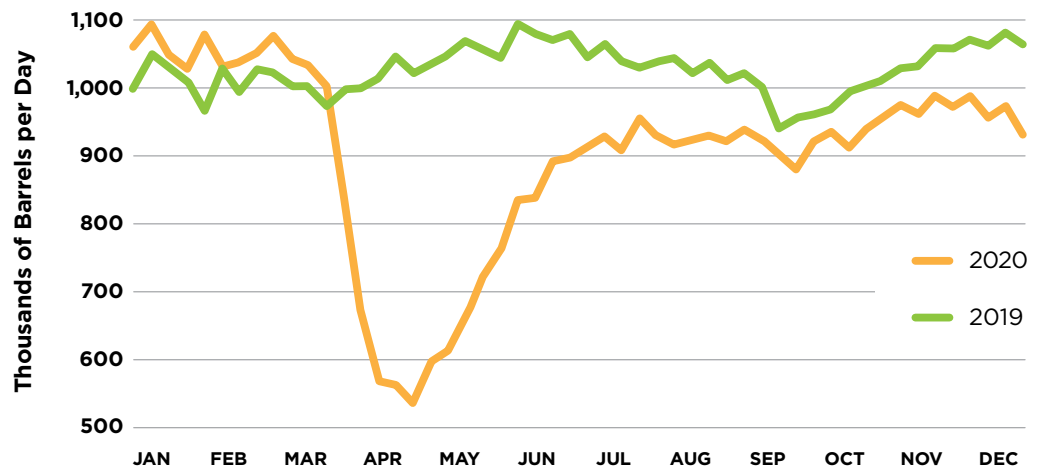
“Our industry relies on ethanol and without it, we don’t have a spot for all our corn.”

— *B.T. Carmichael*

Nearly
40%
 OF CORN
 PRODUCED IN THE
 U.S. GOES TO
**RENEWABLE
 FUEL**

Pandemic Causes Historic Drop in Ethanol Production

Weekly Ethanol Production in the U.S. for 2019 and 2020.



Source: U.S. Energy Information Administration

Through the turbulence, cooperative system grain marketing experts focused on how growers could get the best return on investment.

With its location near the Illinois River, CHS at Elburn took

advantage of the corn export market when ethanol margins were low. “Export demand for corn stayed high and corn was selling at a competitive price to export markets,” says Meisch.

“If it didn’t make sense for the

producer to bring corn to the Rochelle ethanol plant, we’d ship it down the river for exports. Having multiple options is a win-win for the farmers we serve.”

For Carmichael, the flexibility to send his crop downriver for

export markets helps keep his business nimble. “Through the cooperative, I have access to specialty markets that I wouldn’t have on my own. It pays to be flexible.”

Expanding Exports

Every country has its own regulations on ethanol use, but most rely on a blend of ethanol and gasoline, says Brandt.

“Because the U.S. blends 10% ethanol in all of its gas, demand is somewhat predictable. Exports help account for the extra production.”

In 2020, despite pandemic effects on gas consumption, U.S. ethanol exports dropped just 9% from the year before, with 1.3 billion gallons of ethanol going to international markets. Those gallons went mostly to Brazil and Canada, >



The CHS terminal in Peru, Ill., sends corn down the Illinois River to the CHS terminal in Myrtle Grove, La. From there, corn is sent to global markets.



GETTING ETHANOL TO MARKET

For a convenience store to sell E15, it must meet a number of regulations. E15 is now able to be sold at all Cenex® branded retail locations. Here's how CHS made that happen.

E15 retailers must have an Environmental Protection Agency (EPA)-approved misfuelling mitigation plan to prevent consumers from using E15 for unauthorized purposes. "CHS is the only refiner that has an EPA-approved misfuelling mitigation plan for our entire Cenex branded retail network. This alleviates the need for independent Cenex retailers to perform this task on their own," says Akhtar Hussain, director, refined fuels marketing, CHS.

Make E15 an approved grade of gas. "In 2021, E15 counts toward the two-grade minimum requirement for Cenex sites," says Hussain.

Become registered as an E15 manufacturer with the EPA. When CHS gained this designation, it allowed for the sale of Cenex branded E15 at the terminal level.

"These steps demonstrate the commitment of CHS and the Cenex brand to renewable fuels, which play an important role in our environment and contribute to the success of our agricultural economy," says Hussain.

> but Brandt says China and India are growing markets. "China is becoming a major buyer of U.S. ethanol," says Brandt. In the first half of 2021, it was reported that China bought about 200 million gallons of U.S. ethanol, matching its previous annual record for ethanol imports.

Growing Demand

A 10% ethanol blend in gasoline, also known as E10, is the national standard at fuel pumps across America. To increase reliance on higher ethanol blends, the U.S.

Environmental Protection Agency (EPA) ended summer restrictions on the sale of E15 in 2019.

E15 can be used in model year 2001 and newer cars, light-duty trucks and SUVs, plus all flex-fuel vehicles. Nine of 10 cars on U.S. roads today are approved to use E15, according to the Renewable Fuels Association.

Increased access to higher ethanol blends not only helps consumers more readily access renewable fuels but increases ethanol demand, says Dan Mauer, Washington representative, CHS. "E15 is

"Giving consumers additional fuel choices, as well as eliminating barriers for distributors, should increase sales of fuels like E15."

— Akhtar Hussain

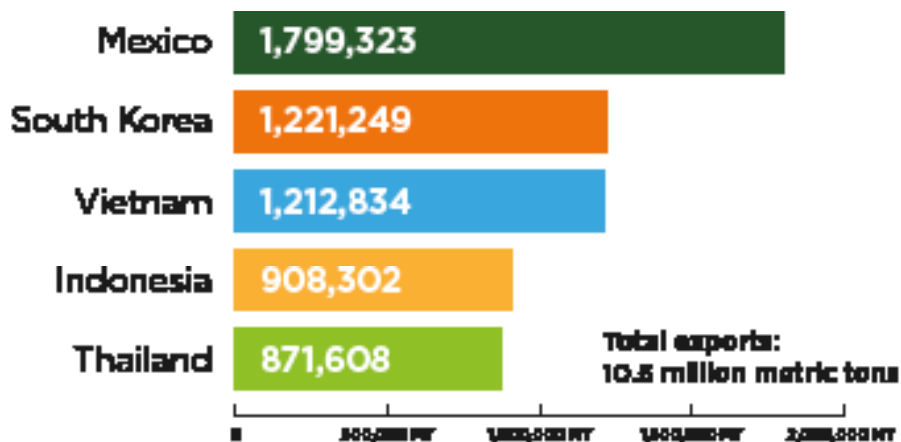
DDGS EXPORTS ADD VALUE

"The export market is huge for DDGS," says Eric Brandt, manager, renewable fuels marketing, CHS, in reference to distillers dried grains with solubles. The byproduct of ethanol production is used for animal feed in Mexico, South Korea and Vietnam.

"When the ethanol industry was challenged in spring 2020, CHS had containers in place and we were able to continue selling DDGS into the export market," says Tom Malecha, vice president, CHS Global Grain & Processing operations and enterprise sustainability. "As one of the largest exporters of DDGS, CHS was able to operate through those demand swings and continue to deliver for our farmer-owners and customers."

WHO IS BUYING U.S. DDGS?

Top U.S. DDGS export destinations in 2019-2020



Source: USDA

5 percentage points more ethanol than E10, increasing the amount of ethanol in the fuel blend by 50%. That's significant."

However, experts say adoption won't happen overnight. "The steps necessary to sell E15 at a retail location are complex and costly," says Akhtar Hussain, director of refined fuels marketing, CHS.

Of the 1,450 Cenex® branded convenience stores, about 50 offer E15, and Hussain expects that number to grow. "Giving consumers additional fuel choices, as well as eliminating barriers for distributors, should increase sales of fuels like E15."

One early adopter is Sioux Valley Cooperative in Watertown, S.D., which has started to sell E15 at one of its five Cenex branded locations as a pilot project. "Our farmer-owners appreciate the fact that we're providing an option to consumers that supports the agricultural community," says Jared Landmark, CEO. "We've been strong advocates of ethanol-blended fuels for many years and E15 is another option to offer our customers."

While Landmark says more education about E15 and a national effort to increase E15 use will go a long way, E15 sales are growing. In 2020, Iowa saw a 24% increase in E15 use, according to Iowa Department of Revenue data.

Producers like Carmichael are ready for the increased demand. "It's been a slow-moving process to get E15 to the pump, but the demand is growing and any effort to help consumers have easier access to E15 is good news for the corn industry," he says. ■



The Future of Renewable Fuels Policy

"Climate change is a pillar of the Biden administration. It's a massive priority," says Dan Mauer, Washington representative for CHS. "That can mean a push toward more reliance on renewable fuels, but it could also result in a push toward electric vehicles (EVs), which could disrupt fuel supply and therefore ethanol supply."

Electric Vehicles

"We are going to continue to rely on fuel, but at what level?" says Mauer. "That creates some uncertainty."

Electric vehicle adoption won't happen overnight, he adds. "We're watching EV adoption closely, but there are infrastructure and cost considerations. We may see things like the federal fleet moving to electric or even more tax credits for electric vehicles."

EV infrastructure and reliance on already strapped electric grids will prove to be a challenge, says Mauer. "For example, the California government has said combustible engines won't be sold in the state after 2035. California has rolling electric outages as it is. Where will the power for all these vehicles come from?"

Renewable Fuel Standard

The Renewable Fuel Standard (RFS) sets guidelines for how much ethanol and biodiesel refineries must blend with fuel. These blending mandates are called renewable volume obligations (RVOs).

Original RFS guidelines expire in 2022. "If Congress doesn't replace the law, the Environmental Protection Agency with the Department of Energy can set blending mandates," says Mauer. "We expect the Biden administration to set high RVOs post-2022, which could be good for ethanol markets."

Infrastructure

While greater E15 adoption could bring more ethanol plants online, there are challenges, says Mauer. "Regulatory and infrastructure issues may limit E15 accessibility."

To help increase renewable fuels use, the USDA Higher Blends Infrastructure Incentive Program (HBIIIP) provides grants to build biofuels infrastructure, such as helping a convenience store retrofit an underground storage tank for E15 storage.

In 2020, HBIIIP awarded \$22 million to 40 recipients in 14 states, mostly in the Corn Belt. "The program got bipartisan support and funding went quickly," says Mauer, who says similar funding may be approved through appropriations bills that set federal budgets.

Mauer says another renewable fuels funding opportunity is the nearly \$2.25 trillion infrastructure plan put forth by the Biden administration in March 2021. While the plan has little earmarked for biofuels as originally written, Mauer expects opportunities to change that.

"CHS is advocating for funding for programs like HBIIIP and I'm cautiously optimistic that there will be pressure on the Biden administration to continue to fund programs that build renewable fuels infrastructure," says Mauer.

Whether it's through government mandates or infrastructure funding, "There is a lot of opportunity for ethanol and renewable fuels when it comes to policy," says Mauer. "Decreasing emissions through greater use of E15 and other blended fuels will go a long way to help the Biden administration achieve its climate-related goals."

By Jennifer Chick

Passion Ma

Horses roam the pastures around Todd and Una Ford's ranch in the Bear Paw Mountains of Montana. Todd and Una operate Treasure State Quarter Horses.



kes Perfect

Many kids dream of horses, but Una Ford pushed her dream into reality. In sixth grade, she marched into the local bank and cosigned a loan with her grandpa, Bill Young, to buy her first six horses: three broodmares and three weanling stallions. That drive, determination and clear vision helped grow Treasure State Quarter Horses into a thriving business.

Una and her husband, Todd, operate Treasure State Quarter Horses with Una's parents, Ted and Barb Crowley, in the Bear Paw Mountains, about 30 miles south of Havre, Mont. Una comes from a five-generation cattle-ranching family

with a rich history in Montana.

"I guess I am a black sheep in the family," she says. "Everyone else was raising cattle, but that was not me at all."

Grandpa Bill always encouraged Una's horse passion as he raised horses on his ranch for working cattle.

"Bill was a well-known and respected horseman in this area and throughout the Bear Paw Mountains," Todd says. He raised proven cow horse broodmares that built the base for today's Treasure State Quarter Horses bloodlines.

But it was a close neighbor who helped Una see her horse passion as something more. Barbara Cowan owns Cowan Select Horses. Una started

working for her at the age of 13 and Cowan is now a close friend and mentor.

Quality from the Start

Una had a great supporting cast as she began to build her herd. Cowan taught her about horse care and the importance of pedigree, genetics, nutrition and feed. Bill supported her dream, and Una's dad drove her around to pick up the animals that became the start of her herd.

"Good horses were central from the beginning," Una says.

Todd, who grew up in Havre and describes himself as a "city kid through and through," joined the operation after he and Una married in 2000. They met >

> through Cowan Ranch, where Todd worked. He credits Cowan with introducing him to horses. She had a trainer and allowed Todd access to that trainer whenever he had questions.

Once Todd met Una, he realized he needed to learn all he could about horses.

"I told myself if I was going to be around horses full-time, I was going to do it well," he says. "I've been really lucky to have come across people whom I've been able to watch. They've always brought me along, influenced me and helped me to get better."

Treasure State Quarter Horses now breeds about 45 mares every year. Those 45 mares are bred by three stallions. About 35 to 40 foals are sold every fall.

Next Generation

Una is a registered nurse at Northern Montana Hospital in

Havre, while Todd works on the ranch full-time. Their daughters, Maisie, 13, and Ashlyn, 12, are a huge part of the operation. The girls followed their mother's lead, purchasing their first broodmares last summer. Todd and Una cosigned the bank notes.

"We wanted to make sure the girls were starting out with animals we would buy ourselves," Una says.

"There are so many phenomenal horses out there," Todd adds. "If they are going to do it, they need to do it right."

That philosophy threads its way through everything the Fords do with their operation, from genetics to nutrition, and brought them to Equis® feed, a line of horse feeds from CHS.

About six years ago, the Fords wanted to change up their feeding program. Their local feed dealer got them in touch with



Below, Ashlyn Ford, 12, leads TS Shake Em for Fame, one of her family's quarter horses. Above, from left, Todd and Una Ford operate Treasure State Quarter Horses in the Bear Paw Mountains of Montana with their daughters, Maisie and Ashlyn, and Una's parents, Ted and Barb Crowley.



Crystal White, the Equis feed representative in Montana.

“Crystal was extremely helpful from the get-go,” Una says. “She was knowledgeable and knew right away what would work best for us.”

White looked at the Fords’ horses, viewed the types of forages available to them and came up with a feeding recommendation that would work for the entire operation.

“Our program is very diverse,” Todd says. “We have weanlings up to 2-year-olds, broodmares and stallions, and performance-bred rodeo horses. We needed a feed program that would cover that wide spectrum.”

Treasure State Quarter Horses feeds a variety of Equis products: Element, Generation and Golden Senior. They supplement with rice bran and feed Daily 35 to many of the weanlings. They also feed HorsLic Omega Elite tubs, a New Generation Supplements brand that partners with Equis.

“Equis feeds are high-quality, affordable products,” Todd says.

Success in the Arena

Treasure State Quarter Horses has sold horses from coast to coast and border to border as barrel racers, roping horses, cow horses, ranch horses and mounted shooters. They’ve even had inquiries from overseas. Much of their success is because Una, Maisie and Ashlyn compete in barrel racing, both amateur and pro. People in the industry see their success and that translates into sales. But Una says they have a secret weapon.

“The girls and I couldn’t compete without Todd,” she says. “To compete at that level, you have to have someone who can help you start and then fine-tune.”

That’s Todd’s role. He rides and trains the six horses in the rodeo trailer daily while the girls are at school and Una is at work, which included

many hours over the winter administering COVID-19 vaccines. Todd oversees foaling in the spring and makes sure the horses are healthy and thriving. The girls and Una help when they can, pitching in with halter-breaking, training and riding colts.

“Every day, every year, we are thinking about how we can make our herd better and stronger,” Una says.

Una’s vision from middle school has come full circle as she and Todd bring their daughters into the horse business. They hope both girls will continue Treasure State Quarter Horses into the next generation. ■

SEE MORE: Watch a video at chsinc.com/c.



As a nutrition consultant, Crystal White connects customers and feed dealers with accurate, reliable nutrition information.

Nutrition Know-how

Nutrition consultants play a key role for operations like Treasure State Quarter Horses.

“There is so much access to information out there that it can be overwhelming,” says Crystal White, a nutrition consultant with CHS for 13 years. “It’s my job to talk with horse owners to let them know I am here to help them manage through issues.”

Nutrition consultants are always learning, White says, through online classes, talking with suppliers, tapping into the expertise of CHS animal nutritionists and attending educational sessions like Payback University, which CHS offers each spring for feed dealers and nutrition consultants.

“We have to know the most up-to-date information so we can share accurate information with our customers and feed dealers,” White says.

“You can have the best horses in the world, but if you don’t feed them right, you can ruin a horse,” White says. “You want to get that nutrition dialed in.”





Let's Go!

Like an opening pitch or the first notes of a favorite song, the initial trip around the field for spring planting is filled with anticipation.

With corn and soybean prices trending to 2014 heights, worldwide stocks at very low levels and worldwide demand increasing, U.S. growers have reason to feel optimistic this season.

Now it's time to manage nutrients, weeds and water as growers and agronomists work together to coax more from every acre. It's a constant battle of will, wits and wisdom as each sunrise and every step takes the crop closer to harvest.

— *Cynthia Clanton*

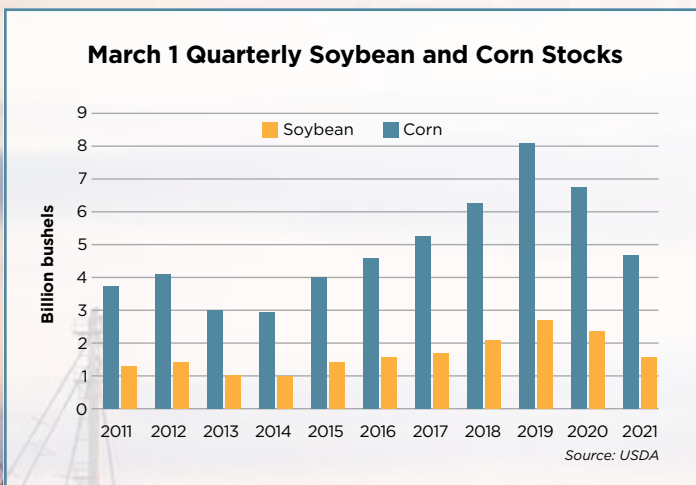




BEAN BALANCING ACT

Will the small 2021 increase in soybean acres and shrinking U.S. stocks be enough to meet robust global demand?

By Joe Lardy



On paper, it appears the United States could run out of soybeans in this crop marketing year. Best case says the U.S. soybean balance sheet is extremely tight.

Soybean stocks are at historic lows. Overall stocks are currently lower than they've been in the last six years. On-farm stocks of soybeans are just 38% — one of the lowest levels in 20 years.

At the same time, the U.S. has seen stronger-than-expected soybean exports over the past year, largely due to strong Chinese purchases. As of mid-April 2021, U.S. Department of Agriculture (USDA) data showed total export commitments were at 98.4% of the USDA target, with four months of the marketing year left to go.

Domestically, second-quarter soybean use is up significantly from recent years and soybean crush volumes are at record highs. While USDA analysts lowered 2020–2021 soy-crushing estimates >

> by 10 million bushels in the April World Agricultural Supply and Demand Estimates (WASDE) report, the remaining crush is still a record 2.19 billion bushels. Recent rallies in soybean oil prices have made crush margins very profitable.

Demand for soybean meal has also been on the rise, thanks in part to repopulated cattle herds in the southwestern U.S.

What Will Give?

With shrinking stocks and robust demand, it would seem something's got to give.

Logic would dictate that soybean prices would increase to attract more acres based on USDA's meager 5.4% projected increase in planted soybean acres for 2021. It wasn't until a few days after the Prospective Plantings report came out that the market started to respond. There were rallies in the corn, cotton and wheat markets at the same time.

Soybeans need to outpace the other crops to buy much-needed acres. All of the projected 87.6 million soybean acres — and more — are needed to support the strong demand side of the balance sheet.

No Corn Surplus, Either

USDA lowered U.S. corn stocks by 150 million bushels in its April report, taking overall corn stocks number down to 1.352 billion bushels. That's approaching low levels between 2011 and 2013, when ending stocks dipped under the 1.0 billion mark.

What's different now from that three-year time period nearly a decade ago is that overall demand is stronger on nearly every front.

Higher corn exports. In recent months, U.S. corn export volumes have seen big increases, causing the USDA to raise its corn export number by 75 million bushels to 2.675 billion bushels in the April WASDE report. The biggest year-over-year demand increase has been from China, but demand has also increased from Mexico, Japan, Colombia, South Korea and Taiwan.

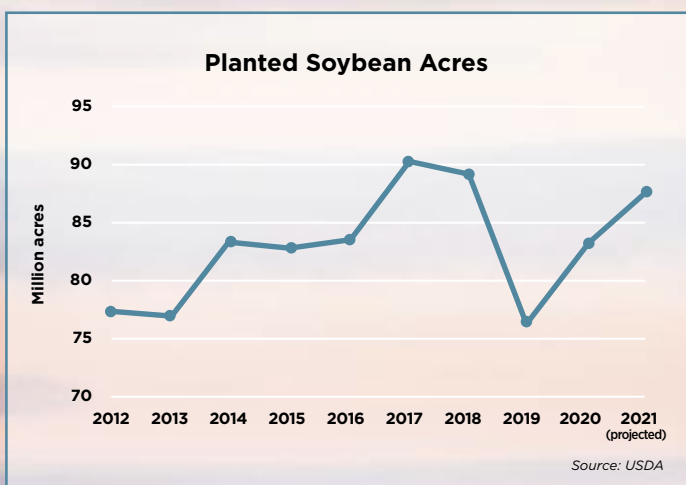
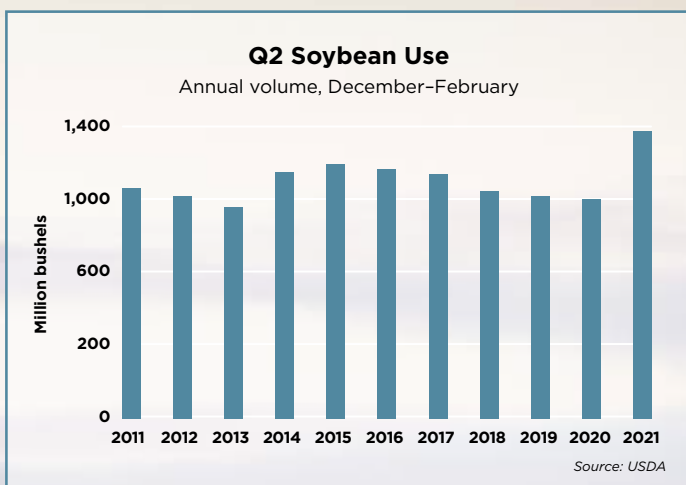
Ethanol recovery. There are signs the ethanol industry is bouncing back from the COVID-19 pandemic hit. Several ethanol plants that were idled last year restarted production this spring. In April, USDA raised its corn use rate for ethanol by 25 million bushels to 4.975 billion bushels.

Increased feed demand. The April WASDE report also showed an increase in corn demand for feed and residual use. Corn going to livestock consumption is up this year due to a record number of animals. The March 1 number of cattle and calves on feed totaled 12.0 million, the second-highest March 1 inventory since the series began in 1996.

Eyeing the Unknowns

One of the wild cards in the soybean balancing act is China, the largest buyer of U.S. soybeans. Resurgence of African swine fever in China, which devastated herds there in late 2019, would significantly drop soybean demand.

In late April, the Chinese government issued new guidelines for domestic livestock production, recommending reduced corn and soybean meal use in pig and poultry rations. We have yet to see how the Chinese ag ministry will implement and enforce this new policy, but it could have a significant impact on U.S. exports. ■



LEARN MORE: Contact your cooperative grain marketer for 2021 crop strategies and listen each week as CHS and industry leaders talk with radio host Mike Adams on Around the Table; find previous episodes at cooperativeownership.com.



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LOOK FIRST

Taking time to check the details can help prevent an accident



Your eyes are your most important safety equipment.

“While we’ve seen critical advances in technology to improve safety, it’s still important to get out and walk around before operating vehicles on the farm,” says Matt Surdick, manager of health and safety for CHS Country Operations. “Use the GOAL technique: Get out and look.

“You can’t trust that there are no obstructions or people around you,” he adds. “Take the extra few minutes to be sure the area is clear. Things can change rapidly, especially during busy seasons.”

Watch for Trouble

Operating farm vehicles and equipment carries considerable risk, says Emily Atwood, regional manager for risk management at Nationwide, the largest U.S. insurer of farms and ranches in 2019, according to A.M. Best, which rates insurance companies. Vehicle and equipment accidents, both on and off the road, are among the most prevalent farm insurance claims for the company.

“Motorists don’t understand what it’s like to operate farm equipment, that there are blind spots and you can’t respond quickly,” says Atwood. “Be aware of your surroundings, anticipate what could go wrong and have a plan for what you’ll do if something does happen.”

She advises using one or two pilot vehicles when moving equipment on heavily traveled public roadways with traffic. “A pilot vehicle helps slow down traffic. That’s especially important when other cars are going around curves or over the crest of a hill and aren’t aware your slower equipment is there.”

New Equipment, New Drivers

The range of equipment and vehicles used on most farms, from skid-steer loaders to big rigs hauling grain, means operators may not be comfortable in every driver’s seat.

“There are two kinds of people behind something with a motor: experienced drivers and inexperienced drivers,” says Jerry Valley, a CHS regional


safety specialist based in Crookston, Minn. “Experienced people will take certain kinds of risks, like thinking about vehicle horsepower and calculating how quickly they can get to speed before a car reaches them. An inexperienced operator thinks driving a truck is like driving a car, but a vehicle that weighs 80,000 pounds isn’t very forgiving.”

“With new — or new to you — equipment, talk with someone who has used it before,” says Surdick. “Find out about the challenges unique to that equipment and take advantage of the perspective of someone who has been sitting in that seat.”

Give new operators a leg up on safety with a skills check before putting them behind the wheel, says Valley. “Take time to evaluate their ability to handle a vehicle before letting them loose. Go for test rides with new employees to assess their ability to manage the unexpected.”

Brief safety meetings to begin the work day can help keep prevention top of mind, Atwood adds. >





Keep it light. Be sure lights are working and clean.

Details Matter

Daily equipment inspections and a walk-around before and after every use helps keep operators and others safe.

Check the dash. Be sure all cab functions work, from defrosters to windshield wipers.

Brake it. Test brakes and air brakes.

Take a turn. Confirm turn signals are operating.

Fix it, don't forget it. Keep maintenance up to date.

Keep rolling. Check tire inflation, rims and lug nuts.

Be visible. Wear high-visibility clothing, especially in low-light conditions.

Sign up. Keep SMV (slow-moving vehicle) signs clean; replace them when faded.

STAY SAFE ON THE ROAD

Nationwide safety experts suggest the following tips for avoiding accidents while on the road with farm vehicles and equipment.

- Keep slow-moving vehicle (SMV) signs clean; replace them when faded.
- Mark edges of tractors and equipment with reflectors or reflective tape.
- Install mirrors on equipment so you can see other vehicles; check sight lines and keep mirrors clean.
- Turn on lights, but turn off rear spotlights to avoid confusing motorists.
- Research traffic patterns and avoid heavy travel times.
- Use pilot vehicles in front of and behind farm equipment; identify pilot vehicles with brightly colored flags.
- When traveling with multiple pieces of equipment, keep enough space between them for vehicles to pass.

> Pay Attention

Constant awareness is critical when climbing behind the wheel of a moving vehicle, the safety experts emphasize.

“Bad things happen when you fail to pay attention,” says Valley. “Keep your cellphone in your pocket.”

Make eye contact with anyone in your area before engaging the vehicle, Surdick adds. “If there’s a lot of noise,


they might not be aware you’re preparing to move.”

Awareness includes what’s happening with the driver, he says. “Fatigue management plays a role in accident prevention. When you push yourself a little too far, that’s when mistakes happen and injuries occur. Be mindful of how the day is going and listen to your body before and while you operate equipment.”

Communicating about potential risks helps head off problems, Surdick adds. “If you see something, tell others what you’re seeing, so you can all take action.”

“When you’re operating equipment, you should always be thinking about safety,” adds Atwood. “Safety is everyone’s job.” ■

LEARN MORE: Find more safety tips at mysightonline.com.



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THE FINALE TODAY

Adjuvant choice can make or break a herbicide mix

By Cynthia Clanton

Waterhemp must be competing with cockroaches to be the last surviving species on Earth.

At least that's how it seems, given the vile weed's ability to germinate throughout the growing season, scatter up to a million seeds per plant and develop resistance to multiple herbicides.

Paul Fossum, a soybean, wheat and sugarbeet grower who farms about 2,200 acres near Hillsboro, N.D., found himself in a pitched battle with waterhemp last summer.

"Waterhemp has become extremely difficult to control,"

he says. "The patches were in an area where I couldn't use dicamba, so I had to find another solution."

Falling back on glyphosate, but knowing it couldn't do the job alone, Fossum got an adjuvant recommendation from Craig Moen, his agronomy consultant at CHS Ag Services, based in Warren, Minn.

That decision made all the difference, he says. "I went back a week later and the waterhemp was dead."

Fossum's waterhemp-busting herbicide ally was CHS Level Best™, a nonionic surfactant,

“Soy-enhanced adjuvants made with refined soy oil are better tank-mix partners and have longer shelf lives, based on our trials.”

— Devin Wirth

water conditioner and deposition aid.

“Weed control with a contact herbicide is all about coverage,” he says. “We notice when we use Level Best that it takes weeds down more quickly and effectively.” Fossum also uses Level Best with Roundup in sugarbeets and adds it to his desiccant treatment for potatoes.

Works Fast

Rapidly advancing herbicide resistance makes adjuvant choice more critical than ever, says Moen.

“Using an adjuvant that gets herbicides into the weed faster helps take down populations before they can spread. Level Best helps get the herbicide past the leaf cuticle into the plant so the active ingredient is absorbed.”

“Level Best is a difference-maker,” says Devin Wirth, a regional technical specialist with CHS Agronomy, who helps develop and support crop protection products for growers in North Dakota and Minnesota. “When you add it to the tank, you see nearly instant results.” Glyphosate typically controls weeds in 12 to 14 days, he explains, but by adding Level

Best, “you could see wilting in five to six days and complete weed death in eight to 10 days.”

A hard-working adjuvant brings out the best in a herbicide mix, says Corey Klaphake, Wirth’s technical counterpart for Iowa and Illinois. Is that difference enough to justify an extra \$2 or \$3 per acre? “If it gives you peace of mind, it’s worth it,” he says.

“Some adjuvants cost more than we think they should,” Fossum says, “but if an adjuvant like Level Best makes everything better, I’ll continue to use it. We try to have a rough idea of what it will cost per acre to apply a herbicide mix, including the percentage attributed to adjuvants. If the adjuvant enhances the chemistry so it works on problematic weeds, it’s hard to put a value on that.”

Efficacy Wins

“We use a lot of Liberty [glufosinate] in my area,” says Klaphake. “It likes heat and humidity, but we’re often applying it in cool, dry conditions. Adding Level Best allows you to apply Liberty

earlier in the day or when the conditions are less favorable.”

And more effective weed control helps prevent resistance development in surviving weed populations, Klaphake adds. “A small number of weed species have confirmed glufosinate resistance. Let’s steward glufosinate so we can continue to use it.”

Quality Counts

When an oil-based adjuvant is called for, not all are created equal. “Conventional oil has impurities that add potential for

“If the adjuvant enhances the chemistry so it works on problematic weeds, it’s hard to put a value on that.”

— Paul Fossum

crop burn,” says Wirth. “Soy-enhanced adjuvants made with refined soy oil are better tank-mix partners and have longer shelf lives, based on our trials.”

“You get a nice clean mix with purified oil,” adds Klaphake. “That gives you an optimal spray pattern and easier tank cleanout. Minimal separation in the tank means better performance and less hassle.”

Many herbicide mixes are still anchored in glyphosate — a water-loving herbicide. “We know oil and water don’t mix well,” says Wirth, “but the majority of herbicides paired with glyphosate are oil-loving. When you choose an adjuvant, you want one that helps you get the best performance out of glyphosate and the other herbicides in the mix. Moving away from a traditional crop oil concentrate to one with highly refined soy oil delivers greater efficiency.”

A growing line of adjuvants from CHS contain refined soy oil made from soybeans grown by CHS farmer-owners, improving herbicide performance and adding value for growers. ■

Adjuvant Matchmaking

Matching an adjuvant to a herbicide mix and combining them properly takes planning, say CHS Agronomy technical specialists Corey Klaphake and Devin Wirth. They advise taking the following steps.

- Read labels carefully and always follow label directions.
- Only use approved adjuvants for your chosen herbicide(s).
- Check the amount of each product in the mix and the mixing order to ensure physical compatibility, solubility and pH.
- Run a compatibility test to ensure your adjuvant choice(s) and herbicide(s) work together. Remember, this will only point out whether they mix well, not whether the combination will hurt efficacy or crop safety.
- Ask an expert for help to ensure you are getting the most value from your crop protection investment.

CHS REPORTS FISCAL 2021 SECOND-QUARTER RESULTS

CHS Inc. has released results for its fiscal second quarter ended Feb. 28, 2021. The company reported a net loss of \$38.2 million versus net income of \$125.4 million in the same quarter in fiscal 2020. Significant year-over-year earnings increases in Ag and Nitrogen Production segments and Corporate and Other businesses were offset primarily by ongoing COVID-19 pandemic-related impacts in Energy.

“Improved trade relations between the United States and foreign trade partners combined with our operating efficiency initiatives led to record grain and oilseed volume increases and continued price gains, significantly improving our Ag segment earnings over the prior year,” says Jay Debertin, president and CEO of CHS Inc.

“Favorable growing conditions and overall strength in agriculture helped drive demand for crop inputs, including crop nutrients and crop protection products and services.

“Our Energy segment, while showing improvement over the previous quarter, continues to experience unfavorable refined fuels market conditions related to the COVID-19 pandemic and exceptionally higher costs for renewable energy credits. These factors resulted in volume and margin declines that significantly reduced earnings compared to the prior year.”

Fiscal 2021 second-quarter results reflect:

- Revenues of \$8.3 billion versus \$6.6 billion in fiscal 2020 second quarter, a 26.1% increase.
- Energy segment impacts that include:
 - Continued low refining margins stemming from COVID-19-impacts on global energy demand.
 - Exceptionally high costs of renewable energy credits, which decreased margins.

- Decreased propane margins and volumes due to warm winter weather conditions across the CHS trade territory during most of the fiscal 2021 second quarter.
- Modest improvements over fiscal 2021 first quarter as volumes and margins began to rebound.
- Ag segment impacts that include:
 - Favorable weather conditions and improved relations between the U.S. and foreign trade partners, including China, that increased volumes of grain and oilseed commodities as well as feed and farm supplies.
 - Higher margins for certain agricultural products, including processing and food ingredients, which improved because of soybean crush strength.
- Enterprisewide initiatives that include:
 - Focused cost-reduction initiatives launched in fiscal 2021 that helped reduce marketing, general and administrative costs.
 - COVID-19-related working arrangements and increased hygiene and infection-control processes to mitigate risk and support business continuity — all CHS operations were deemed to be essential infrastructure industries by federal and state governments.

For the six-month period ending Feb. 28, 2021, CHS reported net income of \$31.4 million versus \$303.3 million for the same period in fiscal 2020. Revenues for the first six months of fiscal 2021 rose to \$17.0 billion, a \$2.8 billion, or 19.8%, increase from \$14.2 billion in the same period the previous year.

“As we look ahead to the second half of fiscal 2021, we remain committed to protecting the financial health of CHS,” says Debertin, “adding efficiency throughout our enterprise to benefit owners and customers, and caring for those who depend on us as we continue creating connections to empower agriculture.”

CHS Inc. Earnings* by Segment (in thousands \$)

	Three Months Ended		Six Months Ended	
	Feb. 28, 2021	Feb. 29, 2020	Feb. 28, 2021	Feb. 29, 2020
Energy	\$(54,690)	\$138,921	(121,867)	301,074
Ag	14,044	(20,845)	97,053	(34,707)
Nitrogen Production	11,165	5,741	15,635	22,191
Corporate and Other	22,791	4,007	47,529	24,667
(Loss) income before income taxes	(6,690)	127,824	38,350	313,225
Income tax expense	31,668	2,130	7,339	8,794
Net (loss) income	(38,358)	125,694	31,011	304,431
Net (loss) income attributable to noncontrolling interests	(129)	247	(431)	1,102
Net (loss) income attributable to CHS Inc.	\$(38,229)	\$125,447	\$31,442	\$303,329

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

CHS EXPANDS GRAIN CAPACITY AT MYRTLE GROVE EXPORT TERMINAL



CHS has announced plans for a significant renovation and expansion project at its Myrtle Grove, La., grain export terminal. Storage and handling upgrades will grow market access for farmer-owners and help move 30% more bushels of grain annually through the terminal to global customers.

“CHS is always looking for ways to expand market access for farmers’ crops,” says Chris Pothen, vice president, CHS Global Grain & Processing. “Improvements at Myrtle Grove will allow us to move more grain to world markets with greater speed and efficiency.”

The terminal handles wheat, soybeans, corn, rice, DDGS (distillers dried grains with solubles) and specialty grains for export to customers in Asia Pacific and Latin American countries. Located 25 miles south of New Orleans, it is the first terminal on the Mississippi River.

Construction is expected to begin in August 2021 during low river conditions, with completion planned by summer 2023.

CHS CONTRIBUTES \$50,000 TO IMPROVE INTERNET CONNECTIONS AND DIGITAL INCLUSION

CHS has joined 19 organizations to launch American Connection Corps, which will place young leaders in two-year, paid full-time fellowships to increase digital access and inclusion in their communities.

Fellows will help increase broadband access and digital literacy in rural communities so residents have access to better education, health and economic opportunities that come with digital connectivity. CHS is contributing \$50,000 to the effort.

“Access to broadband is essential for the success of farmers, ranchers, cooperatives and rural communities,” says Jay Debertin, president and CEO, CHS. “Living in a rural area should not limit opportunities for connectivity and access to data and digital infrastructure that help build ag businesses and enrich lives.”

CHS PARTNERS WITH AGRISAFE ON RURAL HEALTH INITIATIVES



CHS Community Giving has awarded \$105,000 to AgriSafe to support mental health training, safety training for young producers and continuing education for rural nurses.

“Ag health and safety is a key focus for CHS Community Giving,” says Jessie Headrick, director, CHS Community Giving. “Through our partnership with AgriSafe we are able to support health and well-being initiatives for people of all ages engaged in agriculture.”

The contribution will help fund three AgriSafe programs:

- Total Farmer Health, which provides mental health training to farmers, ranchers, rural healthcare professionals and community influencers
- Invest in Your Health, a wellness initiative for high school and college agriculture students
- The Nurse Scholar program, an innovative distance-learning opportunity, which gives rural nurses access to 20 hours of continuing education to help them recognize and treat the unique health needs of those working in production agriculture.

For more information, visit agrisafe.org and chsinc.com/stewardship.

REGISTER TO ATTEND A 2021 CHS OWNERS FORUM

Plan now to attend a 2021 CHS owners forum. Five in-person forums and one virtual forum will be held in July and August. You’ll hear business and financial updates from CHS leaders and the CHS Board of Directors and have a chance to ask questions.

Learn more about CHS owner events and register at chsinc.com/owner-events.

The following forums are planned, all beginning at 9:30 a.m. local (Central) time.

July 12: Kearney, Neb.

July 19: Wichita, Kan.

July 26: Madison, Wis.

July 30: Bismarck, N.D.

Aug. 2: Mankato, Minn.

Aug. 2: Virtual forum

Keeping the Lights On

In early February, a bitter cold blast of Arctic air — a polar vortex — sent temperatures in northern Minnesota plummeting to -43 degrees Fahrenheit. When the icy air swirled south, southern U.S. utilities steeled themselves for a big freeze.

Scott Barkley, director of energy operations for Mid-Kansas Cooperative (MKC) based at Moundridge, Kan., received the first call on Feb. 9 from the co-op's customer, the Board of Public Utilities (BPU). BPU leaders were worried about staying in operation through the coming cold wave.

BPU, a locally owned utility, provides electricity and heat for McPherson, Kan., a city of nearly 15,000 people, and feeds the regional grid, including the CHS-owned McPherson refinery. BPU needed MKC to supply 300,000 gallons of diesel fuel that week to power the utility's electrical generators.

Barkley created an initial plan, working with CHS Refined Fuels Account Manager Jared Docken. They worked to ensure the co-op could pull diesel directly from the CHS refinery. By Feb. 12, with continued historic cold temps in central Kansas, the demand for diesel fuel had grown to 1 million gallons.

Barkley began organizing a fleet of MKC and partner trucks to keep diesel flowing to BPU. As the cold intensified, so did demand, not only from BPU but from neighboring utilities like Evergy. More trucks and drivers were needed; drivers from Kansas and Oklahoma responded to the call.

"I don't think anyone knew what the scope of the demand would be," says Docken. "We just kept supplying diesel as it was needed."

When the cold finally broke on Feb. 22, more than 5.5 million gallons of diesel had been transported to the utilities — nearly 800 truckloads and one-quarter of MKC's annual fuel volume.

"This shows how the cooperative system works. Everyone pulled together to be sure there were no hiccups," says Barkley. Thanks to that effort, there were no rolling blackouts in the region. "The team stepped up and performed when our community needed us most."

— Sarah Haugen





Scott Barkley, director of energy operations for Mid-Kansas Cooperative (MKC), helped his customers plan for increased diesel fuel demand during a recent Kansas cold snap.



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Eye from the Sky

If you could avoid climbing 130 feet to check on grain condition inside a silo or bin, would you? For safety experts, the answer is a clear yes. That's exactly how drones — officially unmanned aircraft systems (UAS) — and other digital technologies are being used at CHS facilities from Savage, Minn., to Myrtle Grove, La.

"Drone-captured videos have given us insights into potential problem areas we couldn't see from a cherry picker and with

much less cost and risk," says Heidi St. Clair, director of supply chain automation, CHS.

From inspecting grain to flying over bins to check grain-handling equipment, drones help keep people on the ground and away from potentially unsafe conditions.

"This technology is a game-changer when it comes to safety," says St. Clair. "It's much safer to fly a drone with an infrared camera to the top of a silo to check for grain hotspots than it is to send

employees above ground."

CHS grain terminals already rely on other virtual observation methods, such as hazard-monitoring devices and video monitoring. "We're adding more sensors, monitors and robotics to capture data and images we'll use to give teams specific information and enhance safety," says Kevin Hall, vice president, CHS Global Grain & Processing, supply chain and continuous improvement.

In addition to safety

enhancements, live video feeds collect real-time information. For example, 35 recently installed cameras at the Myrtle Grove grain export terminal offer a bird's-eye view of critical work zones across the 30-acre site. "That gives us real-time tracking and visibility of the terminal around the world," says Hall. "Combining visual indicators with data helps us make better decisions across the CHS digital supply chain."

— Sarah Haugen