



where

FOOD

comes from

ISSUE 5

The TECH ISSUE

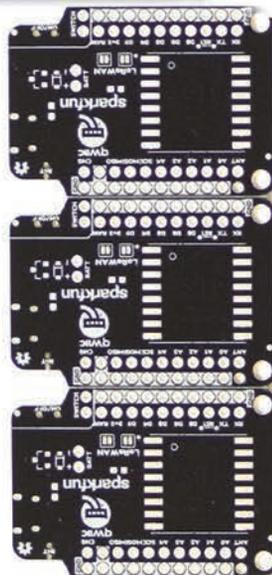
How the Food Industry is Responding

Learn All About Blockchain

How Video Sales Changed Beef Buying and Selling

Plus

Covid-19 and The Food Supply Chain





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Dear Food Enthusiast

Technology. The rate of change and innovation in our lifetime is amazing. It is simply impossible to keep up. I remember making calls on a telephone on the wall in the kitchen with a long, coiled cord that I would stretch around the wall as far as I could and talk as quietly as possible. My family was on a party line, this meant your neighbors—if they were nosy—could listen in to your calls. We typed on electric typewriters in high school and in college we had to go to a computer lab to type our papers. How things have changed!

We have two daughters that are Generation Z. This generation has grown up in a world where the term “personal smart devices” seems completely normal. They have a personal computer and a smart phone that keeps them in constant contact with everyone. Facetime means we get to see our college student as we talk to him across the country. My high school daughter tells me about Tweets from our President she has read during the day. And we “Google” to find facts when we have a family debate. The advent of technology offers great opportunities for improvements in sustainable food production to produce more food with fewer natural resources. It also offers consumers the opportunity to get more information about the food they feed their families and to have more choice in food products. As we progress, we see technology helping us meet our mission and vision as a company and are excited about all of the things to come.

- **Mission: To create opportunities through transparency for food producers and consumers**
- **Vision: Inspire a more sustainable food model for the world**

This issue of the magazine is dedicated to exploring a few technology innovations. We hope you enjoy it!

From our family to yours,

Leann Saunders, President
Where Food Comes From



Where Food Comes From
Winter 2020-21
Issue 5

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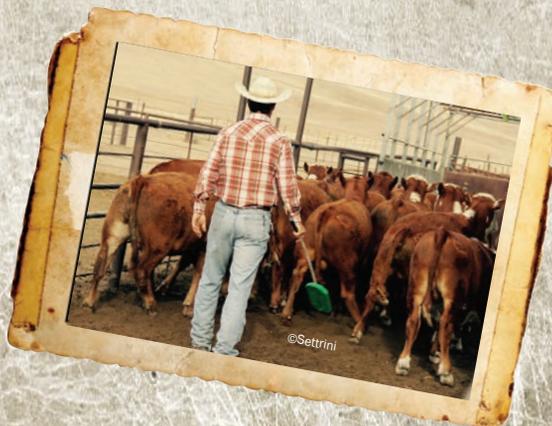
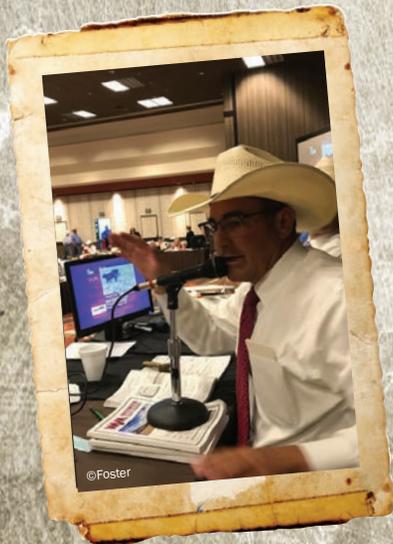
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WVM WESTERN VIDEO market

Market with the professionals!



Since 1989, Western Video Market has been the premier cattle auction business in the western United States. WVM offers internet and video marketing services for cow-calf producers, stockers and backgrounders marketing to a nationwide network of buyers. WVM is the only video auction company that works exclusively with local auction yards.



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Weather Watchers

RORY LYNCH PHOTO COURTESY OF THE COLORADO DEPARTMENT OF AGRICULTURE PHOTO CONTEST

In a previous time, harvesters turned their gaze skyward in an effort to predict the coming weather. Today, weather apps on smart phones hold more data and predictive abilities.



Plant-Based "MEATS"



Regardless of where your interests lie in the plant-based meat trend, there's little argument that the movement is growing and its existence is directly tied to advances in science and technology.

With human health, animal welfare, climate, and global resource concerns inspiring the product, science made it a reality.

Impossible Foods explains that their process uses the heme protein from the roots of soy plants and inserts it into a genetically engineered yeast, which is then fermented to multiply the protein.

Beyond Meat bases its product on a pea protein. Despite the differences in ingredients, both products are—in the end—highly processed foods and have faced questions and scrutiny around their

methods, marketing, and products.

Still, that hasn't stopped other companies from jumping into the market. Tyson Foods, Nestle, and Hormel are all exploring or developing their own plant-based meat alternatives.

Major retailers and restaurants across the country have whole-heartedly jumped on the bandwagon, too. From Walmart to Whole Foods and Burger King to Qdoba, consumers can try these new products.

Cell-cultured meat is also on the come-up. This is meat produced via in vitro cultivation of animal cells using tissue engineering techniques. Though the technology is capable of creating meat, the regulatory issues have not been settled. Like the plant-based meats, ethical issues remain as well.



NOT-SO-SERIOUS SIDEBAR

In response to the rising popularity of plant-based meat alternatives, Arby's introduced the "marrot." The product—which is not sold in restaurants—is turkey shaped as a carrot with a parsley sprig. A video showing how the marrot is made is on YouTube.

CANNIBAL RATS

Unintended Covid-19 Consequences



This summer—unlike any other—saw interesting behavioral changes not only in humans, but in the animal kingdom, too. The US Centers for Disease Control and Prevention warned of "unusual or aggressive" behavior in American rats as the initial lockdown was placed on major metro areas.

In normal times, the rodents' main source of food was restaurant waste and street garbage. But in early summer, according to the national health body, dumpster-diving rats were observed resorting to eating their young in the wake of urban shutdowns.

"Community-wide closures have led to a decrease in food available to rodents, especially in dense commercial areas," the CDC posted in May as part of their rodent-control guidelines.

"Some jurisdictions have reported an increase in rodent activity as rodents search for new sources of food. Environmental health and rodent control programs may see an increase in service requests related to rodents and reports of unusual or aggressive rodent behavior."

Elevated levels of rat aggression was observed in New York, and New Orleans, and Chicago. In addition to infanticide, territorial disputes and rival packs of rats fell into conflict.

At press time, there were no reports of tommy guns in use or drive-by shootings being employed. However, several of the rodents were overheard calling each other "Dirty rats."



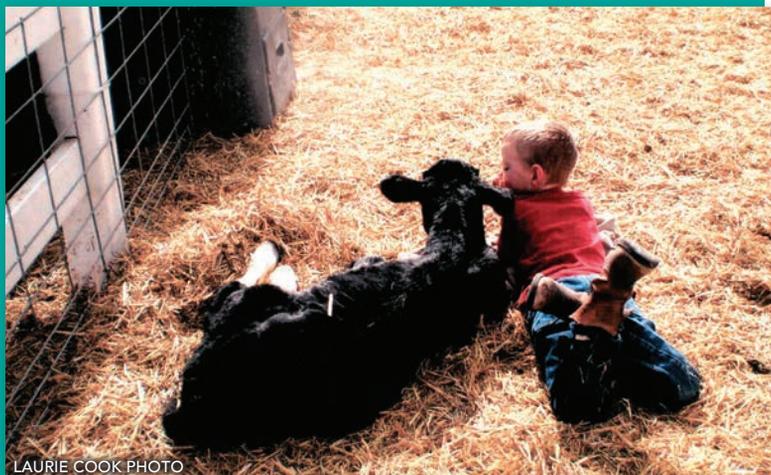
FAST FOOD FIRSTS

Two brothers, Frank and Donald Thomas, were looking for a way to showcase the innovative products their company, General Equipment, was developing, such as flame-broiling equipment and soft serve ice cream machines. Naturally, they opened a restaurant in their hometown of Indianapolis in 1958 and named it Burger Chef. Their flame broiling machine could churn out 800 hamburger patties an hour.

But they didn't just innovate in the kitchen, Burger Chef developed the "Fun Meal" a precursor to McDonald's Happy Meal. They were also the first to offer a combo meal, salad bar, and toppings bar for their burgers.

By 1969, there were 1,000 Burger Chef restaurants. But their innovations were quickly copied and eventually the chain faded. In 1982 Hardee's bought out the remaining 260 stores. Despite their extinction, the technological and marketing innovations they developed continue to influence the fast food industry today.

HAVE YOU HERD THIS?



LAURIE COOK PHOTO

Discovery Education has partnered with National Dairy Council and America's dairy farm families and importers to bring your 5th–8th grade classes behind-the-scenes of the dairy community. The program, called Undeniably Dairy, helps students learn about modern farming, dairy's journey from farm to school, and the innovations that are helping care for cows and communities.



Clean Your Plate!

In 2018, The Economist Intelligence Unit with the Barilla Center for Food & Nutrition released a report titled: Fixing Food 2018: best practices towards the Sustainable Development Goals. The idea was to look at three categories—sustainable agriculture, nutritional challenges, and food loss and waste—to measure the most food secure nations. Overall, the US was near the average among the high-income countries.

However, one spot where the US stood out was in consumer food waste. Annually, US consumers waste over 200 pounds of food per person. On the flip side, the US ranked first in response to consumer food



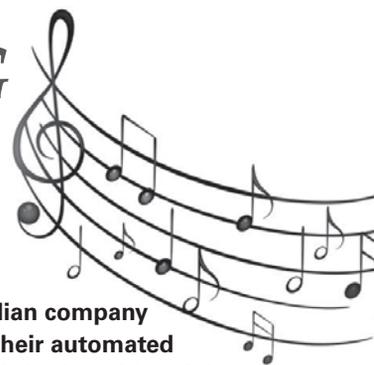
200 lbs

The average amount of food every American wastes each year

waste. While the USDA estimates that 30-40% of the food supply is wasted in the US, practices such as date labels, smart packaging, RFID technology, and even apps to allow users to buy meals that might otherwise be thrown away, are being implemented to reduce consumer food waste.

Apparently, parents imploring their children to finish their meals because there are starving children in Africa did not make the list as a viable way to reduce food waste.

LUDWIG VON PORK



According to Reuters, Brazilian company Roboagro has seen sales for their automated pig feeding robot soar by 400% in the midst of the Covid-19 pandemic. The machine, on a track, rolls between pens of hogs to dispense precise amounts of feed automatically.

Most unique, however, is as it works it plays classical music.

According to a statement given to Reuters, the company claims the music mitigates stress, improves feed conversion, and saves nearly \$8,000 per batch of 1,000 hogs. The machine, they say, is being used in some 500 farms in Brazil. 🌱

Droning On

As the need for precision agriculture and the growth in unmanned aerial vehicle technology begin to dovetail, drones in farming and ranching are becoming more and more viable. As such, we're listing six emerging uses for drones in ag.



CROP MONITORING

Previously, satellite imagery offered the most advanced form of field monitoring, but drawbacks including obtaining the images, image quality, and cost never really made that a viable solution.

With drones, however, time-series animations can show the precise development of a crop and reveal production inefficiencies, health issues, and watering inconsistencies enabling better crop management.



CROP SPRAYING

Advanced distance-measuring technology enables a drone to adjust altitude as the topography and geography vary. Consequently, drones can scan the ground and spray the correct amount of liquid, modulating distance from the ground and spraying in real time for even coverage. The result: increased efficiency with a reduction in the amount of chemicals penetrating into groundwater. In fact, experts estimate that aerial spraying can be completed up to five times faster with drones than with traditional machinery.



IRRIGATION

Drones with hyperspectral, multispectral, or thermal sensors can identify which parts of a field are dry or need improvements for targeted irrigation adjustments. Additionally, once the crop is growing, drones allow for the calculation of things like vegetation index and heat signature.



LIVESTOCK

Ranchers can use drones to locate and check their livestock, water levels, and fence conditions remotely. When outfitted with high-definition thermal images and night-capable cameras, drones can also help survey for prey animals.



INSURANCE CLAIMS

Drones have the potential to more accurately measure insurance claims by surveying an entire field rather than certain sections, and do so in a way that resolves the claim much faster. It also could save the government millions by avoiding payouts on fraudulent claims.



REAL ESTATE

Drone footage of real estate properties has become almost ubiquitous in the agriculture industry. While there is the practical aspect of seeing and assessing the land beyond just what maps can provide, when captured by an expert, drone-generated real estate footage can be inspirational and lead to sales.



Circle of Influence

Superior Livestock is proud to be part of the beef industry and be a leader in this influential circle of agriculture. We've been providing satellite video auction marketing for more than 30 years. We were the first to bring this technology to commercial producers and then to the seedstock breeder.

We continue to broaden our services and offer innovation to our network of cattlemen across the country and the different sectors. We also have established industry partners, which allows us to offer an array of programs and services to our clients. We are always looking for ways to broaden our circle of customers, partners and influence. We value our position as the leading marketing avenue for cattlemen and we are honored to be part of this connection.

SUPERIOR LIVESTOCK'S RESUME:

- Nation's leader in marketing lot loads of cattle as we market more than 1.4 million head annually
- We have almost 400 representatives located throughout the U.S. to provide the highest customer service
- Our Country Page provides a marketplace 24/7
- Our video auctions allow you to click to bid yourself or be on the phone with a knowledgeable representative
- We offer a significant number of value-added programs with many animal industry partners that can be tailored to your specific needs
- Since 1993, we have been assisting registered breeders market their females and bulls.
- We provide individual videoing of each registered lot and have a representative at your sale to conduct the online marketing.
- We offer the potential for your production/bull sale to have a nationwide audience.



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Our circle is commercial cattlemen, seedstock breeders and industry partners. Call us today to discuss our services, programs and our reputation as the industry leader.

Game Changers

HOW VIDEO MARKETING TRANSFORMED THE BEEF INDUSTRY

“It’s all about efficiency and price discovery, bringing buyers and sellers together in the most efficient way possible.”

***-DANNY JONES,
SUPERIOR LIVESTOCK
PRESIDENT***

Since the first financial transaction in human history occurred, buyers look for all their options, and sellers strive for as many potential consumers as possible.

In the early beef business, cattle owners would trail their cattle from Texas to Kansas to find a market. Then, stock yards and auction barns popped up, giving buyers and sellers a central location to find a price discovery. Later, volume buyers would send representatives to ranches to inspect and make offers on cattle.

In the late 1980s, two companies, Superior Livestock Auction and Western Livestock Marketing, began to formulate an idea that would become an even more efficient way to expose buyers to as many options as possible, and sellers to as many customers as possible through the time’s emerging technology.

Origin Story

Simply put, the idea was to film cattle for sale, compile the video for broadcast, and allow buyers to view a large offering of cattle from an expansive region all without leaving their television sets.

“Interestingly enough, it started before the Internet was a viable option,” says Danny Jones, Superior Livestock President. “It was done on C-band dish television, before the small dish and before the Internet. The concept came from what was pretty obvious, that selling load lots of cattle on video can be more efficiently marketed.”

Ranchers began buying VHS cameras to



film their cattle. Then, they began installing the big, ugly dishes in the backyard so they could watch the cattle sell.

“It was a big leap for both buyers and consignors, because consignors were used to that either traditional mindset of they’re going to take their cattle to town and market them in the auction yard or they would have a buyer coming to the ranch to bid on them,” says Holly Foster, Western Livestock Market’s Video Operations Manager. “Then, for those buyers to be buying cattle that they didn’t have the chance to see in person, they were trusting that video footage and the representation that we provided in our catalog descriptions to be accurate. So that was a bit of a leap of faith for all those buyers as well.”

The Benefits

But it didn’t take long for both buyers and sellers to realize the efficiencies gained by the process—but also the idea of a truer price discovery process.

“It’s all about efficiency and price discovery, bringing buyers and sellers



together in the most efficient way possible,” Jones says. “And technology enables that to a great degree, because we put the cattle on each sale in front of as many buyers as possible. As well, buyers come to the table because we offer such a large offering of cattle and specific to their needs, so they don’t have to chase the cattle all over the United States to find them. Then the process just takes place, and price discovery happens.”

And it’s not just buyers and sellers who are benefitting, the product benefits as well. While both Superior and Western stress the importance of the local brick-and-mortar sale barns to the industry, with the advent of the video sales, fewer cattle endure the stresses of a sale barn transaction due to the video marketing.

In fact, Foster sees that benefit reaching even further.

“If producers are implementing a good herd health program, if they are pursuing buying good genetics and good bulls in a video sale, they have an opportunity to really advertise that and market that,” she says. “Whereas in a more traditional format, that’s much more difficult to do. If you just look at the overall quality of the cattle, whether it be our sales or our competitor’s sales, it’s really improved the quality of these cattle and the background and the management that goes into them before they get presented on a video sale.”

Herds that have been audited by independent third-party verification companies, like Where Food Comes From’s

IMI Global in the beef industry, are also able to gain significant premiums on both video marketing platforms.

“Over the years Superior has developed vaccination protocols, as well as many programs and audited programs through IMI and other auditors,” Jones points out. “We’ve developed confidence in our buyer base that what we’re representing has actually been done and is true, and buyers can buy with confidence based on the reputation of those programs.”

Keys to Success

In the fast-paced and ever-changing world of technology, both companies have had to adapt and provide more and more ways for both consigners and buyers to make their transactions. Among the first big changes was the conversion from analog video to digital. That allowed video to be captured and transmitted much more quickly and edited and prepared for airing more easily.

Then, when the Internet became ubiquitous, concepts such as click-to-bid and even remote viewing and bidding became possible. Buyers can purchase thousands of head of cattle from their phones and sellers can watch their cattle sell from anywhere their smartphone has a signal.

Yet both Superior and Western emphasize the importance of the human

element. Not only do they host receptions for buyers and sellers to watch the bidding in person, on-the-ground representatives remain crucially necessary to making these transactions with confidence.

“We have 400 reps nationwide, and our rep is local,” Jones says. “He or she comes to the ranch, evaluates the cattle, represents them and the buyer is trusting that representation from the rep. That trust in that rep from both sides, and the accountability back to that rep to get it right, is key in the whole process.”

What’s Next?

Technology will continue to drive this method of marketing to new places—some just as unimaginable as the original concept.

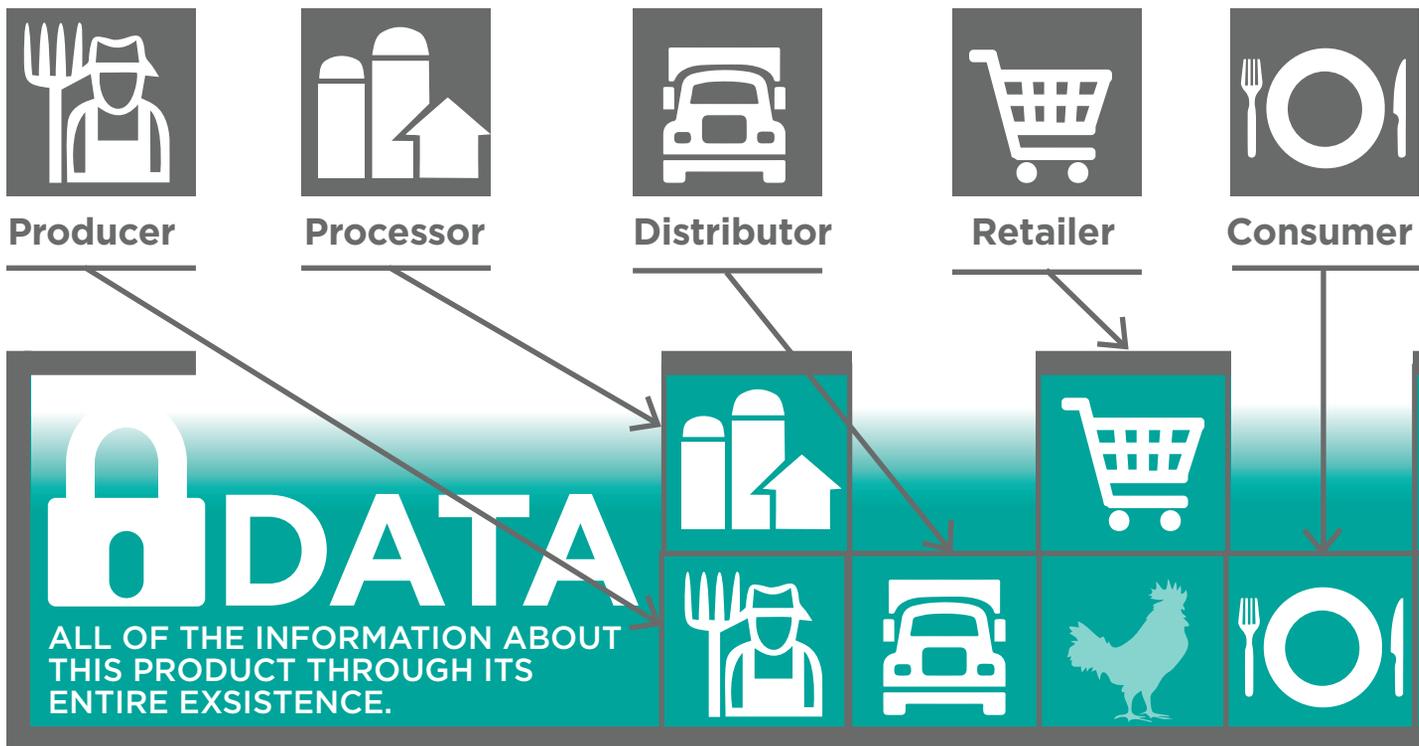
While some skill sets are obviously very hard to automate, can weights, yields, carcass grades, and health someday be estimated and calculated via the digital images captured of the herd?

Just as the old cattle drovers who pushed their cattle to market one step at a time from Texas to Kansas couldn’t have imagined where the industry is today, there are sure to be advances made by the industry’s visionaries that today’s producers will find astonishing. 🌱

OFF THE **(BLOCK)** CHAIN!

What is block chain?

A list of digital records—called blocks—that are linked using cryptography. The data in a blockchain is immutable—unable to be changed—yet can be shared and accessed by various stakeholders.



Information Integrity

As blockchain solutions revolutionize how data is tracked and propagated, the need for data to be verified and confirmed to be true will grow exponentially—especially when data entered into a record is shared with all stakeholders in an immutable fashion. Where Food Comes From has been verifying the claims of the food industry for 25 years.

How can this help the food industry?

Various ag production stakeholders can add to, as well as view, elements of a product's journey from production to consumption. Instead of requiring various systems to talk to one another, blockchain solutions offer a data layer that can sit across all of them. Combined with advances in electronic tagging and labeling, that enable things like location, temperature, and proximity, the journey through the supply chain will be more detailed than ever. These details will empower all forms of continuous improvement along the way. This in turn will enable retailers to tell the story of a true farm-to-table journey in such a way that has been difficult to tell otherwise.

Bitcoin and the Blockchain Boom

The advent of bitcoin—the first digital currency—introduced the concept of blockchain as a way to conduct financial transactions electronically in a decentralized and highly secure manner.



MEGAN BEAUPREZ

CUSTOMER VERIFICATION SPECIALIST



TELL US ABOUT YOUR BACKGROUND. DID YOU GROW UP IN AGRICULTURE?

I grew up in a small town in Eastern Colorado on a large farm and cattle operation. Our cow/calf operation consists of 3 different ranches where we raise Maine-Anjou and Red Angus cattle. I have also showed cattle across the country, which made my passion for the beef industry grow even more. After high school, I attended Colorado State University and graduated with a degree in Agricultural Business.

WHAT DO YOU DO EVERY DAY AT WHERE FOOD COMES FROM?

I work in the IMI Global division as a beef Customer Verification Specialist where I engage with cow/calf operations and facilitate their enrollment in a number of our value-added programs. I am also responsible for the management and distribution of EID (electronic identification) tags for our beef customers.

HOW HAVE YOU SEEN THE TECHNOLOGY YOU WORK ON CHANGE AGRICULTURE?

Traceability is critical to understanding information about an animal and where it has been throughout the supply chain. As EID tags are required for the majority

of our programs, not only are we able to trace animals back to their ranch of origin, but we can also see what programs those calves are approved for as they move. Our EID tags allow us to bring traceability and verification together, which is a huge added value to the individual beef producer and the industry as a whole.

HOW DO YOU VIEW YOUR PROFESSIONAL AND THE COMPANY'S INFLUENCE ON THE INDUSTRY?

Every day we are working with beef producers around the country who are volunteering to enroll their cattle in these value-added programs. In working side-by-side with them to help achieve or maintain verification programs, I'm able to see the effort they put into their operations, what their cattle mean to their family and their livelihood, and how important it is for them to carry on their way of life and bring value back to the ranch. I can't think of anything more influential to the industry than helping to create a more sustainable way of life for producers and be a part--if even just a small part--of helping them to pass the ranch on to the next generation.

WHAT DO YOU SEE COMING DOWN THE PIKE? WHAT ARE THE FUTURE INNOVATIONS PRODUCERS AND

CONSUMERS CAN EXPECT?

The beef industry is truly starting to invest in traceability and verification programs like we've never seen before. I have been managing tags for IMI since 2016 and I can't remember a time when we were moving through the volume we are today. It is exciting to see the industry buy in to these programs and really experience the value they provide. I feel like we are on the brink of something really exciting--traceability can open so many doors, and by innovating with improved technology, bundling programs, and looking ahead to the next market opportunity, the sky is the limit for beef producers in the United States.

WHAT DO YOU LOVE MOST ABOUT WHAT YOU DO EVERY DAY?

Coming from an agricultural background, I knew I wanted to stay within the industry, as it is so important to me that WFCF allows me to do this. I love getting to work with cattle producers across the country and learning about their unique operations. No two are the same--even if they share a fence line! But that is what makes what we do so rewarding. I get to be part of a team that truly makes a difference in the beef industry, and that is what matters most. 🌱

VERIFYING YOUR BREED ADDS VALUE!

Learn more about our Breed Verified programs today!



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COVID-19 AND THE FOOD SUPPLY CHAIN

HOW AMERICA'S FOOD INDUSTRY ROSE TO THE
OCCASION IN THE FACE OF A PANDEMIC



HUMAN EXISTENCE WILL NEVER BE THE SAME.

DESCRIBED BY SOME AS A ONCE-IN-A-CENTURY PANDEMIC, COVID-19 HAS IRREPARABLY CHANGED NEARLY EVERYTHING ABOUT DAILY LIFE. AT LEAST THAT'S THE WAY IT FEELS RIGHT NOW. THE NATION REMAINS IN THE THROES OF THIS PANDEMIC, TIP-TOEING THROUGH OUR DAYS WITH EVER-PRESENT SPECTER OF A SPIKE ON THE HORIZON.

BY BOB WELCH

SAVANNAH SCHLAUFMAN PHOTO

And despite the uncertainty and disruptions, industry must march on. The food industry, in particular, came under intense scrutiny during the initial wave of infections in the spring of 2020.

Food security is a given in the United States—most Americans simply take that there will be food in the supermarket for granted. However, the industry's supply chain was strained to its limits, exposing its weak points in the early days of the pandemic.

Yet, the resiliency and innovation of its leaders was also exposed. People rose to meet challenges, find solutions and are now working toward maintaining the efficiencies of our food supply chain while building in more security.

UNDERSTANDING THE AMERICAN FOOD SUPPLY CHAIN

Americans spend about somewhere between 6 and 9 percent of their household income on food—easily the least of any nation in the world. Many sub-Saharan countries, for example, spend upwards of half of their income to eat. This, inarguably, is due to the highly efficient nature of the American food supply. Consumer costs for Americans are kept so low because the food supply system operates like a Swiss timepiece.

“Within the United States we've created supply chains that are geared towards a very stable set of consumer demands,” says Ken McCarty of McCarty Family Farms, a dairy in Colby, Kan. “And when that supply chain or that set of consumer demands gets interrupted, our supply chain is not nimble enough to handle those types of interruptions.”

Like the dairy industry, with beef and pork there is almost zero waste. Different cuts are sent to different markets, adding value to the carcass as whole and thus keeping the overall cost to consumers low.

“The way you maximize the value of the carcass is putting the right cut, in the right market, at the right time,” says Dan Halstrom, President and CEO of the U.S. Meat Export Federation. “The whole reason we can maximize the value of the carcass is because we keep the higher demand products domestically and some of the lower demand products here are shipped overseas, and it maximizes your carcass value.”

What's more, the decades-long march to consolidation among food processors led to increased efficiencies as well. While that is true in the meat industries, the dairy industry is seeing that trend as well.

“Typically, what you see is when dairies consolidate, productivity per cow as a whole increases,”

At the farm level, the process is similarly regimented. In pork industry, for example, a pig is born and nursed by its mother for three weeks. They're then moved to a nursery for seven weeks. When they reach





about 60 pounds they move to a finishing barn where they stay until they are six months old and ready for harvest. Through this entire process, they are housed in climate-controlled buildings.

“There’s always a place for that pig to go once they’re born,” says Heather Hill of Hill Farms in Greenfield, Ind., a 600-sow farrow-to-finish operation. “And there’s very little time in between each phase. Once we sell a barn and empty it out after the last load, we maybe have a week at the very most, sometimes only a couple of days to get it cleaned and disinfected and ready for the next group of pigs to move in there.”

For nearly everything produced in agriculture—but especially animal products—a similarly proficient system is in place in order to operate profitably in a low-margin business.

WHAT HAPPENED WHEN COVID HIT?

On March 11, 2020 the World Health Organization declared COVID-19 a pandemic. Two days later, President Trump declared it a national emergency.

Americans reacted by stockpiling necessities. Toilet paper and meat leading

the charge. Grocers say their shelves laid bare within the week.

“With virtually every state sheltering in place for weeks, it massively increased hoarding and hoarding specific to frozen foods, meat and poultry, toilet paper,” says Tom Heinen of Heinen’s Fine Foods, a grocer with stores in Ohio and Illinois. “Those items, obviously cleaning and hand sanitizer, as well, was nowhere to be found.”

While demand skyrocketed for some products, it simply shifted for others. Eggs, for example, are divided into two categories: shell and liquid. Most of the liquid eggs go into the food service business. When restaurants were shuttered, the liquid egg market became non-existent. Some liquid egg producers could sell to shell egg industry, but in other production scenarios, liquid egg is the only possible outcome.

“From some of what I heard from my peers, it sounds like there was some egg products having to go into landfill, just literally not enough storage space for the product that was out there,” says Sam Krouse, VP of Business Development with MPS Egg Farms, the eighth-largest egg producer in the US located in North Manchester, Ind.

continued



PRODUCTION AGRICULTURE

POTENTIAL DISRUPTIONS: dramatic weather (drought, blizzard, flood); damage by insects; spoilage; unavailable labor force; disease



PROCESSING

POTENTIAL DISRUPTIONS: blemished or damaged produce; unavailable labor force; contamination;



Meanwhile, shell egg producers were unable to meet the increased demand.

The dairy industry was similarly affected. Each spring, cows go through what is termed the spring flush—producing more milk as temperatures become warmer and days longer. Suddenly, during a time of increased production, restaurants and schools are shutting down.

“When you shift a tremendous amount of fluid milk from, let’s say, a packaging line designed for school and restaurant consumption toward an extreme demand on the grocery store side of things, we don’t have the ability to shift gears that quickly,” says McCarty. “Then, as we do shift gears there isn’t enough supply chain continuity to understand, ‘Okay, hey, me as a processor, I have shifted gears and geared up to be able to provide you with all the gallon jugs that you need. Yet you

as a retailer are still restricting purchases to two gallons a person.’ The U.S. was just drowning in milk.”

Reports of milk being dumped were not uncommon.

As processing plants for all products shifted gears, the next problem began to surface: human COVID infections in those plants (not food or milk being contaminated in any way).

“When meat plants closed down, there became a true meat supply shortage,” says Heinen. “During the worst of it, the wholesale meat pricing in the U.S. jumped anywhere from 50 to 100 percent on items.”

Meanwhile, the live cattle and hog prices plummeted. Because the food supply chain bottlenecks at the processing plant—and they became unable to keep up with demand—the prices on either side moved drastically in opposite directions.

THE FOOD SUPPLY CHAIN



HOW DID THE FOOD INDUSTRY RESPOND?

In the beef industry, direct-to-consumer marketing boomed. Small, local processing plants became booked a year in advance virtually overnight. Freezer sales skyrocketed.

And, of course, companies shifted protocols to improve worker safety through personal protective equipment, increased cleaning, and improved social distancing.

“Our challenge is to first and foremost keep our associates safe,” said Heinen of

his 3,000 employees. “Seemingly every day, there was a new installation of something. We started by washing hands, don’t come in sick, and use hand sanitizer. But then it morphed into wipe the carts every day, separate your cashiers from the customer. We put up plexiglass shields on all of our registers. That then morphed into making sure that we only ran five or six registers in a store. That morphed into social distancing markings at the register and in front of any service area. That morphed into occupancy limits where we could control the number

continued

of people in a store without counting the working associates.”

Of course, the entire food supply chain—farms, packing plants, distribution center, delivery, and retail—all implemented these and other safety measure where appropriate. But many have gone further to examine and rework crisis plans. In the face of worker absenteeism, companies may also invest more heavily in automation.

“One thing we’re looking at is how we plan for enormous spikes in demand like this,” says Krouse. “We were really fortunate to have that Easter inventory built up last spring, but knowing what other levers can we pull, even in the immediate future. Say this pops up again and we’re in the same position of needing to find that kind of volume. What can we do to do that? So we’re doing more contingency planning like that. Hopefully, we don’t have to use it, but that’s certainly something we’re thinking about.”

The pandemic also forced the food industry to find new ways to get their products in the hands of consumers.

Ready-made, curbside pick-up, drive-through, and delivery services exploded. Many restaurants and grocery stores had begun these services pre-pandemic and were therefore well-positioned to meet the shift in demand.

Some 40 percent of restaurants added delivery to their services and plan to continue. DoorDash, one of the existing food delivery services, increased its sales by 110 percent. Delivery order size went up, as well, with Grubhub reporting an average \$40 increase per order.

WHAT DID WE LEARN?

“I think the first takeaway—and this goes for the government too—is we need to have a stockpile of PPEs and any other necessary equipment, so that if this happens, we can activate it right away. And frankly, we’ll be a lot smarter if this happens again,” said Heinen.

For most producers, processors, distributors and retailers, preparedness is the first order of business. Obviously,



RYAN KANODE PHOTO



everyone was surprised by what unfolded in the spring of 2020. Interestingly, many producers and processors have protocols in place for animal-borne diseases, so shifting to deal with human illnesses isn't an entirely foreign concept.

"I'm on the board of directors for the National Pork Board," says Hill. "And one of the things that we've been doing for a very long time is crisis preparedness. That has really paid off throughout all of this because we've really been able to shift resources around. And I think that's kind of a takeaway too, in terms of how we run our operations. We can't just consistently be like, this is how we've done it for generations. We have to be progressive."

Secondly, the entire food supply chain—from farmers to servers—hopes that through this pandemic the consumer sees the food industry as it truly is. That begins with what it takes to operate.

"Ag is inherently a very debt laden enterprise," McCarty says. "And if we see a bump in inflation or a bump in interest rates or a restricting of access to capital, I'll tell you, the food security that we've all enjoyed could drastically change. My hope is that people wake up to the fact that we've been pretty blessed in our country to have cheap, abundant, high quality food stuffs for... forever, really. Our country has never really starved, not for the past 100 years, anyway."

Of course, it's only fair at this point to mention that the federal government did step in to ease some of the immediate losses producers and retailers suffered through various relief programs. Desperate times called for desperate measures. Beyond the financial side, though, food producers and retailers all hope their consumers might realize there are people behind this amazing food security the country enjoys.

"I think we've been very blessed as consumers to go to the grocery store and anything and everything we want is always there," Hill says. "And if we want to go out to eat, we go to a restaurant and you really could eat whatever you wanted. Hopefully we now all have an awareness of how we all fit into the picture to make this happen."

What's more, like doctors and nurses, food workers were on the front lines during this pandemic to serve humanity.

"The entire food industry responded amazingly," Heinens says. "I mean people worked their butts off to make sure extra trucks showed up. I think everybody involved with the food supply chain and the grocery industry should be so proud of the job we've done while people stayed home and depended on us."

So, while COVID-19 has changed humanity forever—those in the food industry hope that it's a change for the better. 🌱





BIG DATA

IN AN OLD BUSINESS

HOW THE BEEF INDUSTRY IS GRAPPLING
WITH EMERGING TECHNOLOGY

BY BOB WELCH



Animal identification as it relates to ownership is an old problem. In Genesis, Jacob and his father-in-law Laban divvy up their flock of sheep and goats based on markings (Laban got the white ones, Jacob the speckled ones). This, of course, was an imperfect way of equitable distribution and resulted in no small degree of jealousy and hostility.

In Egyptian and Roman times, there is strong evidence of hot-iron branding as a means of identification of ownership. Those traditions survived the centuries and became the sole means of animal ID on the Great Plains of the American West frontier.

That method, while better, was not without flaws. The infamous story of the “Murder Steer” and countless other Wild West rustlings, killings, and shootouts attest to the loopholes of branding.

Branding, however, was only designed to record one data point: ownership.

In the wake of the technological revolution, the fact that cattle possess millions of points of data is beginning to take hold in the industry and has revolutionized the way modern beef producers catalog, track, and analyze their product.

While production efficiencies and value-added marketing strategies are the economic drivers of domestic animal identification efforts, disease outbreaks are perhaps the most compelling argument for government-mandated traceability solutions. As such, almost every country producing a significant amount of beef has developed a government-driven, nationwide animal identification protocol—except the United States.

A BRIEF HISTORY

It’s not that the U.S. government has not been involved in the beef cattle market. In the early 20th century, hoof and mouth disease was the industry’s biggest threat. Government-imposed quarantines were among the solutions, but eradication of the disease didn’t happen until nearly 324,000 cattle were euthanized.

Later, when brucellosis became a problem the U.S. government backed cooperative efforts toward eradication and today it is recommended that all heifers under the age of 12 months be vaccinated. While not mandatory, many states require proof of vaccination for interstate shipping.

“THE OBVIOUS PROBLEM IS THE SPEED OF A PAPER-BASED SYSTEM. IT COULD TAKE WEEKS OR MONTHS TO TRACE BACK TO AN INDIVIDUAL ANIMAL.”

JOHN SAUNDERS

Decades later, in the 1990s, a global push for animal traceability was afoot. Mad Cow Disease, or BSE, hit the European Union in the 1990s and 2000s and became one of the primary drivers for nation-wide systems. In response to the outbreaks and epidemics, most major beef producing countries began ramping up their protocols, including the USDA. In 2004 the National Animal Identification System was launched. The concept was to provide animal health officials with the capability to identify all livestock and premises that may have had contact with a diseased animal within 48 hours.

The program, however, was met with immediate and staunch resistance. Confidentiality, information security, and cost were the primary concerns.

Yet many saw an opportunity.

“There was a lot of people that were looking at animal identification, and specifically beef identification, as a way to coordinate the beef supply chain in a way to meet all these new opportunities around the world,” says John Saunders, President and Founder of Where Food Comes From.

So he, along with wife Leann, started a company named IMI Global in an effort to seize some of those opportunities. Since then, they’ve become the largest independent, third-party verification entity for the beef industry. Along the way, the company has grown to verify many agricultural products and created an umbrella company called Where Food Comes From.

THE TECHNOLOGY

At the same time, Allflex—known for its ear tags—was hard at work helping create the future of cattle identification.

“The traceability programs started with visual tags with serialized numbers on them in the early ‘90s, and it evolved very quickly to a machine-readable barcode,” says Glenn Fischer, President of Allflex USA.

However, environmental factors quickly exposed the inefficiencies of reading barcodes. For one, dirt and manure would obscure the codes. Next, the barcodes had to be read in a line-of-sight fashion.

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“IT TAKES SOME EFFORT BUT A LOT OF THE THINGS THAT IMI AUDITS AND A LOT OF THE VALUE-ADDED FEATURES ARE NOT A LOT ADDITIONAL WORK BECAUSE WE DO MOST OF THOSE THINGS JUST FROM A MANAGEMENT PERSPECTIVE ANYWAY.”

BUTCH MAYFIELD

Quickly, the technology pivoted to radio frequency identification.

“Work was being done in the early ‘90s on electronic ID, and its radio frequency, RFID,” Fischer says. “We saw different programs, at different speeds, start to adopt radio frequency ID in the place of the barcodes, because it was no longer line of sight. It didn’t have to be clean tags. It could be animals passing by a handheld or panel antennas. And some global standards came into play that defined the use of radio frequency ID in livestock applications, and so globally, there’s been broad acceptance of those standards.”

With a standard technology in place, Australia, New Zealand, Canada, Uruguay, and many European countries implemented the necessary infrastructure for government-run standards. Some quarter-of-a-century later, these nations—and others—maintain an RFID-based nation-wide animal identification program.

THE UNITED STATES’ NATIONAL ANIMAL IDENTIFICATION SYSTEM

Domestically, the American beef producer did not respond favorably to the National Animal Identification System and this idea specifically. The most vocal and consistent voice of opposition to the NAIS is the Ranchers Cattlemen’s Action Legal Fund (R-CALF). And their complaints were effective.

As a result, the NAIS program is strictly voluntary at this point.

“Literally now, the U.S. is one of the only countries that doesn’t have a mandatory ID program,” says Saunders. “It’s almost three decades down the road of most everyone else in the competitive red meat space globally, is able to make claims around traceability and tying it to a number of other factors.”

However, some U.S. producers do employ the use of RFID tags to enroll voluntary programs such as Age and Source Verified, Non-Hormone Treated, or Verified Natural Beef. There are two



types of tags producers can use. To enroll in source-verified programs, producers may need a government-issued premise identification number, which is managed by the producer's individual state. These tags would all have an "840" country code. Producers who do not want participate in programs in which their premise becomes government enrolled, can use manufacturer coded EID tags (Allflex's code is "982," for example). The information on those tags stays strictly with the independent third party verifying the claims they make on their cattle.

The original idea from the government was as the NAIS program was implemented, over time producers would all transition to the 840 tags.

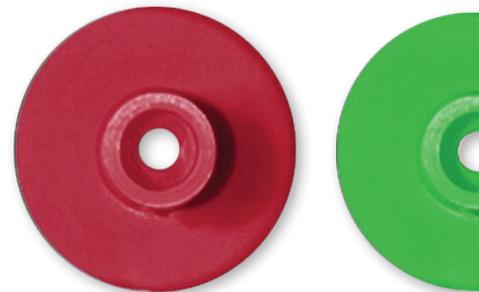
"We have a government program in place right now," says Nevil Speer, independent consultant and Chairman of the Board for the National Institute for Animal Agriculture. "The Animal Disease Traceability is the law of the land. Really, all of the efforts on the government side are

trying to make it more efficient, because it's woefully inefficient. We're not using technology. We're using things like metal tags to identify animals. You've got to write those down, and then you store that information somewhere on a piece of paper. We can probably trace them, but it's going to take a long time and a lot of effort, and a lot of people going through various kinds of papers. So yeah, let's make the system more efficient, absolutely."

In 2013, the USDA published an Animal Disease Traceability (ADT) rule for the interstate movement of beef cattle stating they must be officially identified and be accompanied by an Interstate Certificate of Veterinary Inspection document. This allows for brands, metal tags, tattoos, and other identifying methods.

"We have a fully traceable paper-based system right now," Saunders adds. "The obvious problem is the speed of a paper-based system. It could takes weeks or months to trace back to an individual

continued



"YOU CAN HAVE A REGULATORY PROGRAM, AND YOU CAN CREATE VALUE HAND-IN-HAND."

GLENN FISCHER

animal. Our inability to contain a situation quickly in the midst of a health epidemic has serious economic implications for the U.S. I can't imagine that any practical, common-sense beef producer that I've ever met wouldn't say that that's a legitimate concern."

In response to these concerns, the USDA announced plans for an update to the ADT in April of 2019 that would require the use of official, individual RFID tags by Jan. 1, 2023. The plan specifically omits feeder cattle and other cattle and bison that move directly to slaughter.

THE RESISTANCE

In October of 2019, R-CALF and the New Civil Liberties Alliance and ranchers from Wyoming and South Dakota filed a suit seeking an injunction against this action.

While R-CALF declined to be interviewed for this report, their news release stated, in part, that "The existing regulations, adopted in 2013, allow livestock producers to use the types of effective animal identification techniques and devices that have been widely used by the industry for over 100 years, including brands, tattoos, permanent metal ear tags, group/lot identification, and backtags on animals destined for harvest."

The news release also cites concerns of extralegal lawmaking by the USDA, gifting the RFID tag manufacturers profits, and subjecting the cattle industry to greater risks of disease from Mexico and Canada.

"Our lawsuit draws a line in the sand telling the USDA that our industry will no longer stand for the agency's blatant government overreach." R-CALF CEO Bill Bullard stated in the news release.

While not outlined in their news release, another concern some in the industry have is the ramp-up time to make sure the RFID technology is working without glitches at the big auction markets.

THE ACCEPTANCE

There are many beef producers who have already adopted the use of RFID tags for their products and see it not as an overburdening cost, but a chance to add value.

Butch Mayfield, managing partner of Mayfield Ranches in Animas, N.M., is one of those. His ranch is enrolled in Source and Age Verification and the Non-Hormone Treated Cattle program. His registered bull herds are verified under the CharAdvantage and Black Angus Verified Beef programs.

"It takes some effort but a lot of the things that IMI audits and a lot of the value-added features are not a lot additional work because we do most of those things just from a management perspective anyway," Mayfield says. "And so all we're doing is getting credit for it by having audits by IMI and then those buyers are assured that we're doing what we say we are doing. We feel like we average at least \$75 a head on our calves and that would be a calf averaging around 500 pounds."

And in a year like 2019, when the markets and weather were especially tough in his area, Mayfield could fall back on the premiums his cattle brought on Superior Livestock Marketing's video sales. As for information confidentiality, privacy, and government overreach, Mayfield dismisses them.

"I also rep for Superior Livestock and I have a part of my clientele base that feels like they don't want government interference or they don't want auditors on their ranch or whatever," he says. "I think it's an archaic attitude and a lot of those people have become friends of mine over the years and I wouldn't criticize them. It's their prerogative. But in our industry, that's the least of my worries. I'm worried a lot more about packer concentration and manipulation of the CME for profit taking and things like that."



In essence, there's a significant number of producers who don't share the R-CALF stance and are simply looking for ways to add value to their product.

"I think there's definitely a groundswell, and I think there's a critical mass of the industry, a subsection, that's really embraced that and moved forward, and certainly benefited from that," Speer says. "They've been able to take programs like Source and Age Verification, and NHTC, and whatever and benefit financially. Also, that begins to be able to feed back in terms of traceability, in terms of information management and making better management decisions. It's a benefit to the individuals, but it also benefits the system."

What's more, many of these producers—while collecting, sharing, and monetizing valuable data points on their products—are not sharing that with the government.

"Probably one third of the tags we sell are the 840 ADT compliant tags," says Saunders "There's still two-thirds of them that are these manufacturer-coded tags, which only we, that being IMI Global, knows where those tags were distributed to. There's no law that says that we have to give that to the USDA. So we have this kind of buffer. The confidentiality of the producers, obviously, is of utmost importance for us. It's this kind of free market way of producers being able to say, 'Yes, I comply, but no, I'm not willing to give up the confidentiality of that

information.' I am not in favor on the mandatory ID program at this point. I think we're moving toward a functionally mandatory program."

Surprisingly, Saunders isn't the only one who feels the market and the consumer should drive the regulations.

"You can have a regulatory program, and you can create value hand-in-hand," Fischer says. "And ultimately, that's what this should become if the USDA moves forward with a national traceability program. It should be something that works in context and in concert with creating value. I like working in an environment where we create value for producers. And you know what? If they don't see value, they don't buy our product next year. So it's incumbent on us not to be in an environment where the government's mandating the use of our product, but that industry finds value in our product."

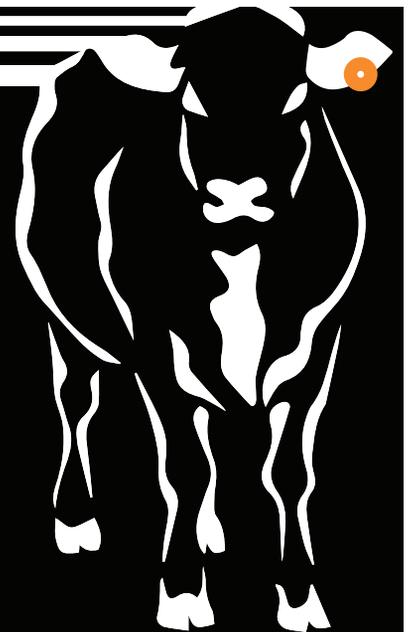
FUTURE IMPLICATIONS

What's next, and how the lawsuit and ADT implementation will play out are yet to be seen. But undoubtedly, there is a massive amount of data being collected, even on a voluntary basis. In fact, technology such as retinal scanning, DNA scanning, artificial intelligence, ultra-high frequency radio signals, and nanotechnology are among new ways being explored to collect that data. So

continued

HOW TO GET STARTED TRACEABILITY STARTS AT YOUR RANCH

Looking to add traceability to your operation? The first step is to apply EID tags at the ranch before cattle change locations. If EID tags are applied at the ranch of origin, that ranch can also qualify for IMI Global's US Verified Source verification program, for which ranchers have received a premium for many years. There are many programs that ranchers can add on after Source Verification, depending on their record keeping. Learn more and get started at imiglobal.com.





"YOU HAVE TO HAVE A MECHANISM OF SERIALIZATION."

JOHN SAUNDERS

accessing, searching, analyzing, and utilizing that data in a helpful way will be the next crucial step for the U.S. beef industry to take.

Regardless of how the data is collected, storage and access of that data is the next hurdle to overcome, and blockchain (see page 12) may be the perfect fit for the beef industry. Simply put, blockchain is a list of digital records called blocks that are linked using cryptography. The data in blockchain is immutable—unable to be changed—yet can be shared and accessed by various stakeholders.

"You have to have a mechanism of serialization," Saunders says. "When you dig into what serialization means, it's a unique non-repeating identifier. With ISO compliant tags that the industry uses today, you've got an ISO compliant, non-repeating tamper evident tag. Which accomplishes that basic component of blockchain from a way to identify those unique widgets, whatever those widgets are, in this case being cattle. Then being able to harness that data, whether it be in a blockchain or some other more centralized database, to do big data searches and to query that data, and to say like, 'How many cattle are in Kansas?'

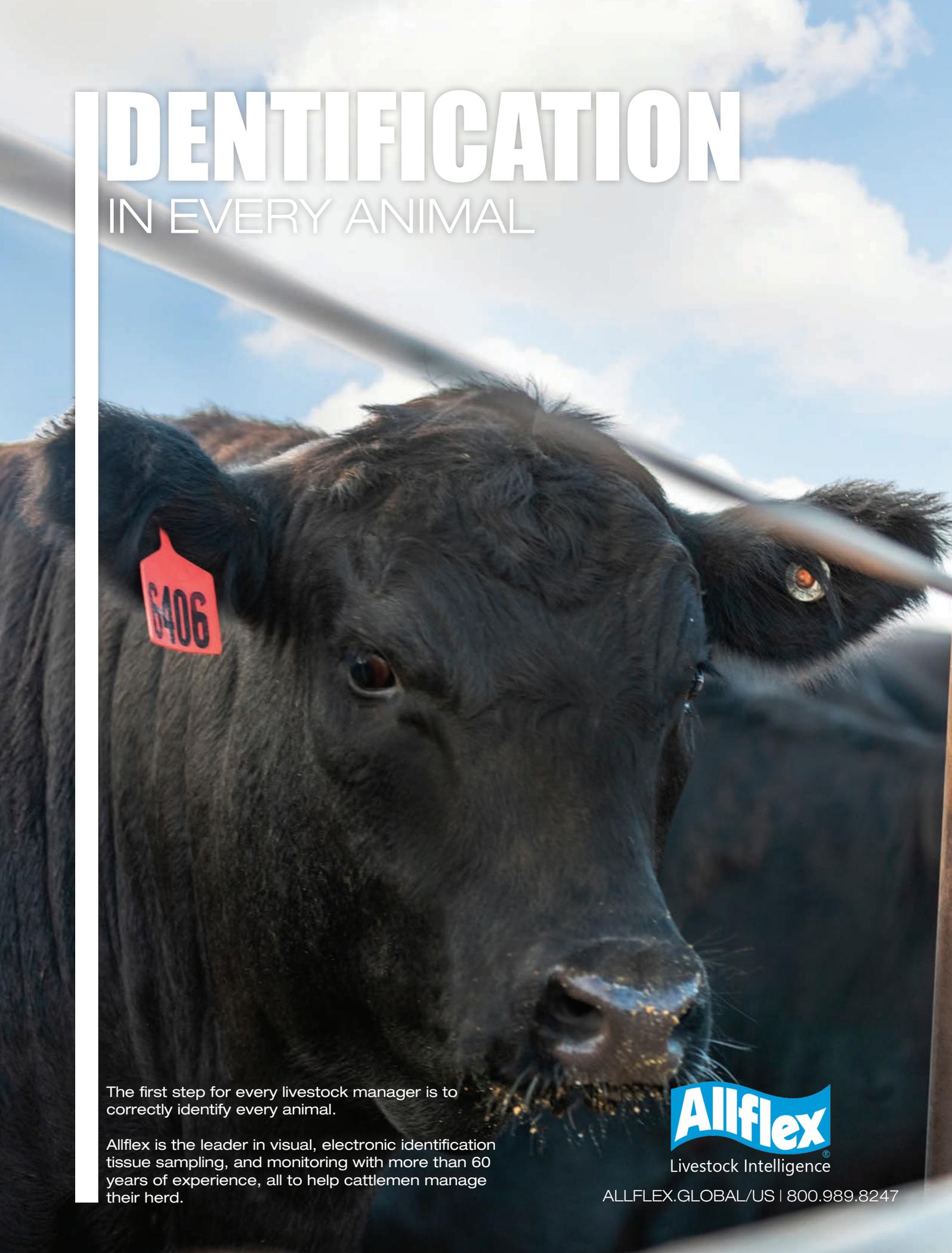
and 'How many of them are being fed right now within a 50 mile radius of Garden City?' In the case of an animal disease outbreak, that's something you would need to access that kind of information."

And while the capabilities to trace and mitigate damages in a health-related crisis outbreak are the most critical from a public safety perspective, the advances the industry can make in terms of data analysis have many excited.

"Ultimately, when we talk about technology, especially on the animal side, we always talk about products," Speer says. "Rarely do we talk about knowledge management. We're doing some of that, but when you start talking about big data, and then you begin to compile information, it can make better decisions, and drive benchmarking and data-driven decisions. We can make huge strides in this business in terms of efficiency and productivity, and then ultimately, quality and cost. The grain side is light years ahead of us. We start implementing that on the animal side? That's big. I'm not saying we're not, but as that becomes bigger and more mainstream, wow." 

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BEEF TENDERLOIN

Serves 12, consider your favorite horseradish cream.



INGREDIENTS

- 5-pound beef tenderloin
- Olive oil
- 2 teaspoons table salt
- 2 teaspoons black pepper
- 1 teaspoon white pepper

INSTRUCTIONS

- Preheat oven to 475 degrees and remove the fat and silver skin.
- Brush the meat with olive oil and completely coat the tenderloin with salt, black pepper, and white pepper. Insert the meat thermometer.
- Place in the oven for 10 minutes at 475. Then lower the oven temperature to 425 and continue cooking for about 20-25 minutes or until the thermometer reads 130 for medium rare.
- Remove the tenderloin and let the meat rest, but remember it continues to cook so slice and serve within 10 minutes. 🌿



BEEF COOKING CHART

TEMP	LOOK	FEEL
Rare 120 F	Red, shiny appearance	Very soft
Medium Rare 130 F	Deep red to pink	Soft, with slight resistance
Medium 135 F	Light pink in the middle	Between soft and firm
Medium Well 140 F	Light pink with graying on edges	Firm with some tenderness
Well 150 F	No pink	Firm



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CAREFUL CONSIDERATION

WFCF Launches the BeefCARE Sustainability Standard

Among all the misconceptions levied at the beef industry, perhaps the most ranking to producers is the idea that they don't care for or about the animals and land under their stewardship. Anyone who has fought the elements—often putting their and their family members' lives at risk—for the sake of their animals knows otherwise. Anyone who has spent more money on vet bills than an animal will ever return knows otherwise. Anyone who has sold their entire herd for the sake of their land amid devastating drought knows otherwise.

Now, Where Food Comes From wants to help producers set the record straight. With the launch of the BeefCARE Sustainability Standard, producers can create and continuously improve sustainable practices based on their particular circumstances as they relate to region, climate, natural resources, production style, workforce, and community interaction.

"We believe BeefCARE certification will create value throughout the beef supply chain while at the same time authentically communicating the story of the invaluable role producers play in animal husbandry, the health of the land they work and live on, and people and communities," says Leann Saunders, President of IMI Global and Where Food Comes From, Inc.

In fact, more than 7,000 cattle from 11 states are already enrolled and in January's Superior Bellringer Sale, 65 lots were BeefCARE verified.

The BeefCARE Sustainability Standard launch comes on the heels of the approval of the program by the US Roundtable for Sustainable Beef, a multi-stakeholder initiative developed to advance and support continuous improvement in sustainability in the US beef value chain.

To learn more, visit www.wfcfcare.com. 



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