FARMING’S FUTURE
More ways to get your very best crops.

That's smart.

Grow Smart® with BASF
GrowSmartSoybeans.com

Always read and follow label directions.

Engenia Herbicide is a U.S. EPA Restricted Use Pesticide. Additional state restrictions may apply. Grow Smart is a trademark and Credenz, Engenia, Liberty, Priaxor, Xemium and Zidua PRO are registered trademarks of BASF. © 2018 BASF Corporation. All rights reserved. APN 18-CB-0010
Ag Tech Moves at Warp Speed
Technology is more integral to agriculture than ever before. But how do consumers feel about its use in food production? ISA commissioned a study to find out and help lead the discussion.

Bet on the Jockey
The challenge of successful venture capital investments in agriculture is to be able to sift through the noise and find the most promising innovations with the best possible team.

The Game Changers of Ag Investment
Instead of following the overall economy, opportunities and risks for agriculture and food sector investments parallel the opportunities and risk in production agriculture.

Block Chain or Blocked Chain?
Blockchain’s potential in agriculture appears increasingly favorable. However, barriers to adoption do exist, and must be recognized and managed by the food supply chain.

Innovation Helps the Well Run Deep
Adapting to climate change, managing existing water supplies and embracing new technology are just some of the innovative strategies needed to tap into water’s future potential.

DID YOU KNOW?
The annual, one-day ILSoyAdvisor Soybean Summit will be held Feb. 5 at the Crowne Plaza Springfield. The event will educate participants about management techniques that lead to higher yields and greater profitability. Visit ILSoyAdvisor.com for details.

Tanner Ehmke
Tanner Ehmke is manager of CoBank’s Knowledge Exchange Division focused on analyzing critical economic issues and sharing results with customers and other stakeholders.

Differences in the Future
Agriculture continues to shed traditional production norms in favor of fresh technology and innovation. The Illinois Soybean Association (ISA) is engaging with both long-time companies and newcomers to make a seamless transition and anticipate the needs of the future.

Contents | DECEMBER 2018
VOLUME 8 • NUMBER 8

6 COVERAGE STORY
Ag Tech Moves at Warp Speed
Technology is more integral to agriculture than ever before. But how do consumers feel about its use in food production? ISA commissioned a study to find out and help lead the discussion.

10 Bet on the Jockey
The challenge of successful venture capital investments in agriculture is to be able to sift through the noise and find the most promising innovations with the best possible team.

12 The Game Changers of Ag Investment
Instead of following the overall economy, opportunities and risks for agriculture and food sector investments parallel the opportunities and risk in production agriculture.

14 Block Chain or Blocked Chain?
Blockchain’s potential in agriculture appears increasingly favorable. However, barriers to adoption do exist, and must be recognized and managed by the food supply chain.

16 Innovation Helps the Well Run Deep
Adapting to climate change, managing existing water supplies and embracing new technology are just some of the innovative strategies needed to tap into water’s future potential.

26 Difference Makers
Tanner Ehmke
Tanner Ehmke is manager of CoBank’s Knowledge Exchange Division focused on analyzing critical economic issues and sharing results with customers and other stakeholders.

Departments

4 PERSPECTIVE
5 OUTSIDE PERSPECTIVE
23 PARTNER NEWS
25 VOICE FOR SOY
Water, Food and the Technology that Ties Them Together

In March, the United Nations (UN) General Assembly declared 2018-2028 the International Decade for Action: Water for Sustainable Development. In making the declaration, the UN noted, “Clean, accessible water is critical for sustainable development and the eradication of poverty and hunger, and it is indispensable for human development, health and well-being.

There is sufficient fresh water on the planet to achieve this. But water-related challenges, including limited access to safe water and sanitation, increasing pressure on water resources and ecosystems, and an exacerbated risk of droughts and floods, remain high on the global agenda.”

The Illinois Soybean Association (ISA) board of directors agrees that water challenges have reached a critical level. We have made water-related issues a priority this year, and hope to lead the discussion on solutions that preserve Illinois soybean producer productivity and profitability. We plan to keep ISA at the center of water quality and availability discussions.

Others also are ringing the alarm on water. According to the World Economic Forum, water is the number one global risk to society; and not just in agriculture. Eight out of 10 U.S. companies face water challenges, finds a study completed by Pacific Institute and VOX Global in 2014.

So, where to begin. Big picture water issues like those outlined by the UN just generate conversation about the related concerns below the surface. For example, the world has sufficient fresh water, but who owns fresh water rights around the world? Who is investing in these rights? With limited access to safe water and sanitation, what technology is used to manage water today and what technology is under development? Exacerbated risk of droughts and floods raises the question of what crops should be produced most efficiently in Illinois, the U.S. and the world.

We dive into some of these topics in this issue. We talk about the future of water management and how irrigation, aquifers and plant technology enter into the discussion. We look at climate change and how that sometimes means water shortage and sometimes water surplus on farms and in cities. And we investigate how technology ties water to future food production.

We also present food for thought on other technology topics. As we approach a new calendar year, we are engaging with industry thought leaders about technology that will improve the food production system, as well as innovative ways on how to pay for these upgrades. See what else we have to say at ilsoy.org. And, as always, we welcome feedback on information we provide.

Watch for our new publication name beginning with the January 2019 issue.

“We have made water-related issues a priority this year, and hope to lead the discussion on solutions that preserve Illinois soybean producer productivity and profitability.”

LYNN ROHRSCHEIB | ISA Chairwoman
Investing in Food and Water Security is Historic Opportunity for American Farmers

MICHAEL TIBORIS, PH.D.

Food insecurity continues to be a major global challenge, despite massive gains in agricultural productivity. By 2050, feeding an expected population of 9.5 billion will require further productivity increases of more than 60 percent on a decreasing stock of available water.

Though stakes are high, this is a major opportunity for the American ag industry to create strong, new international markets for its products and to share smart water management techniques.

Emerging markets currently represent a full 20 percent of U.S. agricultural exports. The African agricultural market alone is expected to reach $1 trillion by 2030. Meanwhile, U.S. agricultural productivity is growing faster than domestic demand, so developing international supply chains is necessary for the future of domestic soybean production. As incomes rise, and more people in the developing world join the urban middle class, we can expect intense demand for agricultural products, especially animal proteins and the silage needed to feed livestock.

More production, however, requires more water. Water scarcity caused by unsustainable consumption, climate change and population growth is a drag on global economic growth, potentially causing losses of as much as six percent of GDP (gross domestic product) in many places, according to the World Bank. With 40 percent of the population living under water stress by then, agriculture will have to do even more with even less water.

U.S. investment in ag development abroad is a crucial element of creating and meeting this challenge. It also has the added benefit of being the most effective response to global poverty.

The vast majority of farmers globally – around 80 percent – operate on less than five acres, making the equivalent of U.S. $1-2 a day. Even marginal productivity gains of a dollar or two daily are a very big deal. This money allows them to send their children to school, purchase additional inputs for their farms and add more nutritionally dense food into their diets.

As the individual purchasing power of rural developing world populations rises, they demand more animal-sourced foods, feed and high-value goods from U.S. producers. Our investment in agricultural development assistance thus paves the way for U.S. agricultural exports.

We know this works because 11 of our 15 top trading partners previously received U.S. development aid. The American Soybean Association advocates for this process through its World Initiative for Soy in Human Health (WISHH).

Chicago Council on Global Affairs research has long detailed the importance of American investment in ag development for achieving these aims. Commitment now will reward farmers everywhere as markets for soy, like everything else, become more globally interconnected.

While the challenges of hunger, malnutrition and poverty can appear overwhelming, the past 25 years demonstrate that substantial improvement is possible. More than one billion people have been lifted out of extreme poverty. Average incomes in low- and middle-income countries have doubled. There are 200 million fewer chronically undernourished people today, despite significant increases in population. American farmers already feed the world through the generosity of food aid programs. But by supporting agricultural development programs, Americans can mitigate global hunger while also investing in their own future. ■
Humans love their technology, don’t they? They are gleefully immersed in a world of artificial intelligence, augmented reality and autonomous vehicles. The self-induced age of innovation has sparked the creation of smartphones, smart cars and even smart water. Technology permeates and controls everyday existence to the point of inescapability.

You don’t have to look far for evidence of this escalating phenomenon. Technology is more integral to agriculture than ever before. As producers look for solutions to everything from labor shortages, sustainability and an unstable climate, to crop quality, shrinking commodity prices and the ability to turn a profit, ag innovators eagerly provide answers with science.

But before the industry gets too far down the technology rabbit hole, there is one simple question that should not be overlooked — how do consumers feel? Will people accept food grown with innovative, scientific and unconventional methods? After all, why invest in agricultural technology if it produces food that no one wants to eat?

These are the questions a recent Confidential Consumer survey commissioned by the Illinois Soybean Association (ISA) checkoff program asked to shed some light on the subject.

IS AG TECH EVEN NECESSARY?

The poll of 500 consumers across the country revealed some eye-opening insights into how the people on the eating end of agriculture feel about technology.

A key finding: Consumers don’t think technology is as critical to agriculture as it is to other industries. Less than half of those surveyed believe technology is extremely important to the success of farming and food production. In contrast, 70 percent of consumers think technology is extremely important to healthcare. Education, energy, transportation and finance all ranked higher than farming when it comes to the importance of technology.

CONSUMER TECH VIEWS VARY

Even though consumers may not understand technology’s role in agriculture, they support its use—to a point. For example, nine out of 10 consumers support using sensors in fields to gather crop data, and almost none oppose this practice.

But when it comes to satellite imagery, nanotechnology and use of robots to plant, tend and harvest crops—the ayes begin to dwindle. Only about three-fourths support using these technologies in food production. As many as eight percent outright oppose them.

Consumers are still wary of gene manipulation, whether it is newer gene editing or genetic modification.

MINDS AND EARS OPEN

The results seem to indicate that consumers are willing to listen and make their opinions on a case-by-case basis. Their minds are open; the challenge is what occupies the space.

“We believe it’s important to engage early in a very transparent way,” says Natalie DiNicola, chief communications officer at Benson Hill Biosystems, a crop improvement company that combines advances in genomics and other technologies to improve food quality.

“Consumers are really interested in how their food is grown. They’re also really interested in who grew it, the values of the person that grew it and what’s happening to the farmers,” she says.

Beyond transparency about ag technology, it’s equally important to communicate why.

“We must help them understand what it takes to truly feed and fuel the world for the next 20, 30, 40 years,” notes Justin Heath, chief marketing officer, Smart Ag, a pioneer in autonomous farm equipment. “We have to evolve, utilize new technologies, new techniques and new practices.”

WHAT DO CONSUMERS WANT TO HEAR?

Communication is clearly key. But what needs to be said and how do we say it?

More data isn’t the answer, according to Alison Van Eenennaam, Ph.D., Cooperative Extension specialist in the Department of Animal Science at the University of California, Davis.

“Has information ever changed anyone’s mind?” Van Eenennaam asks. “It’s much more about feelings. We have to change our communication style to be more engaged and value-driven.”

Conversations must start with what technology means to
consumers, says Sekhar Boddupalli, Ph.D. Boddupalli is president of the Ag Bio Division of Intrexon, owner of Okanagan Specialty Fruits, which used genetic engineering to develop the non-browning Artic apple.

“When surveyed, consumer interest in the non-browning apple was high due to its benefits in convenience and taste. The interest was sustained after explaining the technology simply involved silencing the enzyme in the apple that naturally causes browning,” Boddupalli says.

“The key to gaining consumer acceptance of new ag technology is to understand and promote the consumer benefit,” Boddupalli says. “To date, most of technologies’ benefits have been for the growers. At the end of the day, the world needs food that is abundant, accessible, affordable, healthy and produced in a sustainable way to improve the health of the planet.”

Confidential Consumer research backs up that viewpoint. Consumers support ag technology to help protect water quality, reduce food waste and improve food safety. But fewer strongly support technology to increase crop production or enhance farmers’ profits.

WHO'S RESPONSIBLE?

Who should bear the weighty responsibility of swaying the masses? As with most challenges of this scale and complexity, it takes a village.

“The opportunity is that all of these new tools really could enable a system that’s going to benefit both farmers and consumers alike,” DiNicola says. “But it’s going to take us having meaningful discussion. And it’s really the responsibility of everyone across the chain.”

Corteva Agriscience, Agriculture Division of DowDuPont, proactively paves the way for consumer acceptance of gene editing technology, often years before technologies reach the marketplace.

“We started having conversations more than four years ago and have listened and learned from many different...
stakeholders,” notes Doyle Karr, Corteva Agriscience director of consumer insights and technology acceptance. “With innovations of the past, companies worked through the regulatory process and then took products directly to market. As society changes, we need to think beyond inventing and consider the social license to operate.”

Corteva Agriscience is reaching diverse and sometimes surprising audiences, including religious leaders who may influence consumer attitudes about science and food. A Corteva Agriscience senior research manager recently participated in a “Science Speed Dating” panel at Comic-Con in San Diego, engaging screenwriters, producers and others in the entertainment industry about gene editing.

“We’re trying to make science the hero instead of the villain,” Karr says, adding he disagrees with the assumption that technology companies carry less credibility with consumers. “We have a role to play; consumers want to hear directly about how new technology benefits them.”

And although many may be reluctant to do so, Justin Heath believes some of the outreach must come from farmers themselves. “I think farmers have a role. We live in a digital age where social media and many other channels provide farmers a forum to speak and educate,” he says.

THE BOTTOM LINE
Consumers are skeptical about technology in agriculture, but their minds are open. Survey results show the industry needs to take hard-learned lessons of the GMO backlash and talk now about tomorrow’s innovations. Everyone must work together to not just communicate with consumers, but connect with them on their terms with a message about the good ag tech does for all. ■

<table>
<thead>
<tr>
<th>Terminology matters when it comes to describing technology to consumers (Percent who consider these words “very positive”)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Safe</td>
</tr>
<tr>
<td>• Innovative</td>
</tr>
<tr>
<td>• Science-based</td>
</tr>
<tr>
<td>• Profitable</td>
</tr>
<tr>
<td>• Enhanced</td>
</tr>
<tr>
<td>• Artificial</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Consumer views of gene editing vs. genetic modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Gene editing</td>
</tr>
<tr>
<td>• Genetic modification</td>
</tr>
</tbody>
</table>

SOURCE: CONFIDENTIAL CONSUMER SURVEY OF ADULTS 18+ IN THE UNITED STATES, CONDUCTED 8/30/18 N=511
HERE’S HOW THE SOY CHECKOFF WORKS. The national soy checkoff was created as part of the 1990 Farm Bill. The Act & Order that created the soy checkoff requires that all soybean farmers pay into the soy checkoff at the first point of purchase. These funds are then used for promotion, research and education at both the state and national level.

1/2 of 1% of the total selling price collected per the national soybean act & order

Half goes to the state checkoff for investment in areas that are a priority for that state.

Half goes to the national checkoff for investment in USB’s long-range strategic plan.

0.5%

PROMOTION
RESEARCH
EDUCATION

ROI TO THE FARMER

 Led by 73 volunteer soybean farmers, the United Soybean Board (USB) invests and leverages soy checkoff dollars to MAXIMIZE PROFIT OPPORTUNITIES for all U.S. soybean farmers.
Venture capital infusion in agriculture helps bring disruptive innovation to the marketplace

BY BARB BAYLOR ANDERSON

When venture capitalist Roger Wyse considered investing in ag technology startup Pivot Bio’s nitrogen-producing microbes four years ago, he was confident it was a solid decision.

“When selecting projects, we look at the team. Do they have the research insight and market foresight to bring their product to commercialization? You bet on the jockey,” says Wyse, co-founder of the San Francisco-based Spruce Capital Partners, LLC.

“Next, we look at the technology and the intellectual property potential and whether it addresses a large market need,” he continues. “There are so many small companies entering agriculture. The winners will start to sort themselves out, and investors will invest in the right ones.”

Wyse has been funding promising ag innovations since 1998, long before it was a trend. A plant biologist by trade, he served in academic leadership roles during the 1980s and 1990s before becoming a venture capitalist. Wyse was introduced to Pivot Bio (pivotbio.com) through a Monsanto Growth Ventures contact. His business partner, Ganesh Kishore, worked at Monsanto.

“When we funded our first venture, we had a hard time finding syndicates. Now, with the huge emergence of technology, artificial intelligence, machine learning, big data, imagery and more, there is a much bigger space for venture capital in ag,” he says. “We study the science and the approach and choose projects we think will be truly disruptive in the marketplace.”

Pivot Bio met Wyse’s criteria. The company’s renewable, sustainable nitrogen concept feeds corn crops cost efficiently and with less of an environmental footprint.

“We take nitrogen-producing corn microbes and challenge them to reawaken what has gone dormant through traditional nitrogen fertilizer use,” says Karsten Temme, CEO and co-founder of Pivot Bio. “PROVEN is a reliable and clean alternative to synthetic nitrogen use in corn.”

Founded in 2011 with funds from the Bill & Melinda Gates Foundation, Temme and co-founder Alvin Tamsir had a plan to create a transgenic corn plant that would make its own nitrogen. After realizing the product would take decades of work to reach the point of commercialization, they shifted their business plan to nitrogen-producing microbes and added more investors.

DCVC (Data Collective) led seed financing in 2014 and Series A round in 2016. Other major investors have included Monsanto Growth Ventures, Spruce Capital Partners and Prelude Ventures. Series B funding was announced in October, led by Breakthrough Energy Partners, and included support from existing and new investors like Temasek and Roger Underwood.

“The $70 million in Series B funding will help us bring the product to market. We are selling product now for spring 2019 planting,” says Temme. “We now have a foundation for additional research and development and commercial growth.”

Temme believes venture capitalists are attracted to agriculture because they inherently look to solve problems. He sees such investments as the way to bring more technology to more acres.

“The challenge is how to sift through what is noise and what isn’t. It is all about making life better for farmers, to be sustainable and to shrink the environmental footprint,” says Temme. “Pivot Bio offers a new set of tools that makes corn production easier and more resilient.”

Wyse agrees. “Pivot Bio is different because the microbes reduce corn production input costs by replacing traditional fertilizer costs,” he says. “The Pivot Bio team has scientifically demonstrated value and now they are working with innovative farmers to evaluate the microbes and build their reputation and credibility. That bodes well for farmer acceptance.”

“There are so many small companies entering agriculture. The winners will start to sort themselves out, and investors will invest in the right ones.”

ROGER WYSE
co-founder of Spruce Capital Partners, LLC.
Fight Pythium, Phytophthora and Soybean Cyst Nematode with a combination defense.

Designed to be added to INTEGO® SUITE Soybeans, Aveo™ EZ Nematicide is a powerful defense against Soybean Cyst Nematode and provides complete protection from hidden, quick-spreading diseases that can threaten yield. **Find out more at soybeanprotection.com.**
THE GAME CHANGERS OF AG INVESTMENT

Risks and opportunities for financial opportunity mirror ag production

> BY LAURA TEMPLE

Will 2019 belong to “da Bulls” or “da Bears?” No, not Chicago’s iconic sports teams, rather the market trends that generated their names. And as with sports teams, opinions are divided.

Federal Reserve Chairman Jerome Powell praised the U.S. economy in early October. Private equity and venture capital investments and returns have been strong. But a model tracked by JPMorgan Chase & Co. predicts a 60 percent chance for a U.S. recession within the next two years. Investors monitor such factors for economic trends and to determine investment strategies.

That all may not matter for agricultural investments.

“General investors show increasing interest in the ag and food sector because it does not correlate to the overall macro-economy,” says Sanjeev Krishnan, chief investment officer and managing director for S2G Ventures, a venture capital firm. “It’s inelastic. People need to eat every day, and the importance of long-term global food security is more apparent all the time.”

Instead of following the overall economy, opportunities and risks for these agriculture and food sector investments parallel the opportunities and risk in production agriculture.

INTRIGUING OPPORTUNITIES

Soybean producers often equate investments with farmland, and for good reason.

“The NCREIF Property Index consistently rates farmland strongly,” says Murray Wise, chair and CEO of Murray Wise Associates, a land, auction and agricultural investment group. “To date, farmland has provided great returns, so it’s included in portfolios like pension funds.”

Wise expected land values to fall the last few years. “Land values have dipped slightly, but less than I predicted,” he says. “Stable land values reflect the financial strength of agriculture.”

Producers also monitor emerging opportunities, like the renewable fuel plants of the 1990s and 2000s. Krishnan has unique perspective on the next wave of industry opportunities.

“We see an all-time high in venture capital investments, but the agriculture and food sector represents only two percent of total investments. It is very undercapitalized,” Krishnan explains. He believes agriculture value chain ventures will benefit from the tailwind of investments and advances in other sectors like data science and biotechnology.

“A new generation of entrepreneurs, scientists and technicians will change agriculture,” he says. “New business models and technologies are emerging – all investment opportunities.”

For production agriculture, Krishnan sees opportunities in increasing biodiversity of crop genetics germplasm, more effective and cheaper biologics for crop protection, micronutrients to address soil health and fertility, decision-making and visualization tools, and novel merchandising and financial products to reduce risk.

“I think a new protein supply chain could emerge. That could change the future of the feedlot and create a potential black swan event,” Krishnan says.

REAL RISKS

As with production agriculture, financial experts cite trade uncertainty and low commodity prices as risks for ag industry investments.

“Right now is the most cautious I’ve been on investing in farmland in my 40-plus-year career,” says Wise. “While it’s a solid long-term investment, now may not be the time to get into it. Low commodity prices and uncertain global markets limit farmers’ flexibility to lease ground.”

The 2019 Global Private Equity Outlook from global law firm
Dechert LLP notes that although private equity investments have reached a decade high, the tariff trade wars have serious implications for investors. Agriculture has taken the biggest hit from retaliatory tariffs.

Krishnan says low commodity prices could slow or accelerate adoption of new technologies. “The adoption cycle in agriculture can take a while. As innovative companies mature they find it harder to get capital to grow,” he adds.

However, Krishnan believes producers are willing to try new things and will welcome innovations that help support their future profitability. “It’s exciting to be a part of the early days of these developments and sharing them with farmers, processors and consumers,” he says.

Such optimism undergirds the sector and investments, despite the risks.

“Despite my concerns, I’ve still bought farms in the past year,” says Wise. “I love working with the land and the people in agriculture.”

---

**Risks and opportunities for financial opportunity mirror ag production**

<table>
<thead>
<tr>
<th>INVESTMENT TERM</th>
<th>DEFINITION (SOURCE: INVESTOPEDIA.COM)</th>
<th>AGRICULTURE AND FOOD SECTOR OPPORTUNITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real asset</td>
<td>Physical or tangible asset with value because of its properties</td>
<td>Farmland</td>
</tr>
<tr>
<td>Private equity</td>
<td>Capital not publicly traded from funds and investors that invest in private companies</td>
<td>Private agribusiness, supply chain and infrastructure companies</td>
</tr>
<tr>
<td>Venture capital</td>
<td>Investors financing startup companies and small businesses with perceived long-term growth potential</td>
<td>New technologies and business models for every link in the supply chain</td>
</tr>
</tbody>
</table>

---

Wishing you a **SAFE AND HAPPY HOLIDAY SEASON.**

Agriculture isn’t just a market we serve. It’s what we’re founded on. It’s who we are. And we’re so thankful for the abundance provided by the hardworking individuals who work tirelessly to feed, clothe and fuel the world every day of the year. It’s an honor to serve you. Our team members from Illinois, Minnesota and Wisconsin wish you a joyous holiday season.

Learn more at compeer.com.
Is blockchain a boon or a buzzword? That’s the question ag pundits have been asking as this so-called distributed ledger technology comes to fruition and beyond forward thinking.

First on the scene as the driver behind cryptocurrencies like bitcoin, blockchain professes to provide opportunities for increased transformation and transparency. Experts say its immutability and digital identity offer solutions for supply chain tracing and trackability.

“We’ve seen a lot of movement on blockchain adoption in the ag space recently,” says Mark Pryor, The Seam’s CEO, industry blockchain advocate and founding architect of the company’s online trading and commodity management platforms.

Blockchain’s potential in agriculture also has lately proven out in intense new activity. ADM, Bunge, Cargill and Louis Dreyfus Company announced plans in October to modernize international commodity trading by utilizing blockchain and other technologies.

“Our belief is previous modernization efforts weren’t successful because they weren’t inclusive enough,” the companies shared in joint comments provided to Illinois Field & Bean. “The end goal would be for the seamless exchange of information across the industry that reduces costs, paperwork and inefficiencies and increases visibility and competitiveness for all participants.”

On the food safety side, Walmart in late September put out a mandate directing leafy greens suppliers to use a blockchain-based system called Food Trust, designed with IBM’s help. Suppliers must have the “one-step back traceability” in place by Jan. 31, 2019, which follows an outbreak of E. coli in romaine lettuce. The super-retailer wants easy tracking back to the farm.

After piloting the new blockchain system for 18 months, the company says it can now track a food item from a Walmart store to the farm in seconds. Nine other companies, including Kroger, Tyson Foods and Unilever, have also been testing the system.

“When you get companies like that mandating blockchain because of increased traceability and transparency needs, it brings it to the forefront for food safety and data authenticity in agriculture,” Pryor says.

Collaborations like these are key to successful leverage of blockchain and similar technologies. “In the food supply chain, there are many players with incompatible systems and no real data standards to speak of,” he says. “It’s not efficient when you need to communicate with others and competitors. Companies need to work together to reduce duplication and inconsistencies to drive interoperability.”

The barriers to adopting blockchain are few and easily addressed, says Pryor, who spent 11 years developing The Seam’s cloud-based technology. “People get uncomfortable with transparency, but it’s important to remember that this is truly elective transparency that puts control into the hands of the data owner,” he says.

These barriers are easily overcome by getting players, including
producers, familiar with the science. The move becomes more about knowledge and less about technology maturity.

Still, even with broad-based systems like the one IBM developed, adoption is neither simple nor quick. Interfaces must connect a mass of different software systems, from trucking and processing to shipping. Data must be integrated from processing plants, logistics companies and farms. And retailer and food company business management software must be involved, a mix of digital and paper files and data. Blockchain is tasked with creating the shared digital ledger.

This may be fine for conglomerates ripe with resources, but what of producers?

More than output and expenditure, it’s about faith, says Pryor, who likens it to the Internet. You don’t need to know how it works to take advantage of it.

“Blockchain technology provides a shared source of truth with tamper-proof data that’s protected from outside influences,” he says, adding farmers will likely see little difference in their current processes for supplying data — it’s the technology behind and embedded within new and existing platforms that provides security, traceability and transparency.

“The end goal would be for the seamless exchange of information across the industry that reduces costs, paperwork and inefficiencies and increases visibility and competitiveness for all participants.”

MARK PRYOR
CEO of The Seam

CALCULATE YOUR POTENTIAL FINANCIAL INCENTIVE AT FMCFREEDOMPASS.COM.

FMC is honoring Very Independent Purchasers with exclusive agronomic and economic incentives that offer you more freedom in the field.

SEPTEMBER 1, 2018 - AUGUST 31, 2019

Always read and follow label directions, precautions and restrictions for use. FMC is a trademark of FMC Corporation or an affiliate. ©2018 FMC Corporation. All rights reserved. 18-FMC-2304 11/18
Innovation Helps the Well Run Deep

Water technology opens floodgates of opportunity for rural and urban areas

Confronting norms, challenging existing thinking and incorporating new technology have characterized water pioneers since the first irrigation ditch was dug. Today’s innovators seek to improve ways to discover, use and store water and ensure it is available for future generations.

Professor Fulco Ludwig studies how global changes affect water, food and energy resources and natural ecosystems at Wageningen University and Research in Wageningen, Netherlands. He and his team of Ph.D. and post-doctoral students couple climate and weather models with agricultural models to develop local-scale information systems for farmers worldwide.

“These systems help farmers improve their water and nutrient management,” Ludwig says. “They also help us determine if farmers need to change cropping systems. Plus, we look at the entire value chain and determine how climate change affects risks of different parts of the chain.”

Though technology, such as drones, satellites and GPS, are key to Ludwig’s work, he admits the rate of technological change directed toward farmers’ data can be perceived as too swift.

“We must continue to work on how technology can help farmers make decisions. Currently, a lot of systems give detailed information and farmers struggle with the volume of it,” he says. “The public and private sectors can cooperate to help farmers apply data to individual operations.”

TAKING NO DROP FOR GRANTED

The Arizona Department of Water Resources (ADWR) was created by the 1980 Groundwater Management Act to address declining groundwater levels in the state. ADWR manages and administers surface water and groundwater rights, including drinking and irrigation wells. It also represents Arizona in Colorado River negotiations and in Indian water rights settlements.

To say its conservation work has been successful is an understatement. More than seven million Arizonans used less water in 2016 than in 1957 when the population was just 1.13 million.

“Our focus has been on water management from the beginning,” Jeff Tannler, ADWR area director, statewide active management areas, says. “Ensuring water and permitting recharge projects are part of what we do. The Arizona Water Banking Authority also helps bank Central Arizona Project (CAP) water underground and make it available for future use. So far, more than 10 million acre-feet have been stored within Arizona, some by the bank and some by others. Cities, irrigation districts and other jurisdictions also store water for future use.”

Tannler notes underground storage is simply water that belongs to someone and is added to aquifers throughout the state. It is typically added via natural soaking and constructed basins or injected through individual wells that also remove it when needed. Five active management areas (AMAs) each have conservation requirements for agricultural, municipal and industrial users.

“While requirements vary for each sector, the idea is that everyone is able to contribute to conservation based on what’s most effective to make the AMA’s management goal,” Tannler says. “In agriculture, there is a conservation program based on a crop efficiency that needs to be reached. This results in an annual allotment of water. ADWR supports growers by also offering a best management practices program that helps them conserve the most water possible.”

Technology plays an increasing role, including computer-aided...
furrow irrigation design, ROI calculators and an innovative program that helps farmers evaluate how their natural resource use compares to industry averages.

“Weather stations that take instantaneous climate and weather data so that crop and golf course irrigation systems are more efficient also contribute,” he says. “Laser land leveling, level basin irrigation and drip irrigation are examples of how technology helps make every drop count.”

NEXT-GEN TECH MAKES WAVES

As Arizona advances water conservation, its westward neighbors are on a quest to discover how transformational technology can deliver new water sources. Global Water Innovations, Inc. (GWI), Ventura, Calif., is in final stages of building an integrated system that will affordably purify brackish groundwater to be used for irrigation. It began with a search for a local solution.

“The 2014 Sustainable Groundwater Act required growers using water from California basins to form stakeholder groups,” says Jeanette Lombardo, chief strategic officer. “Our basin doesn’t have access to imported water. It is severely overdrafted, and if we don’t develop new water sources, we’ll have to fallow large amounts of productive farmland.”

GWI personnel searched worldwide for innovative new types of water desalination technologies so that new water supplies could be created from brackish groundwater, irrigation tile water runoff, produced water from oil operations and even from coastal seawater intrusion into freshwater aquifers. Whatever it turned out to be, it had to be affordable for agriculture.

“2014 Sustainable Groundwater Act required growers using water from California basins to form stakeholder groups,” says Jeanette Lombardo, chief strategic officer. “Our basin doesn’t have access to imported water. It is severely overdrafted, and if we don’t develop new water sources, we’ll have to fallow large amounts of productive farmland.”

GWI personnel searched worldwide for innovative new types of water desalination technologies so that new water supplies could be created from brackish groundwater, irrigation tile water runoff, produced water from oil operations and even from coastal seawater intrusion into freshwater aquifers. Whatever it turned out to be, it had to be affordable for agriculture.

“We’re running out of fresh water supplies everywhere, not just California,” CEO Clark Easter says. “In addition, groundwater basins that rely on imported water have serious salt buildup taking place. For example, California’s Central Valley has seven million tons of salt coming in annually from mountain aqueduct water. This is happening around the country, in Australia, India and anywhere imported water is used. In turn, crop productivity is declining. We don’t just have a water shortage problem; we also have a salt-buildup problem. “We’ve focused on helping agriculture shift to alternate water supplies other than fresh water and on how to get salt out of groundwater basins so that we become sustainable long-term,” he adds.

The brackish groundwater abundant worldwide that Easter’s and Lombardo’s team have as their main focus is higher in dissolved-solids content than freshwater, but not as salty as seawater. The U.S. Geological Survey (USGS) indicates brackish groundwater within 3,000 feet below land surface in every state except New Hampshire and Rhode Island. The agency indicates there are 800 years’ worth of brackish groundwater supplies across the U.S.

GWI’s desalination process is solar-powered. It pulls water from a well and treats it on site, where 99 of the water is recovered and dry salts drop and go to a dumpster for disposal. Cleaned water heads directly into irrigation. The first plants are expected online in Ventura County, Calif., in the second quarter of 2019. Easter expects nationwide availability within a year.

MOVING THE IRRIGATION NEEDLE

Loren Seaman, 40-year owner of Seaman Crop Consulting in Hugoton, Kan., says new technology continues to improve water use in his region. This includes a recent innovation that turns pivot irrigation into mobile drip irrigation. It helps water get deep into the soil, increasing water infiltration. He also credits proper use of basic soil moisture monitors.

“The real advantage today’s soil moisture probe offers is education that farmers can actually observe what consultants have been advising for years. They can see things on their screens and feel better about shutting off a pivot system without worrying about burning up a field,” he says.

“We’ll continue to advance technology and we’ll develop crops that are more efficient, but each new tool must create ROI to be accepted by farmers,” Seaman adds. “We must also keep in mind that it can take 10 to 15 years for agriculture to incorporate new technology into routine practices. Thus, efforts must focus on realistic short- and long-term outcomes.”

By adapting to climate change, managing existing water supplies, embracing new technology and improving on-farm stewardship, the future of water has untold potential. And, today’s water pioneers appear to have a thirst that won’t be quenched until each opportunity is realized. ■
Best Management Practices

Best management practices, such as those from the Arizona Department of Water Resources, help farmers stretch water supplies, increase productivity and profits, manage situations of water supply scarcity, reduce energy costs and meet conservation requirements.

**Canal Lining**
Lining conveyance channels with concrete:
- Significantly reduces seepage losses
- Prevents waterlogging of surrounding lands
- Maintains water quality
- Reduces erosion

**Laser Technology to Grade Land**
Grading the land to slope specific to soil type and field layout with assistance from laser-guided technology:
- Improves uniform application of irrigation water
- Minimizes or eliminates losses caused by tailwater runoff
- Minimizes percolation of water past the crop root zone
- Minimizes erosion

**Level Basin Irrigation**
Level basin irrigation systems are small field units (five to ten acres) comprised of level, closed basins. Level basins:
- Improves uniform application of irrigation water
- Eliminates losses caused by tailwater runoff
- Minimizes percolation of water past the crop root zone
- Minimizes erosion

**Sprinkler Irrigation**
The efficient use of irrigation sprinklers to meet the water demands of a crop:
- Improves distribution uniformity of irrigation water
- Prevents excessive runoff and percolation of water past the crop root zone
- Increases efficiency of fertilizer applications
- Minimizes erosion

**Drip or Trickle Irrigation**
Drip irrigation systems use many low-volume, low-pressure water emitters to deliver water to a precise location. The use of above- or below-ground drip irrigation systems to meet the water demands of a crop:
- Improves distribution uniformity of irrigation water
- Minimizes percolation of water past the crop root zone
- Helps maintain soil nutrients within the crop root zone
- Reduces erosion
- Reduces water loss due to soil evaporation

**Tailwater Re-Use System**
Tailwater is water that did not percolate into the soil before reaching the end of the field during an irrigation run. Collecting irrigation water that leaves its original targeted location and reusing it:
- Increases water holding capacity of the soil
- Increases irrigation water infiltration rates
- Improves crop quality and yield by increasing nutrients and organic matter
- Reduces soil erosion
- Improves water quality

**Crop Rotations**
Planting different crops in recurring succession in the same field:
- Improves water holding capacity of the soil
- Increases irrigation water infiltration rates
- Improves crop quality and yield by increasing nutrients and organic matter
- Reduces soil erosion
- Improves water quality

**Soil and Water Analysis**
The laboratory analyses of soil and water for nutrient content:
- Provides vital information to help maintain or improve favorable physical soil conditions
- Increases crop quality and yield
- Improves water quality
- Improves fertilization efficiency
- Reduces erosion

**Flow Rate Measurement**
Determining the quantity of water being delivered to an irrigation site:
- Provides information critical to making management decisions
- Helps prevent excessive runoff and percolation of water past the crop root zone
- Improves irrigation efficiency
- Reduces erosion

**Bed and Furrow Shaping**
Manipulating the shape and surface condition of the plant beds and the furrows between the beds:
- Provides for more consistent irrigation runs for furrows
- Increases irrigation efficiency
- Reduces runoff and percolation of water past the crop root zone
- Promotes favorable physical soil conditions
- Improves crop quality and yield
- Reduces soil erosion

**Irrigation Scheduling**
Using real-time weather sensing and soil and crop analysis technology to determine a schedule for irrigation:
- Improves ability to manage soil moisture
- Increases irrigation efficiency
- Improves crop quality and yield
- Promotes favorable physical soil conditions
- Increases efficiency of fertilizer applications
It’s easy to make more on your soybeans.

Find the connections you need to see your profits grow. Thankfully, SoybeanPremiums.org already did the hard work of finding them for you. Food-grade, identity-preserved and non-GMO, connect with premium programs and buyers in your area today.

Soybean Premiums.org

Funded by the soybean checkoff.
Is feeding a growing population through the uncertainty of ever-changing weather extremes the biggest challenge of our lifetime? Some say yes. And water will play a big role.

Climate experts predict decreased water availability, increased flooding and more frequent and intense droughts in the years to come. Rising temperatures impact snowmelt, river flow, rainfall and groundwater, all of which affect available soil moisture as well as water quality. Fluctuating moisture levels impact crops in myriad ways, from poor root development and reduced nutrient absorption, to increased soil erosion and nutrient runoff to streams and rivers.

While weather has always been dynamic, statistics confirm it has become more unpredictable in recent years, presenting greater challenges to food production. Scientists anticipate the globe will continue trending toward wetter conditions, heavier rain events and rising temperatures.

The Intergovernmental Panel on Climate Change projects 5° to 10° F average global temperature increases are possible by the end of the 21st century. And increasing temperatures can speed up the rate at which crops develop, which can decrease yield and cause other production issues.

“In the short term, I’m not quite as worried about temperature impacts. Illinois has warmed by about 1.5 degrees in the last century,” says Jim Angel, Ph.D., and state climatologist for the Illinois State Water Survey. “However, the warming will get more pronounced as we move forward. So, we will have more issues with heat and pests.”

Also on the rise is precipitation. Illinois’ precipitation levels have been above average for more than 20 years. That affects agriculture in many ways, ensuring adequate soil moisture, but also delaying spring planting. Some estimates say spring rainfall in Illinois could increase by as much as 10 percent in central Illinois and by up to 20 percent in northern Illinois, extending delays.

Extreme precipitation, however, poses a different challenge, notes Angel. These events are defined as the annual number of days with precipitation greater than two inches. The number of these events has been above average since the 1990s. From 2010 to 2014, Illinois experienced two or more extreme events annually – which was a record high for the state.

Angel explains that more frequent, more intense rains make it harder for water to soak into the soil, adding stress to crops. More frequent drought events increase pressures on declining groundwater supplies. As much as 35 percent of Illinois’ arable land is currently drained with tile, which may need to be addressed if climate changes affect soil moisture levels.

“Illinois has become 10 to 15 percent wetter over the last century, and we have seen even sharper increases in the heavy rain events of two inches or more. Even worse, we see a lot of widespread multiday events where we get five to 15 inches over a few days,” Angel says. “And some of those have been in winter when we usually see snow rather than rain. One recent example was in late February of 2018 when four to 10 inches of rain fell in four days, causing widespread flooding in Illinois and especially Missouri.”

Experts say more frequent severe weather events like the 2012 drought and the 1993 Midwest flood are likely, both of which caused billions of dollars in crop and home damage. Increasing flooding has made stormwater management a large and costly issue.

“I think more thought and care will be needed in managing runoff from fields through grass waterways, controlled tile drainage and cover crops,” says Angel. “After the 2012 drought, there was increased interest in irrigation. However, the payoff of that depends on the value of the crop and how easy it is to have access to surface or groundwater supplies.”

Less confidence exists about total rainfall shifts across regions to the west. “We don’t have great certainty in the change in net rainfall across the Great Plains, but the frequency and intensity of drought
The frequency of heavy precipitation events has increased. Warming temperatures will increase evapotranspiration rates,” says Meagan Schipanski, Ph.D., assistant professor, Colorado State University Department of Soil and Crop Sciences. “A multi-year drought impacts everyone across the region, but these episodic droughts may impact certain crops more than others – that’s where the challenge lies. Having more diverse crop rotations may help weather some of the shorter-term drought events.”

Angel agrees. “A wetter climate doesn’t mean droughts go away; they may just be shorter and more confined to the growing season. Even in the drought of 2012, the three bad months were May, June and July. The rains began to return in mid-August.”

From 1900 to 2015, Schipanski says there was not a net decrease in rainfall across the Great Plains, but there was more episodic drought and more intense rainfall.

“We’re working with producers now looking back at the 2012 drought,” she says. “What can we learn to be more adaptive and resilient to future droughts? We know where the risks are, but I don’t think we’ve developed cohesive strategies to help communities adapt. We know many best management practices that could help; we just need the incentives that support adoption.”

When thinking about how rural areas can prepare for climate change, Angel recommends looking at ancillary areas that may not be at the top of mind but impact agriculture just as much. An integrated response and collaborative planning effort may be most successful, involving agriculture, health, municipal and academic entities.

“We need to beef up public health services as well as access to medical care,” he says. “The lasting impression on me from the 1993 flood was not the broken levees or flooded fields. It was the mental and emotional strain of the event. That damage lasted long after levees were fixed.”

- The frequency of heavy precipitation events has increased.
- Since the 1970s, the area of land classified as very dry has more than doubled worldwide.
- Water supplies stored in glaciers and snow cover are projected to decline this century.
- Increased precipitation intensity and variability will increase flooding and drought risk.
- Higher water temperatures and changes in extremes, including floods and droughts, are projected to affect water quality and exacerbate many forms of water pollution.
- Diffuse emissions of nutrients and pesticides from agriculture are likely to increase, critically affecting water quality.
Better Beans—the event series that brings expert soybean knowledge and advice—is back and coming to a location near you. Don’t miss the latest tools, information and technology specific to your region that will help you maximize yield and reach your full profitability potential.

MARK YOUR CALENDAR AND REGISTER FOR FREE TODAY AT ILSOY.ORG/BETTERBEANS

Questions?
Contact us at 888-826-4011 or events@ilsoy.org

JANUARY 16
Carlyle, IL

JANUARY 17
Rockford, IL

FEBRUARY 13
Quincy, IL

FEBRUARY 19
Peoria, IL

FEBRUARY 21
Champaign, IL

IN PARTNERSHIP WITH

BASSETT FARM & SEED
DROSTE FAMILY SEED
ILSOY ADVISOR
ISA Chairwoman Lynn Rohrscheib Reappointed to USB

Fairmount, Ill., soybean farmer and ISA chairwoman Lynn Rohrscheib has been reappointed to the United Soybean Board (USB) to serve another three-year term. Rohrscheib’s new term begins this month. She is one of four Illinois farmers currently representing the state on the board. USB directs soybean checkoff funds to research, marketing and promotional efforts that maximize profit opportunities for U.S. soybean farmers. USB aims to develop new and existing markets and build preference for U.S. soy, specifically in the areas of meal, oil and sustainability. Total annual state checkoff funds are split equally between ISA and USB.

STC Identifies Farmer Benefits of Mississippi River Dredging

A recent analysis by the Soy Transportation Coalition (STC) finds dredging the lower Mississippi River shipping channel another five feet would have benefits for Illinois soybean farmers. The 256-mile stretch of the Mississippi River from Baton Rouge to the Gulf of Mexico accounts for 60 percent of U.S. soybean exports. The STC report, performed by Informa Economics IEG, finds shipping costs for soybeans from Mississippi Gulf export terminals would decline 13 cents per bushel ($5 per metric ton) with the dredging. The research also highlights the potential impact on interior basis for soybeans. Basis maps of Illinois show areas with more pronounced negative basis will be crowded out by more favorable basis territory, resulting in Illinois soybean farmers annually receiving more than $77 million more for their soybean crop.

Illinois Tops 2017 Census of Ag Response

Illinois had the highest response rate of any state at nearly 78 percent for the 2017 Census of Agriculture. The census is a complete count of U.S. farms and ranches and is taken every five years. Data include land use and ownership, operator characteristics, production practices, income and expenditures. It is considered the only source of comprehensive and impartial ag data for every count in the nation. Federal, state and local governments, ag businesses, trade associations and others use the data to make program, service and policy decisions.

USAID Extends Partnership with Illinois Soybean Innovation Lab

The United States Agency for International Development (USAID) has extended its research partnership with the Feed the Future Innovation Lab for Soybean Value Chain Research (SIL) at the University of Illinois. The extension will help build the foundation of the soybean industry in emerging markets, principally in sub-Saharan Africa.

USAID awarded $6 million to the program, which also includes the University of Missouri and Mississippi State University. SIL utilizes a research-for-development strategy that directly links its technical knowledge and innovations in support of soybean development partners. SIL designs products for direct uptake and scaling by development partners. SIL began in five countries, but has expanded into 17 countries – 13 in Africa and four in Asia and Latin America.

Gochipo Day in Japan Boosts Retail Sales of U.S. Pork

As part of an ongoing campaign to encourage greater consumption of U.S. pork in Japan, USMEF held its annual “Gochipo Day” in honor of the U.S. pork mascot. Funded in part by the ISA checkoff program, the event featured special U.S. pork promotions at supermarkets across Japan. Gochipo was created by USMEF to increase awareness and convey a familiar, positive image of American pork among Japanese consumers. USMEF conducted several consumer events, including two with the AEON supermarket chain and one with Inageya, a leading regional supermarket chain. Gochipo was on hand at each location to attract shoppers’ attention. U.S. pork sales increased by 160 percent compared to the same day a year earlier, with Gochipo receiving much of the credit for the sales boost. The Illinois pork industry represents some of the top customers for Illinois soybeans. Pigs eat about 77 percent of the soybean meal fed in Illinois.

Calendar of Events

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019 Soybean Leadership College</td>
<td>Jan. 7-8</td>
<td>St. Louis, MO</td>
</tr>
<tr>
<td>2019 National Biodiesel Conference</td>
<td>January 10-11</td>
<td>San Diego, CA</td>
</tr>
<tr>
<td>ILSoyAdvisor Soybean Summit</td>
<td>Feb. 5</td>
<td>Springfield, IL</td>
</tr>
<tr>
<td>ISA Meeting</td>
<td>Feb. 11-13</td>
<td>Bloomington, IL</td>
</tr>
<tr>
<td>Commodity Classic</td>
<td>Feb. 28-March 2</td>
<td>Orlando, Fla.</td>
</tr>
</tbody>
</table>
From promoting the profitability of using high-quality soybean meal in India to training animal producers on nutrition in Colombia, the soy checkoff is working behind the scenes to develop more market opportunities for U.S. soy. We’re looking inside the bean, beyond the bushel and around the world to keep preference for U.S. soy strong. And it’s helping make a valuable impact for soybean farmers like you.

See more ways the soy checkoff is maximizing profit opportunities for soybean farmers at unitedsoybean.org
Ultimate Frenemy
The love-hate relationship with the regulatory process

> BY MIKE LEVIN, Illinois Soybean Growers director of public policy and regulatory affairs

Regulations. Just saying that word brings many thoughts to mind. Some good, some not so good. Illinois soybean producers have faced a lot of regulatory hurdles in recent history – from water use to estate planning to biotechnology. While regulations incite divisive opinions, they are a critical pathway for technology and agriculture's advancement.

Take genetically engineered seeds for example. According to GMO Answers, a Council for Biotechnology Information initiative, it takes an average of 13 years for a genetically modified organism (GMO) to come to market. The regulatory process alone can take five to seven years. The process includes three safety checks: USDA on growth safety, EPA on environmental safety and FDA on food safety. And that doesn't include the legislative process. Sometimes laws are first written that incite regulatory action. Many times, the regulation is controversial enough to spur further legislation even after the regulation is considered complete. In the case of GMOs, laws were written post-regulatory approval to control product labels.

Can we afford to wait 13 years for new technology to hit the marketplace? Can we even afford to wait five years? Over the last 10 years, ag production has grown about 15 percent. To meet global demand for food, fuel and feed, agriculture will need to grow by another 50 percent between now and 2050, says the United Nations Food and Agriculture Organization (FAO).

FAO says yields will have to increase by 35 percent by 2050 to keep up with population growth and limited land use. Meanwhile, Cornell Alliance for Science says GM crops have allowed an average increase in agricultural yield by 22 percent and increased farmers' profits by 68 percent. Illinois soybean producers have a valuable opportunity now and for decades to come. Integrating technological advances and forward thinking are critical to success, but that technology access and advancement isn't possible without action. While we might not love the process, we certainly can't afford to hate it and remain disengaged. Producers have to commit to advocacy as an integral part of business operations and not allow it to be a one-time fling.

We Need Your Voice! Visit VoiceforSoy.org.
HOW DO YOU ANALYZE TOUGH OR CONTROVERSIAL ISSUES AND SHARE INFORMATION?

Regardless of how controversial an issue may be, data will reveal facts and useful information for all parties involved. It is the basis of having a productive and healthy conversation.

We also consult with our customers, our internal experts at CoBank and the Farm Credit System, and other industry experts and academia to help understand context of any issue. Our information is shared through our reports and through our speaking engagements with customers, key decision makers and stakeholders.

HOW HAS TECHNOLOGY CHANGED THE ECONOMIC ANALYSIS LANDSCAPE?

Computer software helps us visualize data better and tell the story easier in our reports. Social media also has played a role in reaching our audience and engaging with them about issues.

HOW CAN THE ANALYSES YOU PROVIDE BE USED TO MAKE DECISIONS ON THE FARM AND THROUGHOUT THE SOYBEAN SUPPLY CHAIN?

Our reports are meant to educate key decision-makers, our customers, policymakers and other stakeholders about the risks and opportunities of the major industries affecting the rural economy. In an industry as high risk and as volatile as agriculture, our goal is to leave farmers, ranchers and their supply chain partners in a more empowered and educated position to navigate an uncertain future – and hopefully profit from that knowledge.

WHAT ARE SOME OF THE KEY CRITICAL ECONOMIC ISSUES THAT THOSE ASSOCIATED WITH AGRICULTURE NEED TO UNDERSTAND TODAY?

The key economic issues in agriculture and those affecting the rural economy in our view are rising interest rates, a tight labor market, rising transportation costs, trade uncertainty and persistent weakness in agricultural commodity markets. The pain of rising costs from higher interest rates, labor and trucking are compounded by U.S. trade policies, including tariffs on aluminum and steel that have significantly increased infrastructure costs.

The lack of resolution on immigration issues complicate an already tight labor supply. The trade war with China has also helped depress the prices of some agricultural commodities at a time when farmers and ranchers are already financially stressed. Resolution to those issues would give agriculture some much needed clarity for the future.

WHY IS AWARENESS AND UNDERSTANDING OF ECONOMIC ISSUES IMPORTANT FOR PRODUCERS?

It is important to be aware of economic issues for planning and identifying risks and opportunities that may affect your business or investments. While it’s impossible to know about every potential risk, keeping abreast of the issues reduces the unknowns – and hopefully takes the stress out of planning and creates profitable opportunities.

Tanner Ehmke is manager of CoBank’s Knowledge Exchange Division. He manages a team of six economists who provide outlooks on grain, farm supply, animal protein, dairy, specialty crops and rural infrastructure, including telecommunications, power, water and energy. CoBank is a member of the Farm Credit System serving vital industries across rural America, including agribusinesses, rural power, water and communications providers in all 50 states.
TECHNOLOGY

“So, what do you do when you have little land to work with and fewer hands to help? You turn to technology. Automation allows for a more accurate work environment with little human oversight. It will involve hardware that is more agile than the human eye or hand, and it will be able to give each and every plant the unique attention it needs…If farms are to survive, we need to think about them as tech companies. And that means they should be taking advantage of what many other industries are already harnessing: automation.”

BRANDON ALEXANDER | CEO of Iron Ox and former engineer at Google X’s drone-delivery program, Project Wing, October 3, 2018, “If farms are to survive, we need to think about them as tech companies”

“You only get 40 attempts at farming. From your 20s to your 60s, you get 40 seasons,” says Duncan Logan, founder and CEO of RocketSpace, a tech accelerator company. “In tech, you get 40 attempts in a week.”


“General investors show increasing interest in the ag and food sector because it does not correlate to the overall macro-economy. It’s inelastic. People need to eat every day, and the importance of long-term global food security is more apparent all the time.”

SANJEEV KRISHNAN | chief investment officer and managing director, S2G Ventures

WATER

“Water scarcity caused by unsustainable consumption, climate change and population growth is a drag on global economic growth, potentially causing losses of as much as six percent of GDP in many places, according to the World Bank. With 40 percent of the population living under water stress by 2050, agriculture will have to do even more with even less water.”

MICHAEL TIBORIS, PH.D. | Fellow, Global Food and Agriculture Program, Chicago Council on Global Affairs; lecturer at University of Chicago’s Harris School of Public Policy

“In the face of accelerated consumption, increasing environmental degradation and the multi-faceted impacts of climate change, we clearly need new ways to manage competing demands on our precious freshwater resources. It is time for us to re-examine nature-based solutions (NBS) to help achieve water management objectives… Working with nature, rather than against it, would enhance natural capital and support a resource-efficient and competitive circular economy. NBS can be cost-effective, and simultaneously provide environmental, social and economic benefits.”


“We’re running out of fresh water supplies everywhere, not just California. Groundwater basins that rely on imported water have serious salt buildup. This is happening around the country, in Australia, India and anywhere imported water is used. In turn, crop productivity is declining. We don’t just have a water shortage problem; we also have a salt-buildup problem.”

CLARK EASTER, CEO | Global Water Innovations, Inc.
THE JOURNEY TO THE TOP STARTS AT THE SUMMIT.

2019 SOYBEAN SUMMIT | TUESDAY, FEBRUARY 5, 2019
7:00 A.M. – 4:00 P.M. | CROWNE PLAZA SPRINGFIELD

If you want to be among the best of the best soybean growers, you need access to the latest industry insights, technologies and management techniques. Start your journey at the 2019 Soybean Summit Tuesday, February 5, and learn how you can bust through your yield barriers to climb to the top of the industry in soybean production and profitability.

REGISTER FOR FREE TODAY AT ILSOY.ORG/SUMMIT