SEEDING ECONOMIC DEVELOPMENT ALLOWS COMMUNITIES TO BLOOM.

This spring I attended the Iowa Young Professionals in Agriculture Executive Breakfast at the Iowa FFA Enrichment Center. Mark Core ('79 agricultural and life sciences education), executive vice-president and chief marketing officer of Vermeer Corporation, served on a panel about change—dealing with it and leading it. Mark talked about the changing supply of potential employees for rural Iowa. Attracting people to rural Iowa through job creation, quality healthcare and schools and access to broadband, draws people to support community infrastructure. This fuels everything from volunteer fire departments to local FFA chapters to civic organizations and everything in-between.

That’s where Iowa State comes in. Partnering with companies like Vermeer in collaborative research, talent acquisition and internship programs drives economic development and helps communities grow. That especially benefits our new alumni—nearly 70 percent of whom start their careers in Iowa.

In this issue you’ll learn how the Center for Crops Utilization Research is helping companies refine their industrial processes to maximize efficiency and profits (page 18). You’ll hear from Kevin Kincaid ('91 MS economics), director of the Agricultural Entrepreneurship Initiative, on the ecosystem of entrepreneurship (page 14) and learn about the initiative’s latest impacts supporting agricultural startups. From local foods (page 25) to the incredible egg (page 28) to the impact of trusted counsel in farm management (page 21), you’ll see how the College of Agriculture and Life Sciences provides connections, talent and technology to fuel economic development.

In closing, I’d be remiss if I didn’t mark the occasion of this, our 20th issue of STORIES magazine. In my first foreword, I laid out our team’s mission to share stories that inform, educate and inspire—stories that connect you with the people of ISU, our ISU family. In this issue you’ll learn how the Center for Crops Utilization Research is helping companies refine their industrial processes to maximize efficiency and profits (page 18). You’ll hear from Kevin Kincaid ('91 MS economics), director of the Agricultural Entrepreneurship Initiative, on the ecosystem of entrepreneurship (page 14) and learn about the initiative’s latest impacts supporting agricultural startups. From local foods (page 25) to the incredible egg (page 28) to the impact of trusted counsel in farm management (page 21), you’ll see how the College of Agriculture and Life Sciences provides connections, talent and technology to fuel economic development.

I invite you to join me. Share your copy of STORIES with a friend or neighbor when you’re through, or share a link to our stories via www.stories.cals.iastate.edu. I can’t wait to discover what the next 20 issues have in store for us!
LETTER FROM THE DEAN

When you talk about Iowa’s economy, our state agriculture is a prime topic of conversation. It’s often ranked first in the nation. First in corn and soybean production, first in hog production, first in egg-laying chickens and highly ranked in other areas. Agriculture serves as one of the main economic engines for the entire state.

One in 10 jobs in the United States is tied to food and agriculture, that was 16 million jobs in 2011. The 2011 value added to the gross domestic product from agriculture and related industries was $743 billion—nearly 5 percent of total U.S. economic output. Many years, agricultural exports are the bright spot on the nation’s trade balance (Iowa makes a huge contribution here).

Every year, in Iowa, we track food chain links from gate to plate. Employment related to the food chain was more than 388,000 jobs in 2016, nearly 20 percent of Iowa’s employment. Twenty-three percent, over $40 billion, of the state’s gross domestic product was linked to agriculture. Iowa and the whole north-central region of the nation represent a powerhouse of world-leading agricultural productivity. That’s why I constantly speak out on the need to support world-class public university agricultural research and extension programs. They play a critical role for the future of agriculture and the state economy.

As dean, I believe our college truly strives to provide world class education, research and extension—and stay true to our land-grant mission. This includes creating research, practices and techniques to conserve and protect our natural resources, so that Iowa remains an economic leader in agriculture for the coming centuries.

Yes, centuries. Sustaining those natural resources supports our agricultural productivity and the state’s economic future. It is money well spent.

Wendy Wintersteen
Endowed Dean of Agriculture and Life Sciences

STORIES

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UNDERSTANDING THE DIVERSITY OF LIFE

Growing up, Jo Anne Powell-Coffman and her family would recite the Serenity Prayer every evening at the dinner table. “My parents were divorced, and from the time I was 12 I lived with my mother, who was a social worker. I moved from school to school, depending on where my mother could get a job,” says Powell-Coffman, chair of the Department of Genetics, Development and Cell Biology (GDCB). “Often, we ate food from local food banks. If it was a bad month, we used food stamps. My mom’s refrain always was: We’re broke, not poor.” She went to college courtesy of need-based federal Pell grants. “I went with a lot of gratitude just for the chance to go,” she says.

At the University of California at Davis—that state’s land-grant institution—she hungrily took one of everything from a smorgasbord of classes. Something clicked when she took her first-ever biology class.

After that, she couldn’t get enough life sciences courses. In a cellular physiology class, the instructor handed back mid-term exams, but hers wasn’t included. “Later I learned she kept the top-score exams and made us come to her so she could meet us one on one,” says Powell-Coffman. “When she handed me my test, she told me I needed to be doing research.”

The instructor then put her to work in her own lab. Powell-Coffman attended graduate school at the University of California at San Diego and then completed a postdoctoral research fellowship at the University of Colorado at Boulder, where she began working with the model species she relied on through today: The microscopic nematode (or tiny roundworm) C. elegans.

Her lab at Iowa State was the first to discover a genetic factor in C. elegans comparable to one in humans. The factor regulates gene expression in response to changing oxygen levels. Labs around the world now are using her model to study and find regulators important to improving health or stymying disease.

Powell-Coffman has been a member of the Iowa State faculty for nearly 20 years, and has served as chair since 2013. The department, co-administered by the College of Agriculture and Life Sciences and the College of Liberal Arts and Sciences, excels in biological discovery and making it relevant to undergraduate and graduate education.

GDCB is a partner in delivering key courses for hundreds majoring in biology, genetics, bioinformatics and computational biology, and a major contributor to multiple interdisciplinary graduate programs. Its faculty constantly strive to understand what engages students, especially in introductory classes—the gateway courses that, if successful, can open eyes to promising career paths, as was the case for Powell-Coffman.

The line in the Serenity Prayer about the courage to change resonates today, with how she thinks about education and science. “With the incredible amount of data we’re able to generate, we now have the ability to analyze and truly begin to understand the diversity of life,” she says.
It was August 1967 when Carl Bern first walked into a classroom at Iowa State University. He began his career in agricultural engineering as a teaching assistant, and has taught students at Iowa State every term since.

Over the past 50 years, Bern has seen immense changes in technological innovation. He explains the “founding fathers” of agricultural engineering created four sub-disciplines reflecting engineering needs in agriculture: soil and water, power and machinery, structures and environment, and electric power and grain preservation.

Between 1930-1970 almost all farms in the United States became connected to line power, and agricultural engineers were a key part of this effort. “Electric power on farms transformed the life of farm families. They were no longer limited to sunlight hours or candles and lanterns. It impacted their home life, too. It’s the pits to have to do homework by candlelight,” Bern says.

The first use of electric motors on the farm was usually to power fans and conveyors for grain preservation, according to Bern. Grain preservation became his primary research focus, and he taught many courses and mentored several students researching the topic. One of his former students is now chair of his department.

“Dr. Bern was a very caring academic adviser and instructor. He was always available to answer questions and wanted to ensure students understood what he was teaching. He engaged students in active learning and made it fun to learn,” says Steve Mickelson, professor and chair of the Department of Agricultural and Biosystems Engineering.

In 2013 Bern began a part-time appointment. He guest lectures and teaches labs in an introductory agricultural and biosystems engineering class. He says this helps him to focus more on the things he enjoys most: mentoring students, research and travel.

“In 2007 my wife and I went with a church group to Tanzania, and noticed corn stored on farms by smallholder farmers was frequently riddled with weevils. I saw the weevils there are the same as in Iowa, and I thought to myself, ‘I can use engineering to do something about that.’ Bern says. “Smallholder families depend on their stored corn for food. Losses to maize weevils can be devastating.”

As he talks about the trip that inspired his current work on grain storage in developing countries, a tiny maize weevil, Sitophilus zeamais, crawls up the wall inside his office in Elings Hall. With a laugh, he says a few of the insects must have found their way out of a shipping container from an order he received the previous week.

Bern says he’s looking forward to continuing his international work and mentoring students. “I’ve been so fortunate to be given the opportunity to be part of this faculty teaching in world-class facilities. It means everything to me, and is a central part of my life,” Bern says. “I’m very blessed to be sitting here 50 years later.”

It didn’t matter if you were a post doctoral fellow or an undergraduate student in his lab. The environment was welcoming and engaging, so you felt like you were part of the team,” McCleary-Wheeler says.

McCleary-Wheeler, an assistant professor of oncology at Cornell University, says he was a fantastic teacher and adviser who had a major impact on her career trajectory. “He always had that inquisitive nature to admit, I have been enjoying it ever since,” Beitz says.

When asked for advice for new faculty, Beitz says it’s important to get established as a researcher and start teaching as soon as possible. “I like to see people start teaching right away because it gets you into the university experience,” Beitz says. “He was a very enthusiastic teacher and adviser, and had a major impact on her career trajectory. He always had that inquisitive nature and that whole environment fostered learning,” McCleary-Wheeler says.

Another graduate, Jim Roth (’75, ‘79 MS, ’81 PhD veterinary medicine), is one of those students. He nominated Beitz for the Iowa State University Alumni Association Faculty/Staff Inspiration Award, which he received in May. He thought was fantastic,” Beitz says. “I would get assigned to teach mathematics or science to younger students, and that’s what I learned that teaching was an enjoyable experience. ”

Betz, a Charles F. Curtiss Distinguished Professor of Agriculture and Life Sciences in animal science and biochemistry, biophysics and molecular biology, says the best thing about teaching is inspiring others. Angela McCleary-Wheeler (’01 agricultural biochemistry, ’03 veterinary medicine) is one of those students. She nominated Beitz for the Iowa State University Alumni Association Faculty/Staff Inspiration Award, which he received in May. When she saw the announcement for the award she immediately thought of Betz. “He was a great teacher. He made biochemistry interesting and applied. I really appreciated that as a student.”

Betz’s first class was introductory biochemistry 301, which met at 8 a.m. on Monday, Wednesday and Friday. “That was the best experience—to just jump right in and teach. I have to admit, I have been enjoying it ever since,” Beitz says.

During Carl Bern’s 50-year career he’s seen electricity transform life on the farm and needs and opportunities for agricultural engineering. Bern continues to guest lecture and teaches labs while focusing on what he enjoys most: mentoring students, research and travel.
PREPARING REAL-WORLD PROFESSIONALS WITH REAL-WORLD DATA

Hugo Ramírez-Ramírez is a land-grant triple threat. His appointment at Iowa State is three-fold, combining extension, research and teaching. His class, Applied Dairy Farm Evaluation, provides students with a capstone experience to their undergraduate education. "Having a sound nutritional program is one of the most effective things farmers can do to manage their cost of production," he says.

It was his own experience on a dairy farm in central Mexico that shaped the way he approaches education. Ramírez-Ramírez, an associate professor and extension dairy specialist with Iowa State University, spent the year after earning his undergraduate degree as the dairy herd manager at a farm in Leon, Guanajuato, Mexico, where he was responsible for the care of 1,000 animals.

"That experience helped me realize the type of things students will need to have in their toolbox when they graduate," Ramírez-Ramírez says. "It helped me develop a teaching style that combines things that may seem abstract and show why that information is important when managing a farm."

His research and extension appointments allow him to work directly with dairy producers in Iowa, focusing on dairy nutrition and forage quality. The dairy industry in Iowa produces over $800 million annually in milk sales from over 210,000 dairy cows, making it the 12th-largest milk-producing state in the country.

"Knowing that, in one way or another, I am able to support their efforts is very rewarding," Ramírez-Ramírez says.

Ramírez-Ramírez is conducting research on the chemical and physical processing of corn stalks used to increase feed value for cattle. While the research is still ongoing, preliminary indications show additional feed value can be found in corn stalks. An increase in their feed value could help farmers better navigate current marketplace conditions.

"Having a sound nutritional program is one of the most effective things farmers can do to manage their cost of production," Ramírez-Ramírez says. "Feeding dairy cows represents 50-60 percent or more of the cost of producing milk. Anything that can be done to manage those costs is a positive thing for farmers."
DISCOVERING HIS NORTH STAR

FIVE QUESTIONS WITH WHITE HOUSE INTERN DAKOTA OLSON

Dakota Olson is fresh off the internship of a lifetime:

Olson was part of Michelle Obama’s personal communications team in the White House last fall. His internship and study abroad experience helped him discover his passion for serving others.

What obstacles did you have to overcome to be a successful intern?

In order to build up a resume to be prepared for such a prestigious opportunity, I had to constantly be outside of my comfort zone and face adversity head-on. The biggest barrier that I face is that I am Deaf with a cochlear implant. All my life I have been placed in environments that just aren’t designed for people like me. I’ve traveled to countries in the Global South (the collective term for nations of Africa, Central and Latin America and most of Asia) without American Sign Language interpreters and been in work environments that pushed me to my limit and caused me to redefine my barriers. These experiences forced me to advocate not only for my needs, but those of others as well in order to level the playing field and provide equal opportunities for people with disabilities.

The White House was a different story, however. I found it to be an incredible and inclusive atmosphere providing equal opportunities for people with disabilities and of various races, ethnicities, religions and other minority factors. I found the White House work environment to be built with an inclusive design in mind—videos were already captioned, sign language interpreters were provided and any accommodations I needed could easily be requested.

Within the first few weeks, I connected with the West Wing receptionist (known by ROTUS, or Receptionist Of The United States, to many) who is Deaf. Leah Kacht-Hernandez is a true barrier-breaker as a Deaf, Latino woman working in the most prestigious office in the world in one of the most front-facing positions. She was an excellent mentor and role model for me, providing me with valuable insight and advice I got was to just “keep your head down and get your work done.” An office can’t function if interns are spending half of the workday lingering outside of the Oval Office hoping to see the president.

Was your experience in the White House what you expected?

Most people, when they think about an internship at the White House, can’t help but envision daily fist-bumps with the president, browsing memes on the internet with the vice president, gardening with the first lady and giving some clever advice to the press secretary. A lot of the experience just isn’t that glamorous. You’ve got to do what is expected of most interns in any office—copy papers, clear a jammed printer, stuff envelopes and do a lot of reading. In fact, one of the first pieces of advice I got was to just “keep your head down and get your work done.” An office can’t function if interns are spending half of the workday lingering outside of the Oval Office hoping to see the president.

It’s all worth it when you get to attend weekly speaker series with White House senior staff and ask them anything you want or attend staff holiday parties and rub shoulders with some incredible people or even stand out on the South Lawn and greet the president and first lady as Marine One lands.

How does an intern manage the first lady’s correspondence?

Our role was less about correspondence, but more about managing how the first lady interacted with the American public and global leaders. As you can imagine, the first lady received thousands upon thousands of letters, gifs, emails and other forms of communication.

Three other interns and I managed correspondence for the Office of the First Lady, as well as my supervisor and the director. We had a group of 24 outstanding volunteers who read each item of the first lady’s mail and appropriately processed it. We might send a dozen autographed photos to a classroom or send a letter of encouragement from the first lady to constituents in need. We sent a lot of birthday greetings and thank you notes.

What was the most exciting or rewarding experience?

By far the most rewarding part of my job was being able to help those in dire need. We had access to every federal agency through our liaisons and were able to assist those seeking assistance. I was able to help military veterans get medical care from the Veteran’s Administration, find people somewhere to live through the Department of Housing and Urban Development, get people healthcare solutions from health and human services and help people fight injustices and discrimination with the power of the Department of Justice.

How will this experience help you meet your future goals?

Having “White House” on your resume is a pretty strong point! I crafted skills that will be relevant in any career path including leadership and team development, office management and internal and public communications.

I learned so much about public service and influencing positive change in our society. I participated in workshops led by public speaking experts, presidential speechwriters and government experts to learn how to engage and organize communities.

Above all, I want to continue to develop my skills and apply them to whatever future career I choose. Right now I’m focusing on my work with the MEANS Database—an online platform I lead that connects emergency food donations with local organizations in need.

If I learned anything about my future, it was discovering my North Star—what is that guides me. For me, it’s serving others and making people’s lives better.
TAILORING THE STUDENT EXPERIENCE FOR VET SUCCESS

Story by Barb McBreen
Image by Christopher Gannon

Wielding a tool belt full of medical supplies, Patrice Sorensen vaccinates dairy cows at the Iowa State University Dairy Farm with the confidence and ease that comes with experience.

Sorensen, who graduated in May with an animal science degree, says she always knew what she wanted and strategically planned her college career to pursue her dream.

“I’ve been researching veterinary schools since I was in middle school,” Sorensen says.

Her research and focus paid off: In February, Sorensen came closer to her dream of becoming a veterinarian when she was accepted into the University of Minnesota College of Veterinary Medicine.

“When I called my mom to tell her I had to hold the phone away from my ear because she was so excited,” Sorensen says. “I knew what I wanted and strategically planned my college career to pursue an animal science degree, says she always knew what she wanted and strategically planned her college career to pursue her dream.

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Patrice grew up in North Mankato, Minnesota, and was involved in 4-H. She didn’t show animals, but always cared about animals. Her favorite animals are goats, so when she had the opportunity to intern at a goat farm she took it.

“I interned in New York at a goat farm with 80 goats and nine Alpacas,” Sorensen says. “We did a lot of work in rotational grazing and processing fiber.”

Her other internship experiences include working in public outreach at the Iowa State Fair with the Boulevard of Dairy Breeds and a study abroad experience in Ecuador.

“In Ecuador I gained experience vaccinating snakes and neutering dogs. It gave me practical experience and inspired me to do more international work,” says Sorensen.

During the academic year, Sorensen says she walked around seven miles a day, three days a week while working at the Iowa State Dairy farm. She collected tissue samples, cleaned stalls, drove a skid loader and vaccinated cows at the farm—she thrilled on the variety and challenge of the work.

She was also an active member of the Alpha Sigma Kappa, a sorority for women interested in science, technology, engineering and mathematics (STEM). She served both as vice president of communications and operations in the sorority and in 2015 received the National Outstanding Leadership Award. Last summer she led a committee to organize the sorority’s national convention in Des Moines.

Sorensen has received numerous scholarships including the Fred Foreman Scholarship for Growth in Leadership and Development, M. E. Emaninger Scholarship, Thomas and Esther Ringklo Memorial Scholarship in Animal Science, Alpha Sigma Kappa Pride of Epiont Alumnae Scholarship, Award for Competitive Excellence, Presidential Leadership and 4-H Achievement.

When asked what she would tell others students about pursuing a dream, Sorensen says, “Find as many opportunities and experiences as you can.”

Patrice Sorensen’s work and internship experiences included the Iowa State University Dairy Farm, the Iowa State Fair and a stint in Ecuador where she learned to neuter dogs and vaccinate snakes.

ADDGING VALUE, ADVANCING ENERGY

Story by Barb McBreen
Image by Christopher Gannon

Grant Ives is discovering ways to add value to ethanol production.

As an undergraduate in industrial technology, he’s worked alongside researchers in the Iowa Grain Quality Initiative lab using Near Infrared Spectroscopy to analyze grain samples for protein, oil, fiber and fat content.

His internship has allowed him to make strides towards his real passion—making the world a better place.

“I want to leave the world a better place for my kids,” says Ives. “I think I can do that by working with renewable energy.”

Corn is a complex grain, Ives explains, with several products available to extract on both the front and back end of ethanol production. The work he is doing will implement ideas that add value to the process.

“We estimate how new forms of additional processing could increase the profitability of an ethanol plant by adding new products to sell from the same amount of corn,” Ives says.

Charles Hurburgh, professor-in-charge of the Iowa Grain Quality Initiative, says Ives’ work is related to the dry grain milling industry. Dry grain milling processes 60 to 70 percent of Iowa’s corn and is used in 90 percent of ethanol plants nationwide.

“Technological advancements will help make ethanol meet the technical definitions of an advanced biofuel. That’s important because of the lower environmental impact of advanced biofuels,” Hurburgh says. “With current corn surpluses and corn yield trends, we could get 20 percent of our gas in the United States from corn.”

The internship broadened Ives’ understanding of ethanol production. Ives already had extensive experience in industrial manufacturing through hands-on internships and coursework. He’s excited about the future of manufacturing as a whole and says he sees major changes in the future because of 3D printers.

“Right now manufacturing is a subtractive process and parts are carved out of blocks of material, but the industry is working towards 3D printing as an additive process to produce parts,” Ives says. “It’s booming.”

Ives began his career in civil engineering, after transferring to Iowa State from Des Moines Area Community College. However, he learned it wasn’t the career he wanted to pursue and now shares his experiences as a transfer student from both another major and a community college with other students.

“As an older student, I have a lot of experience to share with students,” he says. “I try to help them become adults. I encourage them to attend the career fair each year and learn to sell their strengths.”

Ives is working to obtain a Green Belt Certification in Lean Six Sigma from the Management and Strategy Institute. The LEAN quality based certification is just another way Ives believes he can leave the world a better place.

“I’m continually learning new things and that’s what I like about my major and this internship,” Ives says.

After graduating in May, Ives began working with Land O’ Lakes as a manufacturing management trainee, and in six months will move up to plant supervisor for a Purina Feedmill.
Estefany Argueta is driven to learn. Her thirst for knowledge helped her acquire so many college credits she qualified as a senior when she entered Iowa State University two years ago fresh out of high school.

Argueta is continuing her adventure through courses like aquaculture, Taekwondo and an entomology class where she learned about different orders of insects and how they affect the world.

“I like to learn new things. I’ve always been curious and my family encouraged me to explore,” she says. “All these classes are so interesting, I’ve learned things I would have never known.”

Her adviser Amanda Chung (12 animal ecology), says Argueta is pursuing two options in the animal ecology major: pre-veterinary and wildlife care and fisheries and aquatic sciences. Chung describes Argueta as dedicated and hard working.

“She’ll go things done and she’s going places,” Chung says.

Chung says Argueta is always planning. This summer Argueta spending time at the Iowa Lakeside Laboratory on Lake Okoboji and at The Tatonsh School in Alaska, a field camp hosted by Portland State University.

“I was born in Alaska and I can’t wait to go there,” Argueta says. “It’s a field camp, so we’ll be kayaking, camping and doing research—it’s more hands-on learning.”

Military service is another area Argueta is exploring. She’ll be the first in her family to serve in the armed forces. She joined the Iowa State’s Army Reserve Officer Training Corps (ROTC) and says the program is developing leadership skills that she’ll use as an officer.

“I have been challenged both mentally and physically,” Argueta says. “I’ve always been interested in the military. These are great people and there are great opportunities.”

Early intro to science

In middle school Argueta was introduced to the Iowa State University Science Bound program. The program reaches out to help underrepresented Iowa students in middle school and high schools pursue degrees in STEM (science technology, engineering and mathematics) fields.

The program piqued Argueta’s curiosity and interest in science.

“There are so many things out there— I wish I could do them all,” Argueta says. “I just want to explore every topic I can and I want to travel.”

During high school she not only traveled and studied in Japan, but also found her way to an Iowa State turtle camp in Illinois. She says the two-week camp is why she chose animal ecology.

“We did research on turtles and I met graduate students and they talked about their experiences,” Argueta says. “It was amazing to me that they did this for a living.”

She’s so enthused about the Science Bound program that she tutors incoming students. She promotes opportunities in agriculture and life sciences and advises students to take advantage of resources at Iowa State.

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Spirit of Innovation, Service

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As I complete my 16th semester at Iowa State University, I can’t help but reflect at the simple power of bringing good people together.

Last December, Iowa Staters Joe (36 agricultural business) and Karen Kerns kindly opened their beautiful home in rural Boone to host Agricultural Entrepreneurship Initiative students, alumni, supporters and others involved in the agricultural entrepreneurship community for a holiday party. It was a delightful time for fellowship, idea sharing and making new friends.

‘Ecosystem’ is used in many ways, but I think it is an appropriate term to use for the community that is being built by the Kerns and those like them who engage the Agricultural Entrepreneurship Initiative. Each year we ask for help from so many great friends for mentoring, interviews, panel role and other ways of engaging with students and others on campus.

Now that ecosystem is sprouting new vines off-campus in a number of ways including the market-changing businesses launched by past and current students engaged in the initiative. A survey of ISU alumni conducted in 2008 showed that 20 percent of College of Agriculture and Life Sciences (CALS) graduates from 1982 to 2006 had started a business, averaging 12 employees per business. I fully expect the next generation of ISU CALS graduates to have an even bigger impact.

Entrepreneurial places and industries have a cultural element that sets them apart. There’s a vibe, an energy and a dynamic that supports and encourages entrepreneurial behaviors. That entrepreneurial culture is expressed now in the agricultural startup community by support for aspiring agricultural entrepreneurs and an action-orientation among industry professionals and organizations for championing new ideas.

That action is making an impact and is important to the future of agriculture and Iowa. Analysis from the Kauffman Foundation shows that 80 percent of net job creation in the United States since the 1970s results from new businesses. If we imagine a more dynamic future for agriculture and Iowa, startups must be a part of it.

We have alumni who’ve been out of school for a few years now working on their first startup. We have current students partnering with past students on new businesses. And we continue to have so much help from seasoned business professionals and entrepreneurs in creating new opportunities. The networks of great people who support the Agricultural Entrepreneurship Initiative is an expression of the vibrancy of the agricultural startup community and represents the evolution of a dynamic agricultural startup ecosystem.

Kevin Kimle is the Pasteriter Chair of Agricultural Entrepreneurship, Director of the Agricultural Entrepreneurship Initiative and senior lecturer in the Department of Economics.

They discuss next steps for the business with fellow CALS grad Mikayla Sullivan, co-founder of KinoSol, and Iowa-based startup specializing in mobile, solar dehydrators.

With mentorship from the Agricultural Entrepreneurship Initiative’s Kevin Kimle (left), Steven Brockshus (center) created Terva, an online marketplace for farmland. They discuss next steps for the business with fellow CALS grad Mikayla Sullivan, co-founder of KinoSol, and Iowa-based startup specializing in mobile, solar dehydrators.

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The Ag Startup Engine is a key piece of an emerging, vibrant ecosystem for agricultural entrepreneurs.”

The Ag Startup Engine is a key piece of the next generation of innovators and leaders in agriculture. The Ag Startup Engine aims to provide businesses like Performance Livestock Analytics with access to networks and resources helpful to their continued growth, says Kimle. “Dane and Dustin have done a fantastic job of launching their products into the beef industry. We look forward to supporting them as their business grows its customer base.”

New courses, experiential learning opportunities and engagement opportunities will be rolled out by the initiative in the next few years. “The goal is to build students’ entrepreneurial capacity,” says Karen Kerns, CEO of Kerns and Associates and chair of the Entrepreneurship Initiatives Advisory Council. “Entrepreneurship is more than one idea, product or project. It’s a way of thinking, innovating and impacting.”
IOWA STATE’S INDUSTRIAL PLAYGROUND

Iowa focus, global client base

More than 50 companies used the Center for Crops Utilization Research (CCUR), or its affiliated BioCentury Research Farm (BCRF) over the past five years, generating an economic impact of $118 million in Iowa.

The Center for Crops Utilization Research and Service is a valuable partner that steers Iowa companies to CCUR. About half of CCUR’s clients are based in Iowa, which helps support the center’s goal of diversifying the economy in the state. Iowa State’s Center for Industrial Research and Service is a valuable partner. CCUR has more than 260 pieces of manufacturing equipment that can be configured into integrated systems solutions depending on the needs of the faculty or industrial clients. CCUR encompasses 14,000 square feet of lab and pilot-plant space to accommodate companies ranging from start-ups to multinational corporations.

Ideas to implementation

The center was created more than 30 years ago to increase the use of Iowa crops, which is still a primary focus, Keener says. “We look at corn and soybeans as an input into all these other opportunities. We don’t just look at them as an agricultural product to feed to animals or make ethanol. The intent is to connect with companies to make value-added products because those products provide a 10-to-1 mark-up on revenue,” he says.

“Many companies have pilot plants, but they are focused on process improvement and are set up to mimic their large-scale manufacturing. Our facility is a playground where they can come and explore new ideas,” says Kevin Keener, director of the two facilities.

“Many companies have pilot plants, but they are focused on process improvement and are set up to mimic their large-scale manufacturing. Our facility is a playground where they can come and explore new ideas,” says Kevin Keener, director of the two facilities. Iowa State’s Center for Industrial Research and Service is a valuable partner. CCUR may enter the picture again. “Ideas to implementation

The Center for Crops Utilization Research, along with the BioCentury Research Farm, provide companies from around the world access to processing and production systems to help take their ideas to the next level.

“We look at corn and soybeans as an input into all these other opportunities. We don’t just look at them as an agricultural product to feed to animals or make ethanol. The intent is to connect with companies to make value-added products because those products provide a 10-to-1 mark-up on revenue,” he says.

“I have the chance to help technologies move from bench top through pilot scale to commercial scale, troubleshoot the technical issues and help Iowa companies and beyond generate more jobs,” he says.

For a start-up business like ours, it is critical to have access to a pilot plant with the capability to adapt to specific, custom engineering and processes,” says Michael Spinelli, the company’s co-founder and chief technology officer. “Our team was very pleased with the facility layout and the many process capabilities available on site.”

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Diverse expertise, equipment

CCUR offers a variety of technologies that commercial research and development departments may need. Many seek information about fermentation from CCUR’s department of chemical engineering and processes,” says Michael Spinelli, the company’s co-founder and chief technology officer. “Our team was very pleased with the facility layout and the many process capabilities available on site.”

“CCUR is convenient since it is close. The company develops some ingredients based on herbs, such as rosemary and spearmint. It wants as much pilot-scale information about growing, harvesting and extracting before actual production. That’s where CCUR came in. “CCUR is convenient since it is close. The availability is great, it seems like we can get in on pretty short notice because they can accommodate multiple groups. As far as equipment, they have a wide range of equipment that we can work with,” says Schroeder.

“Human capital, high tech

Schroeder says Kemin received information about fermentation from CCUR’s department of chemical engineering and processes,” says Michael Spinelli, the company’s co-founder and chief technology officer. “Our team was very pleased with the facility layout and the many process capabilities available on site.”

Having that assistance helps clients,” Schroeder says. CCUR also offers new businesses needed facilities and experience to develop their ideas.

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Drying technology is another area of emphasis. The center houses eight types of drying technologies that affect the structures of finished products in different ways. Several kinds of grinding systems also are available to handle the qualities of a wide range of materials.
“A lot of these companies don’t have the diversity of equipment. They can come in here and do the work for a few thousand dollars compared to an investment of a couple hundred thousand for a piece of equipment. That’s the driver for a lot of companies,” Keener says.

Large companies with extensive research and development facilities still seek their help, says Darren Jarboe (’85 ag business, ’96 agronomy, 12 PhD industrial and ag technology). CCUR’s program manager for technology commercialization, marketing and communication.

“The knowledge and real life experience I have gained from this job will serve me just as well if not better than the knowledge I have gained in the classroom.”

Next gen scientists
Students and faculty researchers are a necessary part of CCUR’s success. The Iowa State faculty affiliated with the center is a draw for companies, allowing them to access world-class expertise without leaving campus. More than 50 faculty and researchers from departments including food science and human nutrition, agricultural and biosystems engineering and a dozen other departments work with CCUR clients. Faculty also supervise student research projects in the center. Labs for food processing, food technology and ag and biosys-tems engineering and a dozen other departments work with CCUR clients. The experience has given him the opportunity to learn about the food processing industry and network with clients, making contacts for after graduation.

“The knowledge and real life experience I have gained from this job will serve me just as well if not better than the knowledge I have gained in the classroom,” Wiegle says Keener says there are currently 10 senior design project and product development teams using the center. CCUR staff help teach undergraduate and graduate courses in areas including food product development, food processing, pet food processing, food analysis and grain processing and handling.

Keener wants to expand training programs for companies using the center including workshops in food safety training, regulatory compliance, packaging and recycling. Last year, it hosted a session on the use of ultrasonics—the use of acoustic vibrations to improve materials and industrial processes—in food processing. An upgrade to the existing CCUR Technology Transfer Theatre could allow participants to view pilot-plant operations by video, and be broadcast online to sites around the world. It is difficult to view equipment for groups gathered around it, but a camera could put workshops into the pilot plant whenever they are.

“I’ve done a lot of training programs for USDA and FDA inspectors as well as private industry tailored to different company needs, and I see a tremendous opportunity there,” he says. When he was hired in 2015, Keener says the message he got was to diversify the economy in the state. The variety of projects at CCUR shows it is achieving its goal.
Five years ago, Sara Hunter moved from Vermeer Corp. headquarters in Pella, Iowa, to the Iowa State University Research Park in south Ames.

Hunter (‘06 animal science) oversees the day-to-day partnership between Iowa State and Vermeer, a family-owned and operated manufacturer of agricultural and industrial equipment.

“The proximity to campus is a benefit to students and our team members. The ability to allow students to work on real-world projects while they’re continuing to go to school is a big piece of it,” she says. “Being able to collaborate with the university and recruit technology-based talent is key.”

After outgrowing their original space, the research park constructed the Vermeer Applied Technology Hub in 2016 and leases it to the company.

“The new multi-use building includes labs, offices and an equipment high-bay to allow our team members and Iowa State students and faculty to work side-by-side on technology advancements of Vermeer equipment,” Hunter says. “The building fosters an environment for software engineers to excel in the development of practical, affordable and modular equipment technology.”

Campus collaborations
Hunter builds relationships with staff, faculty, students and the Ames community to complete projects and build brand awareness for Vermeer. That includes supervising a crew of students handling technology needs for the office and planning events. She also serves as an adviser to the College of Agriculture and Life Sciences Student Council, volunteering her time to meet with the club and offer industry guidance to its members.

Edan Lambert, a junior in animal science and president of the college’s student council, spent this year as part of the Vermeer International Leadership Program. She found it so valuable that she added leadership studies as a minor.

“While I have already gained so much from being a part of this program, I hope to gain a better understanding of leadership on a local, national and cultural level,” Lambert says. “I also want to be more equipped from a cooperative standpoint so I can be a better employee and colleague in the future.”

New building, new partnerships
After moving into the new building last March, Vermeer was joined by several tenants. Colin Hunt (‘15 agricultural studies), founder of Smart Ag, jumped at the chance to move his start-up into the Vermeer Applied Technology Hub.

“New enterprises are filling several buildings out on their own and create businesses. Discover in labs and classrooms to strike startups looking to deepen their relationship with the Iowa State research enterprise and talent pipeline.

“We connect our tenants with the resources they need to grow their business; whether that is talent, the research infrastructure at Iowa State, specialized facilities and equipment, business development expertise or financing,” says Steve Carter, president of the Iowa State University Pappajohn Center for Entrepreneurship.

The Vermeer-Smart Ag relationship is just one of many agricultural connections at the research park—more than 40 percent of companies in the park are related to agriculture.

Like Hunt, several College of Agriculture and Life Sciences alumni, faculty and students are taking what they discover in labs and classrooms to strike out on their own and create businesses. New enterprises are filling several buildings going up at, and around, the research park.
Many companies navigate to the research park after forging relationships elsewhere on campus, usually through research. Deere is setting up a research and innovation center collaborating with, among others, Matt Darr in the agricultural and biosystems engineering department. Darr, who was recently named to the Kinze Manufacturing Fellowship in Agricultural and Biosystems Engineering, has conducted several projects with Deere, many dealing with biomass harvesting equipment at Iowa State’s BioCentury Research Farm (BCRF).

Grau-Wen Technologies is commercializing an algal wastewater treatment technology developed at the BCRF and the Center for Crops Utilization Research. It has offices at the park and is part of the Iowa State University Startup Factory and Ag Startup Engine (read more on page 15). It has offices at the park and is part of the Iowa State University Startup Factory and Ag Startup Engine (read more on page 15). Martin Gross, left, and Zhiyou Wen take a sample of algae in the portable algae water-treatment unit. Their business, Grau-Wen Technologies located at the research park, is commercializing an algae wastewater treatment technology developed in partnership with Iowa State. "Many of the park’s more than 60 companies are agricultural, and several are led by ag and life sciences alumni or faculty.”

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"Many of the park’s more than 60 companies are agricultural, and several are led by ag and life sciences alumni or faculty.”

The spirit of entrepreneurship is strong in the College of Agriculture and Life Sciences and in agriculture, says Carter. “Many of the park’s more than 60 companies are agricultural, and several are led by ag and life sciences alumni or faculty.”

For example:
• Varifas Biomreuwerables LLC was cofounded by a team of researchers including agriculture and life sciences faculty members Saul Nicolaus and Mama Nelson. The company’s goal is to produce biomass chemicals economically, help partners create environment-friendly products and contribute to building a bio-based sustainable chemical industry.
• Pat Schrible (’96 PhD agronomy), Charles F. Curtiss Distinguished Professor in Agriculture and Life Sciences, is managing partner of Data2Bio LLC, that helps clients on six continents with projects ranging from mapping and cloning individual genes to designing and conducting multiyear plant breeding programs relying on genomics
• Nathan Davis (’15 food science, global technology) is the founding partner of Idenqit, which provides customized packaging solutions for food and pharmaceutical companies.

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The Rineharts also are raising, “just about any vegetable you can grow in Iowa” for sale at the Boone and Des Moines Downtown Farmers’ Market. Greg credits Iowa State faculty and staff with ongoing technical assistance and support, and names Ajay Nair, professor of horticulture, and the staff of the horticulture station as especially helpful. He looks forward to passing the farm to his son Daniel in due time.

He’s got a bit of advice for other farmers looking to diversify into horticulture: “We learned slow, and that’s the best plan,” Greg says. “Grow the things you like about any vegetable you can grow in Iowa.”

Growing impact

The most recent statewide survey data collected by Iowa State University shows farmers like the Rineharts are contributing to Iowa’s growing horticultural industry. In 2015 horticulture generated $48.3 million in labor income, which is earned and spent locally.

The potential exists for even more growth. Iowans spend more than $8 billion on food each year, of which only about 14 percent is grown in the state. Research by Iowa State University economist David Swenson indicates increased production of fruits and vegetables could result in a corresponding increase in jobs and income for many Iowans.

In response to this opportunity, Iowa State has ramped up its investment in a local foods program within extension and outreach. Its staff of 10, under the direction of program manager Craig Chase (’80 MS agricultural economics, ’94 PhD rural sociology), supports local food systems in a number of ways.

The program offers the following resources:

- Leadership training and professional development
- Research-based, needs-driven tools and publications
- Evaluation services and training
- Facilitation and outreach services
- Support for youth education in gardening and nutrition
- Help building diverse coalitions and partnerships, locally and statewide

The 28-state local foods systems practitioners currently serving 89 of Iowa’s 99 counties attest their work is benefiting their communities in multiple ways. “Growing for local markets can provide a lower-cost point of entry into agriculture for beginners than larger scale, commodity-market farming,” Chase says. “Local foods systems create other business opportunities for distributors and aggregators, keep dollars circulating in the community, give commodity growers a means of diversifying their income and help children and families connect to healthy, local food products.”

Adding value on farm

When Jill and Jeff Burkhart of Picket Fence Creamery bought a grade-A bottling plant at their 80-acre dairy farm near Woodward, Iowa, in 2007, they were aiming to bring some balance to their family life. “Jeff and I both had full-time jobs off-farm and had the dairy farm as well,” Jill says. “We needed to find a way for the dairy to make money on a stable basis, or stop the dairy and do our jobs in town. We both decided we wanted to keep the farm going, make it sustainable for us, and make a living for our family.”

The timing was right for a value-added dairy business in the central Iowa area, so Picket Fence Creamery stepped in to meet demand for a local dairy product line and has continued to grow with consumer demand.

With several Iowa Staters in the family, the Burkharts turned to Iowa State University for assistance. They worked with students to produce a business plan as a team project, and another class did a marketing and feasibility study for the creamery.

The family-run creamery was bottling all of its own milk within the first nine months of operation. Since selling its first bottles of milk in the Perry Hy-Vee, the creamery has grown to produce and distribute milk and chocolate milk, cheese and 30 flavors of ice cream to 80 locations statewide. They also sell their own beef and around 100 locally made food products from other vendors in their farm store.

Connecting farm to table

FarmTable Procurement and Delivery of Harlan, Iowa, is an aggregator and online marketplace of locally produced foods. Ellen Walsh-Rosmann (’09 public service and administration in agriculture, international agriculture) and her husband Daniel Rosmann (’95 agronomy) created the business in 2013 to meet a growing demand from local chefs for fresh products. Business has boomed, and now includes a crowd-funded delivery truck, a growing staff and a business park location for aggregation and storage.

FarmTable distributes products from about 45 farmers to 80-90 buyers such as chefs, grocery stores and buying clubs in the Omaha, central Iowa and Cedar Rapids/Iowa City food sheds.

“As a farmer, it is not easy to sell and scale up a farm for the wholesale market,” Ellen says. “We started FarmTable to help our farmer friends.”

“It’s difficult to make ends meet by just raising animals for milk production and sale of fresh milk,” Clark says. “Farmers can recover more of their investment and have the creative satisfaction that on-farm value-added processing provides.”

Dandale Myer is one of those friends—the owner-operator of One Farm, a small vegetable business near Logan, Iowa, and a satisfied FarmTable client.

“What I appreciate most about FarmTable is the way its system allows me to not only stay on farm to grow, harvest and package orders, but it also allows us to reach markets and build customer relationships we would never have time to cultivate on our own,” Myer says.

Iowa State’s Swenson suggests smart public policies connecting local farmers to large food buyers such as supermarkets, restaurants, hospitals and school districts could help grow midsize farms, creating jobs and boosting local economies.

Capitalizing on growing consumer demand for locally grown food is one way farmers may diversify. The Iowa State University Extension and Outreach Local Foods Program offers tools, resources and expertise to help along the way.

Find ISU Extension and Outreach local food resources and visit the farms featured online.
With its plentiful supply of corn and soybeans, Iowa is at an advantage to capitalize on economic opportunities in the U.S. egg industry.

Iowa egg producers started building on the state’s value during the late 1990s and by 2001, reclaimed the state’s past title as the number-one egg-producing state in the nation.

Iowa has been the leader in egg production ever since, housing 49.3 million laying hens in 2016, producing an estimated 1.4 billion table eggs. According to the United States Department of Agriculture, Iowa’s laying hen flock is nearly the size of the flocks located in Indiana and Ohio combined, the second and third largest respectively.

The individual who understands the industry’s past and can offer insight into its future is part of the team at the Egg Industry Center located at Iowa State University.

Maro Ibarburu (BS MS agricultural economics) works as the associate scientist and business analyst for the center. He didn’t grow up with a fascination for eggs or chickens, though they raised some on his family’s farm in Uruguay. He was drawn to Iowa State by the opportunity to learn and an interest and passion for economics. Ibarburu started his adventure under professor Brent Hueth and continued to work with others in agricultural economics.

“I expanded my knowledge of cattle production and marketing under John Lawrence, interim vice president for extension and outreach (then director of the Iowa Beef Center and professor of agricultural economics). I also learned a lot about pork production and marketing under James Kliebenstein, professor emeritus of economics. The education and support I got at Iowa State are priceless and will stay with me for the rest of my life,” says Ibarburu.

Ibarburu definitely has learned so much as to what following graduation he earned a position as a poultry economist. And, he is now the go-to person nationwide for three things: historical egg industry information, insight on the future of the flock and egg prices.

He continually analyzes data coming from the United States Department of Agriculture and other private sources to project what the future may hold for the industry. His efforts increase the accuracy of models used for reporting.

Forecasting markets is never an easy task, and it gets harder when the product doesn’t have a tight correlation between price and consumption.

“The correlation between egg price and egg consumption is weak. In only nine out of the last 17 years the consumption and the price moved in opposite directions, whereas in the remaining eight years, the consumption and the price moved in the same direction,” says Ibarburu.

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The industry relies on the information he provides.

“The knowledge that Maro has, and the information that he generates is invaluable and critical to us as producers and to our industry partners because we have to make important investment decisions that have long-term impacts,” says Steve George, president and CEO of Fremont Farms of Iowa. “Maro is a key asset to the entire U.S. egg industry and we are lucky to have him in Iowa.”

To help Iowans better understand the impact of the Iowa egg industry, Ibarburu helped co-author an Iowa State University Extension and Outreach publication titled Economic Importance of the Iowa Egg Industry. Updated periodically, this piece is used to help educate policy makers and others.

Iowa Egg Council Executive Director Kevin Stiles says the publication has another use.

“Farmers use it when they meet with lenders and others when they look to grow or modify their farming or processing operations,” Stiles says. “It is one of our go-to pieces.”

“Ibarburu also works as a collaborator on research projects and develops special reports on things like the market reaction to the High Pathogenic Avian Influenza outbreak in 2015, but ultimately he likes helping others the most.

“It is a fun job because sometimes I am helping a producer who has a question about the market reports, and other times I am helping a new allied industry person who is unfamiliar with egg production—like the one who started a job earlier this year for a company located in Des Moines,” he says.

The Iowa egg industry has an underlying network of supporting companies, and Ibarburu considers collaborating with these industry partners essential for the industry.

Besides some educational opportunities, Ibarburu also has helped one such company determine the egg industry’s capacity to sustain needed inputs for their operation. This information was used to determine if it was possible for them to locate within the state.

In response to industry needs and trends, he currently spends a considerable amount of time talking with those in the consumer food chain about the economic trade-offs of moving the industry to a cage-free production system.

“While we don’t know the future, we do know some of the trade-offs that exist,” says Ibarburu. “These include things like a bigger environmental footprint, increased disease pressure for the birds, and increased cost of production, which will increase prices on the grocery store shelf. One thing is certain, this industry is always changing and that means there is always something to learn.”
April Hemmes, a fourth-generation Franklin County farmer, has been called the epitome of women’s empowerment in ag.

During her 32-year farming career, nothing has stopped Hemmes, known as an assertive, outspoken, resilient ag leader who’s more likely to wear a “Well behaved women rarely make history” shirt than a seed corn cap. In 2016, Hemmes spoke at 10 conferences, including the Farm Progress Show, traveled to five foreign countries to discuss U.S. agriculture and sustainable crop production, conducted radio and television interviews with 12 media outlets, and hosted more than 30 visitors on her farm. “Twenty of these visitors were from China, and four participants had the opportunity to drive Hemmes’ combine during harvest. Hemmes offers her top five tips for success in farming and life:

1. Mentors matter. Hemmes’ (’82 animal science) credits her grandmother, Bert Hemmes, for encouraging her to farm, and her high school ag teacher, David Flint, for inspiring her to learn all she could about agriculture. This support helped her thrive at Iowa State University, where only 5 percent of her fellow animal science students were female. Today, that number has risen to 75 percent.

2. When there’s a roadblock, take a detour. When the 1980s Farm Crisis made it tough to return to the farm, Hemmes accepted a job at a bank in Omaha. “Be willing to try new things,” she says. “I’ve learned you have to do what’s best for your farm and your family.”

3. Leverage your contacts. As her career evolved, Hemmes became an Iowa State University agronomy department research assistant and later worked at the Iowa Swine Testing Station in Ames before serving as a legislative aide in Washington, D.C. for Iowa Congressman Jim Ross Lightfoot. “Never lose your contacts,” Hemmes says. “Every job I had is because of someone I knew.”

4. Start small, but pursue big dreams. When Hemmes returned to the Hampton area to farm full-time in 1985, she converted an old shed into a farrowing barn and raised 30 sows. As she modernized the operation, she bought her first piece of ground in 1996. Today, Hemmes owns approximately 1,000 acres of corn, soybeans and pasture land. “Even after 32 years, people still think my husband is the farmer,” jokes Hemmes, whose husband, Tom Kazmierczak, has an off-farm job in Hampton.

5. Give back. Hemmes serves with the United Soybean Board, Iowa Soybean Association, Iowa Beginning Farmer Center Advisory Council, Franklin County Soil and Water Commissioner, Franklin County Farm Service Agency County Committee, Reeve Township clerk, 4-H Beef project leader and more. “I love working with people in agriculture, especially kids, and feel fortunate to be an Iowa farmer,” jokes Hemmes, whose Impacting the Land award in 2016 for her conservation efforts. “I love working with people in agriculture, especially kids, and feel fortunate to be an Iowa farmer.”

When Stephanie Carlson walks into the room to lead a discussion on federal policy she’s well equipped to protect more than 6,200 Iowa hog farmers representing $7.5 billion in annual economic activity. Her ace in the hole? Science. As producer outreach and federal policy director for the Iowa Pork Producers Association, Carlson monitors, researches and prioritizes federal policy issues. She recommends action to members, builds strong relationships with policy-makers, government agencies and staff. Carlson’s (’13 animal science) says science and agricultural research are vital to her job.

“Agricultural research allows farmers to be competitive and protects the environment and human health,” she says. “We use science and technology to back up our policy for the best interest of people, pigs and the planet.”

The association is appreciative of partnerships with the Iowa State University College of Agriculture and Life Sciences, Carlson says, especially in their Foreign Animal Disease Preparedness Task Force. She leads the effort bringing together partners across the industry to increase understanding of the State of Iowa Foot-and-Mouth Disease Response Plan and crisis management among pork producers.

“When we were dealing with PED (Porcine Epidemic Diarrhea Virus) and Avian Influenza struck poultry farmers, we realized the pork industry is at risk. It’s not the most fun conversation, but it’s important for producer success and the economic success of Iowa and the United States,” Carlson says.

The task force recommends the USDA Animal and Plant Health Inspection Service expand their Foot-and-Mouth Disease vaccine bank to provide adequate coverage for all strains.

She plans to continue these conversations as part of upcoming Farm Bill discussions.

“Exports are not part of the Farm Bill, but go hand-in-hand with the Foot-and-Mouth Disease vaccine bank. Should we get the disease, exports would be shut down immediately. With about 25 percent of total pork production exported, that’s a tremendous amount of product to be sitting on,” Carlson says. Exports of Iowa pork totaled $1.1 billion in 2015.

Carlson says she learned from the best at Iowa State, especially during her time working at the Swine Teaching Farm under the direction of Dr. Chizmar. Advised by professor Tom Baas, Carlson says those mentorships and relationships helped her find a career path and inspire her passion for the pork industry.

She contributes her time and service to the college and to the agricultural industry. Her community relations chair for the Young Professionals in Agriculture networking group and a member of the Grow Iowa Agriculture advocacy organization.

Carlson was honored earlier this year with the 2017 College of Agriculture and Life Sciences Emerging Iowa Leader Award.

“From sharing her expertise with classes and student organizations, to advocating and raising awareness for college priorities through the Cantus League and the Grow Iowa Agriculture organization, Stephanie has positively impacted the college and our students in many ways,” says Wendy Wintersteen, endowed dean of the College of Agriculture and Life Sciences.
Barkema credits former career services director Roger Brewer for first helping him find his way at Iowa State and introducing him to another main mentor—agronomy professor Ken Frey.

“I worked for Dr. Frey the summer before my senior year as an apprentice to see how science worked and get acquainted with field work and plant breeding,” Barkema says. “Dr. Frey was a world famous scientist.”

Barkema earned a master’s degree in plant genetics from Cornell University in 1978 and graduated from the executive program at Stanford University in 2009.

“The Stanford program broadly considered what affects an organization’s performance, a big help to me in my role at the Kansas City Fed. Culture and teamwork are fundamental, and I encourage students to build their team skills during their ISU years,” he said.

He landed at the Kansas City Federal Reserve Bank in 1986.

“They were looking for someone who knew something about agriculture and monetary policy. I thought I’d go for a few years and get experience. That turned into 25 years, and I’ve been thrilled with the experience,” Barkema says. “Initially agriculture was my beat. Kansas City has always maintained the Federal Reserve’s agricultural brain trust, and that is still true today.”

Barkema joined the faculty at Oklahoma State University and served as chair of the Department of Agricultural Economics for three years.

“That was a good time for me to take a break from the Federal Reserve and gain some new leadership experience in an extraordinary educational and research setting,” Barkema says. He returned to the Federal Reserve, where he worked with fellow Iowa Stater Tom Hoenig who was president of the Federal Reserve Bank of Kansas City from 1991 to 2011. Barkema retired in 2012 as the senior vice president and director of research.

“I served through the financial bust of the late 2000s. It was a difficult period for the nation, and an extraordinary challenge. I learned so much and worked with such wonderful and amazingly talented people. It allowed me to see the economy and agriculture from a whole new level and light.”

Barkema shared his experiences and expertise at Iowa State University in April as he presented the 2017 Carl and Marjery Herzt Lecture in Emerging Issues in Agriculture.

He offered his thoughts on current trends and issues impacting agricultural economics nationally and globally.

Barkema says that while some connect today’s economic climate to the farm boom and bust of the 1970s and 1980s, there are important differences between then and now.

“A calamitous drop like that of the 1980s is unlikely, because the economic environment is much different today. Inflation is at a modest level, and the economy is on a slow growth path. This calls for measured and deliberate action, not what we had in the 80s,” Barkema said during the lecture. “Looking ahead, agriculture will face tough challenges, but global food demand will grow.”

Barkema encouraged students to ask tough questions, and bring issues into focus in a way that leads to logical conclusions.

Following Barkema’s presentation, Kayleigh Koch, a sophomore in agricultural business raised her hand.

“When you were a student you said a question you pursued was, ‘how do we feed a growing population?’ What do you believe is another major issue in agriculture students like myself should be working to solve,” Koch asked.

“I grew up in the era when trying to feed a growing global population was front and center. And, there is still much to be done there. But, the questions that swirl in my mind are how to feed the world in a sustainable way and in a way that makes good business sense. I think those are the two major questions,” Barkema replied.

“But, I’m sure you’ll have better questions as you move forward.”

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“Kansas City has always maintained the Federal Reserve’s agricultural brain trust, and that is still true today.”
ALUMNI

Photo essay by Harlen Persinger
Story by Melea Reicks Licht

“Harlen’s dedication to the industry and his willingness to help budding photo-journalists learn their craft is unequaled among his peers,” says Den Gardner, former executive director of the AAEA.

Persinger, (’67 dairy science, ’72 ag journalism), a native of Grundy Center, took his first picture on the Iowa State University campus. The subject was the campanile.

He captured his first photographs abroad while visiting 10 countries as part of the Iowa State University Ag Travel Course in 1966. He became more interested in photography while serving in Vietnam with the U.S. Army in the late 1960s and refined his skills working on farms in Norway as part of the International Farm Youth Exchange following his deployment.

He returned to Iowa State to pursue ag journalism and built a 45-year career telling stories with pictures. Persinger worked for Harvestore Farmer Magazine, Webb Publishing, Bader Rutter and since 2004, freelancing for regional and national farm publications. His work can be found in popular agricultural media outlets, the Peace Corps annual calendar and in the winner’s circle at the Iowa State Fair.

“A good photograph starts with having an excellent eye for composition, and the only way to develop that is through years of practice,” Persinger says. “The best shots involve an interesting angle, the right balance of light, leading lines that draw you in and a touch of red. Red is like a spotlight in a photograph.”

Harlen Persinger received the Lifetime Achievement Award from the American Agricultural Editors Association (AAEA) at the organization’s annual meeting last July. Persinger is the first photojournalist, freelancer and active farmer to receive the award.

Persinger selected 10 top photographs from his career to share in this photo essay—visit STORIES website to view the rest of his selections.

NO FILTER
A CAREER IN PICTURES

“Golden Time” circa 2007
Persinger grabbed this picture by taking a unique angle of a common harvesting scene on a neighbor’s farm near Grundy Center, Iowa.

“Combine Camaraderie” circa 2005
The Grimmius family near Grundy Center, Iowa, stopped for a quick chat during harvest just down the road from Persinger’s home farm. The secret to photographing silhouettes, Persinger says, is “to make sure you can see arms and legs on each individual.”

“A Love of Lefse” circa 1970
This was one of Persinger’s first “real people” photographs. Taken during his stint in Norway with the International Farm Youth Exchange, it features the neighbor of his host farm family rolling out dough for Lefse (Norwegian flatbread).

“Giant Thumbprint” circa 1986
This landscape photo featured a recently tilled fallowed wheat field after a fresh snow in eastern Washington.

“Aflac Audition” circa 2013
Fascinated by the ducks, Persinger literally chased down this driver on a back road in Vietnam to get this shot. The driver stopped just long enough for him to take five quick frames. He never determined how the ducks were secured on the motorcycle.
Believe

Who believe in the future of life sciences.

We are tasked to do so with less land and inputs. Youth and their parents see the challenge of ‘feeding the nine’ and local challenges in agriculture and food. “In addition to paying more attention to their FFA experiences on campus,” Zehr says, “that’s one reason why our students are less likely to switch career interests than the typical student.”

Why? “People pay more attention to their food,” says Josh Remington, executive director of the Iowa FFA Foundation. “In addition to paying more attention to what they eat, youth want to tackle the challenges of feeding this nation and be a part of the solution to global hunger. We are tasked to do so with less land and inputs. Youth and their parents see the need to build a lifestyle that is sustainable.”

The Iowa FFA and the College of Agriculture and Life Sciences team up to offer a career pipeline to address local and global challenges in agriculture and life sciences. FFA offers a leg up in gaining skills and knowledge necessary for these careers. Once students are ready to select a college Iowa State feels like home thanks to their FFA experiences on campus, Remington says.

Andy Zehr, director of marketing and new student programs in the college, agrees. “Students in FFA come to us with a greater awareness of the breadth of career opportunities in agriculture. They can articulate their goals in a way that allows us to help them find their home on campus.” Zehr says, “That’s one reason why our students are less likely to switch majors outside of the college—they have spent more time considering these types of careers than the typical student.”

Scott Johnson, executive secretary of the Iowa FFA Association, says the state’s membership has increased 69 percent over the last 25 years with 14 percent growth per year, while the Iowa FFA Association, says the state’s membership has increased 69 percent over the last 25 years with 14 percent growth per year, while the college’s partnership with Iowa State University Extension and Outreach has increased from 1,000 to 12,000 per year.

“Iowa farmers are great at what they do,” says Steve Johnson, farm management specialist with Iowa State University Extension and Outreach. “Where we come into play is helping farmers manage price risk resulting from these large crops.”

Johnson is one of eight farm management specialists serving farmers around the state, offering farmers the latest information on farm financial and risk management strategies and marketing tools. He leads ag marketing clubs that meet during the late fall and winter months in Lynnville, Conrad and Osgen. Farmers gather monthly to discuss trends and best practices for managing a variety of crop risks.

“These groups help farmers build knowledge regarding a variety of crop production and marketing topics that lead to the development and implementation annually of crop marketing plans,” Johnson says.

FFA includes:
- Enhancing science, technology, engineering and math (STEM) through secondary agricultural education—Mike Retallick, chair of agricultural education and studies, leads this effort with FFA advisers
- Recruiting FFA advisers and agriculture teachers including the National Teach Ag Campaign
- Hosting Career Development Events (CDEs) on Iowa State campus providing facilities and expertise
- Hosting Iowa FFA Convention on Iowa State campus offering members access to people, programs and places showcasing college life and opportunities
- CALS offers scholarships to FFA members participating in select CDEs and eight-state convention raﬄe prize winners
- 67 percent of Iowa FFA advisers and secondary agriculture teachers are CALS graduates

FFA offers a leg up in gaining skills and knowledge necessary for these careers and local challenges in agriculture and food. “In addition to paying more attention to their food,” says Josh Remington, executive director of the Iowa FFA Foundation. “In addition to paying more attention to what they eat, youth want to tackle the challenges of feeding this nation and be a part of the solution to global hunger. We are tasked to do so with less land and inputs. Youth and their parents see the need to build a lifestyle that is sustainable.”

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The number of Iowa youth who believe in the future of agriculture is at an all-time high. Membership in the Iowa FFA is now approaching 15,000 young people in 232 chapters.

“The agricultural youth leadership organization is growing more relevant than ever before. Why? “People pay more attention to their food,” says Josh Remington, executive director of the Iowa FFA Foundation. “In addition to paying more attention to what they eat, youth want to tackle the challenge of ‘feeding the nine’ and be a part of the solution to global hunger.”

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Members of the College of Agriculture and Life Sciences campaign committee:

- Wendy Wintersteen (PhD entomology), endowed dean, campaign committee chair
- Lloyd Bettis (BS agricultural journalism)*
- Chris (BS agricultural journalism) and Chuck Cornelius (BS agronomy)
- Nancy (72 food science) and Rich Degner (BS agricultural and life sciences education, ’77 MS agricultural and life sciences education)
- Clare and Jim Frevert (’60 farm operation)
- Howard (’73 MS, ’74 PhD veterinary microbiology and preventative medicine) and Nancy Hill (’74 MS education)
- Owens Newman (’61 BS agronomy, ’53 MS crop production)*
- Dana Robes (BS dairy science)*
- Roger Underwood (BS agricultural business)
- Dana (BS home economics education) and Pete Wenstrand (’74 BS agricultural business)

* Also serving on the university-wide Forever True campaign cabinet

AG AND BIOSYSTEMS ENGINEERING GRADUATE PROGRAM TOPS IN THE NATION

Iowa State’s graduate program in agricultural and biosystems engineering jumped one spot to No. 8 in the nation according to this year’s rankings released by U.S. News and World Report. The program, which is co-administered by the colleges of Agriculture and Life Sciences and Engineering, also jumped to the top of the undergraduate rankings last fall.
The American Society of Farm Managers and Rural Appraisers (ASFMRA) has honored agricultural and life sciences endowed dean, Wendy Wintersteen ('88 PhD entomology) with the Charles F. Curtiss Distinguished Service to Agriculture Award. Richard Priginzit ('86 farm operation) received the 2017 Carl and Marjory Hertz Lecture on Emerging Technologies in Agriculture and Life Sciences award.

Small But Mighty Science

Learn about micro-scale science making big impacts in the next STORIES in Agriculture and Life Sciences. You'll learn about efforts to address antimicrobial resistance in the animal production food chain and how microbes help or hinder plant health. We'll introduce you to tiny creepy-crawly ambassadors for science. Glimpse the future through the lens of small plots and projects that may lead to major advances in human health and environmental quality.

Join us at these upcoming CALS Alumni Events!


STORIES in Agriculture and Life Sciences

小事不小

了解小型科学使大规模影响

在下一次STORIES农业

和生命科学。您将了解关于

对抗微生物耐药性

在动物生产食品链中

和如何微生物帮助或阻碍

植物健康。我们将向您展示

微小的令人毛骨悚然的

大使为科学。

窥视未来通过小

的小型和项目

可能将导致重大改进

在人类健康和

环境质量。

Iowa State University

College of Agriculture and Life Sciences

College of Agriculture and Life Sciences

ISU RESIDENCE HALL HOUSES NAMED FOR CALS ALUMNI

Iowa State’s newest residence hall, Griffey Hall, opened for students at the beginning of January. The hall includes two houses named for college alumni.

Lauro Cavazos ('44 PhD genetics), professor of public health and community medicine at Tulane University School of Medicine. He formerly served as U.S. Secretary of Education and president of Texas Tech University.

Larry Ebbers ('62 ag and life sciences education, '71 PhD) educated, emeritus University Professor in the Iowa State University School of Education and former coordinator of residence life.

CARLSON HONORED AS EMERGING IOWA LEADER

Stephanie Carlson ('13 animal science), director of federal policy and outreach with Iowa Pork Producers Association, received the Emerging Iowa Leader award during the college-sponsored basketball game on January 21. Carlson serves in the college’s young alumni initiative, Curtis League, and is an active advocate for Iowa’s agricultural industry. (Read more on page 31.)

ROSS SELECTED AS CARET REPRESENTATIVE

Kevin Ross, a farmer near Underwood, has been appointed to represent the College of Agriculture and Life Sciences and the Iowa State University Extension and Outreach on the Council for Agricultural Research, Extension and Teaching (CARET). Ross ('09 ag studies) is a licensed crop insurance agent for the Home Agency, a certified general prunty for Western Iowa Energy, LCC and serves on the National Corn Growers Association Board.

CAROLYN MELLION-PATON NAMED VICE CHANCELLOR

Dawn Mellion-Patin ('96 ag and life sciences education) has been appointed vice chancellor for outreach and federal policy with the Iowa Pork Producers Association. She has served the college with the Iowa Pork Producers, Iowa Pork Producers Advocacy group and the Iowa Pork Producers Organization.

KOLISON APPOINTED EXECUTIVE VICE PRESIDENT AND PROVOST

Stephen Kolison ('86 MS forestry, '90 PhD) has been appointed executive vice president and provost for the University of Indianapolis. In his role, Kolison will lead more than 5,500 faculty for the university, which boasts an enrollment of more than 6,500 undergraduate and graduate students and is ranked among the top Midwest Universities by U.S. News and World Report.

ALUMNI NEWS

STORIES

Vol.11 No.1

Jewish Heritage Center, 1200 20th Street

Joe Sweeney

educator and FFA adviser, Ballard Community Schools, Huxley, Iowa

Jenny Lichty

('09 ag and life sciences education, '14 MS), agricultural

CALS GRADS NAMED STATEMENT MAKERS BY THE ISU ALUMNI ASSOCIATION

Four young college alumni were honored by the ISU Alumni Association as “Statement Makers” for their personal, service, entrepreneurial, business and scholarly achievements.

Cameron Creighton ('06 industrial technology), product manager, Toyota North America Business, California

Jenny Lichty ('09 ag and life sciences education, '14 MS), agricultural

education and FFA advisor, Ballard Community Schools, Huxley, Iowa

Bobbi Waggoner ('57 ag journalism), chairman of Hexagon Investments and

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**Fashions may change but the best of Iowa State stays the same.**

Visit to share your classic cyclone experience.

Please e-mail us at stories@iastate.edu to share feedback and your current e-mail or mail address. Or complete and return this card. By sharing your e-mail address you will be signed up to receive our monthly e-mail update, *STORIES Online.*