AgReport

College of Agriculture • Spring 2018

KANSAS STATE UNIVERSITY

K-State's Pet Food Program

Seeking quality nutrition for companion animals

Moving Forward

As we near the end of the semester and commencement, I like to reflect on our accomplishments. A recent survey by *Niche.com* ranked the College of Agriculture fourth in the 2018 Best Colleges for Agricultural Sciences in America.

Shortly after I came to K-State, we established our 2025 goals, which included becoming the Top 5 College of Agriculture in the nation. To date, we have met and surpassed our goals.

Student achievements

Our bright and talented students are central to all our efforts. They choose K-State not just to launch their careers but also to make a difference in a world that needs them to be innovators and problem solvers.

With 35 organizations and 19 competition teams within the college, students have numerous leadership opportunities. Our teams consistently win and place at regional, national, and international contests where they foster valuable industry contacts. Teamwork, critical thinking, and time management are among the skills strengthened through team participation.

The annual Legacy Sale is a tremendous learning experience that showcases the best of the university's purebred bull and cow genetics. Having research facilities adjacent to the main campus increases undergraduate research opportunities that help students understand and evaluate data. Whether they go on to graduate school, return to the ranch, or venture into industry, these students will use data every day to make decisions.

Internships reinforce what students learn in class and often lead to full-time positions. We had 101 employers participate in the annual Agri-Industry Career Fair, which shows that businesses are eager to offer internships and jobs to our students.

Outstanding faculty

The college has a reputation for excellent advising. Faculty mentor students not only in the classroom but also through one-on-one advising and student organizations.

Participation in professional organizations brings new ideas and learning opportunities into the classroom. Undergraduate and graduate students as well as faculty make presentations at various conferences across the country. Our faculty consistently hold leadership roles in national organizations and high-profile committees. They also earn prestigious awards for their innovative teaching, research, and extension programs.

Research and outreach

As the university builds momentum to become a Top 50 research university, the College of Agriculture and K-State Research and Extension lead the way by carrying out crucial work on improving global food systems, conserving water, living healthier lives, revitalizing communities, and developing tomorrow's leaders.

Agriculture accounts for $67.5 billion, or 44.5 percent of the Kansas economy. To improve productivity, producers can access information in multiple formats through K-State Research and Extension's integrated system.

Alumni success

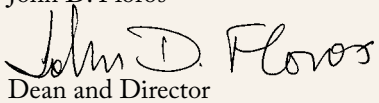
Last year's graduates, December and May combined, comprised the largest graduating class in the college's history. Our graduates are making a difference in Kansas, the nation, and the world.

I'm impressed by the generosity and accomplishments of our alumni and friends. The recent donation to create the Harold and Olympia Lonsinger Sustainability Research Farm provides tremendous opportunities for research, teaching, and extension programs. The College of Agriculture raised a record $20 million last year. Thank you for your continued support.

I believe the articles in this issue clearly illustrate the tremendous value of a K-State College of Agriculture education.

Go Cats!

John D. Floros



Dean and Director

Make a difference by supporting the College of Agriculture.

Visit *www.found.k-state.edu/agriculture*

to find out how you can become part of the college's exciting future.

AgReport

Spring 2018

College of Agriculture and Kansas State University Agricultural Experiment Station and Cooperative Extension Service

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On the cover: Greg Aldrich, the pet food program coordinator, with graduate students and their pets. Back row: (l-r): Spencer Smith, Julia Guazzelli Pezzali, Janak Dhakal, and Renan Donadelli with Finn. Front row: Megan Morts with Remi, Aldrich with Lucre, Alyssa McCormick with Boone, and Isabella Corsato Alvarenga with Benji.

Find more information and view previous issues online

www.ksu.edu/agreport

Ellis takes the helm

Associate Professor Jason Ellis became head of the Department of Communications and Agricultural Education in January 2018. He had been interim department head since March 2017.

A native of Mayfield, Kansas, Ellis earned his bachelor's degree at K-State in 1998 with a dual major in agricultural journalism and animal sciences and industry. He then worked as an account supervisor for a Des Moines, Iowa, advertising firm for four years.

After completing master's and doctoral degrees at Iowa State University, he served as an assistant professor at the University of Nebraska-Lincoln. He returned to K-State in 2011 as an assistant professor in the department he now leads.

He teaches both undergraduate and graduate courses, and his research focuses on food safety and risk communication. While at K-State, Ellis has led three student study-abroad experiences.

"It is a great honor to be selected as leader for the department where I started my journey in agricultural communications 20-plus years ago," Ellis said.

College of Agriculture ranked No. 4 in national survey

A recent survey by *Niche.com* ranks Kansas State University's College of Agriculture fourth of the 2018 Best Colleges for Agricultural Sciences in America.

The survey categorizes 43 colleges using 2015–17 data from the U.S. Department of Education as well as student reviews from Niche users. It compares the top agricultural science degree programs including horticulture, agronomy, crop science, turf management, and aquaculture.

Rankings for the Best Colleges for Agricultural Sciences in America were achieved by Niche's mix of

- Student SAT/ACT scores
- Percent of university's undergraduate students majoring in agricultural sciences
- Program demand
- Student surveys
- Percent of U.S. graduates
- Program demand within the university
- Agricultural sciences test scores compared to those of the university
- Overall Niche grade

Driving Force for Change Statewide

Go to ***www.ksre.ksu.edu/reports*** to access the 2018 annual report, related videos, other reports, and *Statewide,* a new e-newsletter.

By tackling the five grand challenges facing Kansans — global food systems, water, developing tomorrow's leaders, health, and community vitality — the College of Agriculture and K-State Research and Extension are making a difference in the lives of all Kansans.

Metzger joins leadership team

Courtesy of Susan Metzger

Following a national search, Susan Metzger was chosen as the senior executive administrator for the College of Agriculture and K-State Research and Extension.

Metzger served as deputy secretary of the Kansas Department of Agriculture, where she led the agency's policy evaluation and development related to water and natural resources. Before joining KDA, she worked for the Kansas Water Office for 11 years as chief of planning and policy, manager of the watershed coordination unit, and as an environmental scientist. She also was instrumental in developing *A Long-Term Vision for the Future of Water Supply in Kansas*.

Metzger works directly with John Floros, dean of the college and director of K-State Research and Extension, and his senior leadership team to continue the organization's success in teaching, research, and extension.

"I am delighted to have Susan join our team," said Floros. "She brings a wealth of experience related to agriculture, water, and other environmental issues important to Kansans. Her experience communicating with Kansas legislators and agricultural stakeholder groups will be an asset as she represents K-State at various events. Susan's outstanding management and organizational skills make her an excellent choice for this position."

"Joining the College of Agriculture and K-State Research and Extension is an exciting opportunity for me," Metzger said. "I look forward to serving the agricultural community in this position — building and maintaining current relationships and establishing new partnerships."

She replaces Steven Graham, who retired in June 2017 after serving as assistant to the dean and director for more than 20 years.

Division of Communications and Marketing

About 380 students attended the annual Agri-Industry Career Fair to visit and interview with 101 employers about internship and career opportunities.

Keeping Agriculture Sustainable

Researchers and farmers work together to grow food and protect the environment

Kansas farmers are looking to the future. By evaluating tillage and irrigation practices and testing new technology, they hope to prolong their land's productivity for future generations. Using current resources in a way that doesn't delete or permanently damage them is sustainable.

While searching for new practices and technology, new partnerships are being formed.

Kansas State University researchers and Kansas farmers are teaming up on projects to ensure that raising crops is done in ways that are both economically and environmentally sustainable. You can't spend a lifetime growing food if you can't make a living doing it. You also can't damage or destroy a farm's ability to grow food and still expect the land to produce food for years to come.

A new kind of farm

Vara Prasad, university distinguished professor of agronomy, believes that, where possible, those who are raising food to help feed the world should leave the land and water better than they found them to sustain life in the future.

Prasad, director of the Feed the Future Sustainable Intensification Innovation Lab, is gearing up to

Photo above from left: Robert Gillen, head of the Western Kansas Agricultural Research Centers; Gary Pierzynski, agronomy department head; Dean and Director John Floros; Harold Lonsinger; Vara Prasad, director of the Feed the Future Sustainable Intensification Innovation Lab; Sandra Wick, Post Rock District crop production agent; and John Morris, KSU Foundation senior vice president of development, at the dedication of the Harold and Olympia Lonsinger Sustainability Research Farm.

Dean and Director John Floros and Harold Lonsinger shake hands after the dedication ceremony.

lead research projects at K-State's new Harold and Olympia Lonsinger Sustainability Research Farm near Alton. Harold Lonsinger donated 2,300 acres of farmland to the university's College of Agriculture in 2017.

The farm will be home to studies in crop diversity with a focus on efficiently using natural resources and developing crop, soil, nutrient, and water management practices that improve the health of the soil and the quality of the water. Research from the farm will be used to improve productivity while protecting the environment.

Research projects planned for the Osborne County farm involve undergraduate and graduate students who will one day be the next generation of scholars and scientists.

They will learn the principles of sustainability and its importance for the entire food system, from the soil all the way to the consumer, said Gary Pierzynski, university distinguished professor and agronomy department head. The work done there will be a basis for educational programs for elementary school-aged children to producers in the region.

Wheat for the future

Romulo Lollato is not the average observer when he drives past a Kansas wheat field. Where most people see waving heads of wheat, Lollato, an assistant professor of agronomy, may see a crop that needs more moisture or has been overfertilized.

He is leading an effort to determine just how sustainable typical wheat production practices in Kansas are, with an eye toward identifying ways that could be modified to enhance sustainability. Part of the effort, started in 2017, tests the usefulness of a tool called the Field-to-Market FieldPrint Calculator. Lollato and his team used it to analyze previously collected data. In addition, 10 farmers are providing information about their current management practices on about 60 wheat fields. The research team will quantify sustainability on those practices.

The FieldPrint Calculator tool is responsive to some of the tests, Lollato said, especially in exhibiting the impacts of nitrogen fertilizer rates and pesticide applications. But it doesn't take into account crop rotation, double-cropping systems, and other important factors in wheat production, so there is room for improvement.

"The first year of the project was very broad in nature, mostly to understand the tool we were working with and to quantify the sustainability of a few typical wheat fields in Kansas," he said.

Final results of the current project, which was funded by the American Bakers Association, will be available later this year.

Lollato hopes to secure funding for a follow-up project in which the team would work with several wheat producers to modify particular practices and compare those practices to their usual management in terms of sustainability. For instance, researchers could compare a grower's typical


Agronomist Romulo Lollato examines wheat in a research plot near the K-State Manhattan campus.

Agricultural engineer Jonathan Aguilar (center) talks to producers and vendors during a water sensor field day at a water technology farm.

nitrogen management and satellite-based nitrogen management to see if that farm's system can be improved, either by increasing productivity or reducing inputs.

Connecting the dots

Ever since his move to western Kansas from southeast Idaho 14 years ago, Tom Willis has been trying to figure out the best crops, planting and tillage practices, and the most efficient ways to use water in his farming operations. He's owned T&O Farms near Garden City since 2013.

With diminishing water resources linked to the Ogallala Aquifer in western Kansas and portions of the state often in dry and sometimes drought conditions, farmers like Willis continue to search for ways to grow their crops, conserve water, be profitable, and leave resources for future generations.

He and several other farmers have teamed with K-State and the Kansas Water Office in a public-private partnership to establish the network of water technology farms. On those farms, irrigation technology is demonstrated, related research is conducted, and water conservation is supported. New irrigation technologies, management techniques, and cropping patterns can be tested on a larger scale on these privately owned farms than can typically be done on university property.

Like most of Kansas, we farm in a water-limited environment, so the amount of water that soil can effectively capture and store is a good predictor for potential productivity...

"I wish all the wells out here were 1,000 gallon-per-acre wells, but they're not," Willis said. "I'm excited that I'm not just sitting back and just allowing whatever happens to happen. We're being proactive. So whatever happens, I can look at myself in the mirror and say, 'I did everything I knew how to do.'"

Willis and other technology farm owners work with K-State Research and Extension agricultural engineer Jonathan Aguilar (Ph.D.'09 biological and agricultural engineering) and his research colleagues to conduct irrigation and water management research on some of the farms.

Alumnus Justin Knopf and his family were featured in the book and documentary *Rancher, Farmer, Fisherman: Conservation Heroes of the American Heartland.*

"Jonathan helps me pull the data together, interpreting what it means. I can't say enough about the State of Kansas and the extension agency and the things they've been as a resource. They've been great," Willis said.

K-State, the Kansas Water Office, and the technology farms have hosted educational events for the public to show how different technologies work in different regions of the state.

"The hope is that by demonstrating what we're demonstrating, that we can get more farmers to say, 'hey, the risk isn't as high as you think it is,'" Willis said.

Partnering for the better

Saline County farmer Justin Knopf (B.S.'00 agronomy) has no problem trying something new. Make that … a lot of somethings new. Knopf, along with his brother and father, grow wheat, alfalfa, soybeans, grain sorghum, corn, and multi-specie cover crops in a dryland no-till environment.

The Knopfs are collaborating with Andres Patrignani, assistant professor of agronomy, on a project that uses new sensor technology to develop soil moisture-based management zones within a field.

"Like most of Kansas, we farm in a water-limited environment, so the amount of water that soil can effectively capture and store is a good predictor for potential productivity," Knopf said. "The ability to divide a field into management zones based on soil-moisture would allow farmers to manage each zone more precisely, making the most of the water we receive."

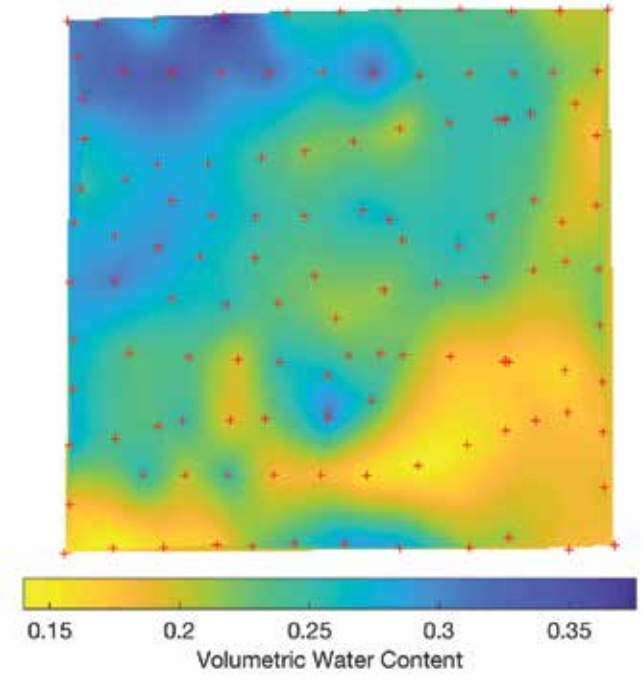
In work with K-State Research and Extension agronomist Ignacio Ciampitti, the Knopfs are using satellite imagery during the growing season to predict crop yields at harvest. The results look promising, Knopf said.

"This is useful for quantifying varying levels of productivity within a field, which will allow us to divide the field into management zones to more precisely manage each area of the field," he said.

"It is also helpful for discovering a problem area within a field earlier than we may find it through scouting or visual observations, which may allow us to be more proactive in solving the problem before it causes more damage."

When the family was considering expanding cover crops on their operation, K-State helped design an experiment, monitor weed levels to quantify suppression from the cover crop, and statistically analyze the data.

"K-State is collaborating with not only our farm on these projects, and of course many others, but replicating the same projects on a number of farms across the state. The data and outcomes on other farms are also valuable and relevant to our farm, which is yet another layer of value in the relationship and collaboration between K-State and Kansas farmers," Knopf said.



Example map showing the soil moisture spatial patterns in a 160-acre field that is part of the study. The soil moisture spatial patterns follow topographic gradients and soil type. These maps can be used to delineate management areas based on soil moisture. Each red cross represents a measurement with the cosmic-ray neutron probe (150 total points).

The Search for the Perfect Meal

K-State program seeks quality nutrition for companion animals

Lucre

One food for the day. That's all you get, and that food has to contain all your nutrients, vitamins, minerals, protein, carbohydrates, and healthy fats — everything.

For many companion animals, that's typically what they get. The family dog gets a bowl of food and maybe a few small treats throughout the day. Kansas State University's Pet Food Program is looking to make the next meal better than the last.

"The purpose of our laboratory is to evaluate the process effects on manufacturing pet food, as it relates to safety, nutrition, and shelf life," said Greg Aldrich, research associate professor and the Pet Food Program coordinator in the Department of Grain Science and Industry.

A growing industry

The program began in 2011 as a way of reaching into different areas. "In regard to feed manufacturing, the companion animal foods area is very, very popular — it's growing significantly," Aldrich said. "I started by teaching one class every couple of years, and that evolved into a part-time faculty position. Just this last year, we made it official: It's a full-time program housed within grain science as part of the feed science and management group."

This parallels Kansas' former "niche industry" of pet food, which is on the verge of exploding into serious trade (see sidebar). In 2017, Tuffy's Pet Foods, based in Perham, Minnesota, made an investment to create the Tuffy's Pet Foods Leadership Fund for Faculty and Program Development in Pet Food Science in the department.

The pet food project focuses on understanding what happens in the process of formulating, manufacturing, and packaging pet food.

One process involves extrusion, in which a set mixture of ingredients is forced through a plate or die, and then cut into pieces of a set size. Making corn curls would be a good human food example: the mixed flour dough is forced through an extruder, which produces a long ribbon. Then it's cut into small pieces, resulting in a curl or puff. Same thing happens for dog and cat kibbles.

"Something like 70 percent of pet food is extruded," Aldrich said. "So, we're looking at ways that we can adjust the ingredient mix and extrusion process, to make sure that we're fortifying the diets properly. For example, we're trying to minimize vitamin degradation, or conversely, we're evaluating things like resistant starch as an alternative fiber in the pet's diet.

Pet food is a complete nutritional package — 100 percent of their daily requirements in one bowl. "It's a lot like infant formula," Aldrich said, "so we have an extra responsibility to make sure we get it right."

Nutritional needs

Digging even deeper, concerns over specific vitamins, nutrients, and minerals must also be addressed.

Courtesy of Grain Science and Industry

Graduate students (l-r): Spencer Smith (B.S. '16 animal science), Renan Donadelli, and Megan Morts (B.S. '12, M.S. '16 animal science) create pet treats in the AIB International facility in Manhattan.

"We could add certain types of minerals into a canned food that may accelerate the degradation of the vitamins, so we have to be cautious of the type of trace mineral pre-mix that we're adding," Aldrich said. "They need to be protected properly so they don't interact with the vitamins — especially things like B vitamins — and degrade them before they get to the animal."

Student involvement

Virtually all research projects are conducted at K-State with student involvement, and the Pet Food Program employs a dozen or more students. Some are working on graduate degrees, and some are undergraduates. "They're conducting that research," Aldrich said. "They're the ones who are actually doing the work, and I'm providing the direction and guidance to them."

One of those students is Spencer Smith, from Overland Park. Smith is completing a master's degree in grain science. She chose K-State because she wanted a career with animals and was impressed by what the College of Agriculture had to offer.

"This is an opportunity to gain hands-on experience with animals and their food, instead of just learning about it in a classroom," she said. "My research has mostly been on the use of plant-based proteins in companion-animal foods, so I have done some work with protein quality, digestibility, and food production."

Smith said after completing her work at K-State, her career goal is a job developing new products with a pet food company. "I think this is going to open a lot of doors for me because I'm really getting to experience all aspects of food from formulation to production, to feeding it, and seeing how animals respond to it."

Fin

Kansas and Pet Food: A Growing Relationship

According to the Kansas Department of Agriculture:

The Kansas City Animal Health Corridor is home to several of the world's largest pet food manufacturers along with more than

300 companies and organizations involved in animal health and nutrition.

Pet food manufacturers located within the corridor represent

61 percent of the total pet food sold in the U.S.

That amounts to more than

$14 billion

of the U.S. total of $23 billion.

The dog and cat food manufacturing industry alone

employs 2,181 Kansans

with a direct output of more than $3.12 billion.

Source: "Pet Food: Executive Summary," Kansas Department of Agriculture, 2017

Where are they now?

With 16 undergraduate majors, 15 minors, five certificates and one undecided program in general agriculture, a degree from the college offers numerous career paths. A few alumni share how K-State experiences influenced their choices and opened doors to careers.

Drew Ladd, Lenexa, Kansas

Director of Continuous Improvement, Flowers Foods
B.S. 2012, Bakery Science and Management

K-State experiences: "Don't be afraid to challenge yourself. Take the time to listen and learn from those who have been in the industry for a long time. Invest in relationships and don't be afraid to ask for help." Drew completed three internships and attended the American Society of Baking Conference as a member of the Bakery Science Club.

Current occupation: "I reached out to Flowers Foods for a full-time job because I had interned with them and knew they were a growing company." As director of continuous improvement, he travels to different Flowers bakeries across the country to implement continuous improvement programs.

Catrina Smith, Madrid, Spain

Director, Research and Development, Schreiber Foods Europe
B.S. 2006, Food Science and Industry

K-State experiences: "I was a member of the Pride of Wildcat Land Marching Band, Basketball Cat Band, and Volleyball Band as well as participating in Food Science Club as Ag Council representative and president. I also worked in the Call Hall dairy, learning hands-on how to package milk and ice cream, and in the Value-Added Foods Lab testing foods for Kansas companies. When I started my full-time position with Schreiber Foods, I found that the curriculum and experiences at K-State prepared me for the technical and leadership challenges I faced in my first months on the job. A degree in agriculture is applied, and you can't just read about it in a book. The facilities and staff at K-State allowed us to see, on a small scale, what we would later face in the industry."

Current occupation: "My work in the dairy industry has taken me all over the world. I now live in Spain and travel around Europe working in R&D. We develop new cheese, yogurt, and dessert products for customers throughout the world, and I am lucky enough to be a part of that process. Nothing is better than going into a store or restaurant and seeing something you had a hand in creating on the shelf or menu. The feeling is even better when you realize that your friends and family and people you've never even met are enjoying those products."

Jill Casten, Manhattan, Kansas

Senior Director, Training and Education, Kansas Farm Bureau
B.S. 2002, Agricultural Economics

K-State experiences: Jill interned with the American Soybean Association, Pioneer Hi-Bred, and the National FFA Organization. She enjoyed taking courses in agricultural finance. "It's not really an exciting topic, but I loved working with formulas that applied to real-life decisions."

Current occupation: "I get to work for farmers and ranchers across Kansas. I knew I wouldn't be pursuing production agriculture as a full-time career, so it brings me such fulfillment to know that I can help support, educate, and develop leaders for agriculture and our rural communities by working for Farm Bureau."

Matthew McKernan, Wichita, Kansas

K-State Research and Extension–Sedgwick County Horticulture Agent
B.S. 2015, Horticulture

K-State experiences: "I really enjoyed the opportunity for hands-on labs. Between landscape maintenance, landscape contracting, and irrigation labs, I had lots of great opportunities to apply what I was learning in the classroom, and make my education better prepare me for the professional world beyond K-State."

Current occupation: Matthew provides public education related to trees, shrubs, flowers, and turfgrass. "This provides me a unique opportunity to impact my local community, and I enjoy being able to learn something new about plants on a daily basis! From giving public presentations and seminars, to training close to 300 Sedgwick County Extension Master Gardeners, every day at work is different." Last year the volunteers contributed over 19,452 volunteer hours, attended over 5,926 hours of advanced training, and had contact with over 85,480 community members through special events, educational programs, and the garden hotline. "Working with the volunteers is the highlight of my job every day. They are an incredible group of people who multiply my impact in the community in immeasurable ways."

Jessica Rilinger, Seneca, Kansas

Sales Agronomist, Wilbur-Ellis, Wathena, Kansas
B.S. 2016, Agronomy

K-State experiences: "I served as Wheat State Agronomy Club president and treasurer, competed on a champion international crops judging team and the weeds judging team, helped build a national champion forage judging team, and completed two undergraduate weed science research projects. My classes gave me a foundation of technical knowledge, and the extracurricular activities gave me leadership skills and hands-on experiences. The combination prepared me for my career. "

Current occupation: "I interned with Wilbur-Ellis Company, and they reached out to me for a full-time position. As a sales agronomist, I partner with farmers to find products that fit their farming practices and help achieve maximum yield while maintaining profitability. I determine fertilizer recommendations (flat rate and variable rate), find the seed varieties and hybrids that fit each field, decide on herbicides for weed control, and provide scouting updates to identify problems in the field. Although I am a sales agronomist, I serve in leadership roles including Integra Seed Team Lead and Central Midwest Intern Team Lead."

Food Companies, Editor,
News Broadcaster, Event Planner,
4-H and Youth Extension Agent,
Advertising Account Executive, Staff

Kara Schwarzkopf, Springdale, Arkansas

Food Safety, Quality and Regulatory Superintendent, Cargill Protein Group
B.S. 2014, Animal Sciences and Industry, Minor in Food Science

K-State experiences: As an out-of-state student, Kara was eager to meet other students and build her K-State community through the College of Agriculture Ambassadors, Block and Bridle, and Collegiate Cattlewomen. She says choosing K-State agriculture and being involved within the college were two of the best decisions she made toward her career goals.

Current occupation: Kara built her relationship with Cargill during one of her summer internships. Shortly after the internship ended, Cargill called with a full-time offer. Within six months, Kara applied for a food safety, quality, and regulatory split supervisor role. "I was interested in this role because of my science background and the opportunity for management experience at an early point in my career."

Jesse Blasi, Pratt, Kansas

Farmer, Certified Seed Business Owner
B.S. 2004, Agricultural Technology Management

K-State experiences: "Agricultural technology management was the perfect avenue for me. The hands-on learning and applied engineering is a great combination for someone going back to the family farm. The classes explain things your dad never talked about — how things work and the math involved. The ATM major is offered through the College of Agriculture, but many of the classes are in the College of Engineering. My classmates and I were a tight-knit group. We stay connected and still bounce ideas off each other."

Current occupation: "My dad and I have separate farming operations plus the certified seed business. People often say, 'You probably never use what you learned in college.' I respond that I probably use some skill from my K-State education every day. Things like the ability to take a mechanical problem and put numbers to it to find an answer and ways to streamline an event or some project you want to do on the farm."

Jacob Lang, Emporia, Kansas

Agricultural Education Teacher, Northern Heights High School
B.S. 2003, Agricultural Education

K-State Experience: "When I graduated high school, I knew I wanted to be involved in agriculture but going back to the family farm was not an option. As an officer in the Agricultural Education Club, I was able to attend the National FFA Convention. This experience reaffirmed my career choice. K-State Ag Ed was the perfect choice for me to continue my life in agriculture and influence the next generation of Kansas agriculturists. The K-State experience was truly amazing and helped me build the skills necessary to be a successful teacher today."

Current occupation: "I am in my third year teaching at Northern Heights High School and my 15th year as an ag teacher. We started the Agricultural Education and FFA program at Northern Heights three years ago. It has been a remarkable experience connecting the youth interested in agriculture with their futures. One of the greatest parts of my job is when a student tells me they plan to pursue a career in agriculture because of what they learn in my classes."

For more alumni profiles, go to www.ag.k-state.edu/academics/alumni-profiles/

Kevin Burnett, chief operating officer of Richardson Plano Guide Right Foundation, spoke during the Diversity Student Leader Reception.

Division of Communications and Marketing

Fifty Years of Living the Dream

On January 22, the College of Agriculture hosted the 14th annual Diversity Student Leader Reception. This year's theme, Fifty Years of Living the Dream, commemorated the 50th anniversary of Dr. Martin Luther King Jr.'s 1968 speech at K-State.

Students in K-State's Minorities in Agriculture, Natural Resources, and Related Sciences (MANRRS) Chapter hosted the event.

Kevin Burnett, chief operating officer of Richardson Plano Guide Right Foundation in Texas, was the guest speaker.

Burnett, a Kansas native, earned bachelor's degrees in business administration and political science from K-State in 1979. He held leadership positions in Blue Key, the Union Governing Board, Student Government, Kappa Alpha Psi Fraternity and was a member of Alpha Kappa Psi.

"Mr. Burnett talked about how Martin Luther King Jr. motivated him to pursue his degree and become involved," said Lonnie Hobbs Jr., agricultural economics graduate student who introduced Burnett. "He also shared how he and his peers faced diversity issues as students at K-State."

Burnett spent more than 30 years working for the telecommunication industry. In semiretirement, he coaches football and girls' basketball at the Shelton School.

Hobbs especially liked the basketball analogy Burnett used to describe when and how to lead. "In basketball everyone wants to shoot, but leaders are willing to pass."

Hobbs participated in the 2017 K-State Research and Extension Multicultural Summer Research Fellowship. He is now a graduate assistant working with Aleksan Shanoyan, assistant professor of agricultural economics. Hobbs and Zelia Wiley, assistant dean for diversity, are co-advisors for MANRRS.

Makinsey McIntosh, MANRRS president, Melissa Riley, and Hector Rojas, all animal sciences and industry majors, and Jordan Bailey, general agriculture, also spoke at the reception.

For the fourth year in a row, K-State earned the Higher Education Excellence in Diversity Award from *INSIGHT into Diversity* magazine. K-State was the only higher education institution in Kansas recognized for demonstrating an outstanding commitment to diversity and inclusion.

Lonnie Hobbs Jr. (right), co-advisor for the Minorities in Agriculture, Natural Resources, and Related Sciences Chapter, welcomes guest speaker Kevin Burnett.

Fighting Pests with Technology

From the wheat and grain sorghum fields of rural Kansas to home landscapes and wooded areas across the state, millions of dollars worth of plants are lost to pests every year, and many millions more are spent in efforts to combat them.

To help farmers, landscapers, and gardeners — anyone who grows plants — Kansas State University researchers and extension specialists combined their expertise, resources, and passion in their life's work. Their combined efforts produced new ways to bring research-based information to Kansas and beyond.

"We know that groups tend to innovate faster, see mistakes quickly, and find better solutions to problems, compared to individuals," said project coordinator, Frannie Miller, who is also the integrated pest management coordinator at K-State.

The result is an ambitious campaign launched four years ago by experts from the departments of Entomology, Horticulture and Natural Resources, Agronomy, and Plant Pathology. They strive to educate Kansans and others on the use of safe, sustainable pest management practices using mobile-friendly technologies. Farmers, gardeners, landscapers, and others can readily find information in several different ways.

The U.S. Department of Agriculture's National Institute of Food and Agriculture funded the program.

New online app

For farmers, a new online app, *myFields.info* features interactive tools and resources, including the popular diagnostic guides, a searchable database useful for identifying crop pests. A one-time free registration opens an array of information, including photos, pest descriptions, management options, and more. Because land-grant universities across the country are collaborating with K-State, the platform can be adapted for region-specific information, said Wendy Johnson, extension associate. She and Associate Professor Brian McCornack lead the *myFields.info* project.

One notorious pest currently on many farmers' radar is the sugarcane aphid, which can wreak havoc in grain sorghum — a crop widely grown in Kansas. The myFields project monitors the invasive species through real-time mapping. Reports trigger experts to send out localized alerts to myFields users.

"We've also partnered with Kansas and Oklahoma crop improvement associations," Johnson said. "They are using myFields as an online approach for crop certification procedures."

Plants for Kansas climate

For those who work in landscaping, park development and maintenance, garden centers, as arborists or who just want good advice about the best plants to grow in the often-challenging Kansas climate, the *kansasroots.org* website was developed.

"It's a new approach to helping clients select appropriate plants for their location by featuring searchable and interactive profiles of recommended plants," said Cheryl Boyer, associate professor of horticulture. "Our ability to reach users using a website is unique and allows for interaction with users by letting them rate their experience with plant varieties."

The website is a portal for numerous resources, including the Kansas Turf blog, which reaches more than 1,200 subscribers by email. Via the blog, subscribers have diagnosed diseases, identified weeds, and implemented cultural practices to manage pest problems.

Plans are under way to convert the popular Kansas Garden Guide into an interactive digital resource also available on Kansasroots.org, Boyer said.

Courtesy of Frannie Miller (2)

Participants gain practical experience by identifying common plant diseases.

She and entomology professor Raymond Cloyd lead an inter-disciplinary team of entomologists, plant pathologists, and horticulturists on this section of the project. Through the website, plus face-to-face meetings, print materials, static websites, and social media, they are reaching out to Kansans and others.

A RetailWorks educational conference designed for garden center sales staff focused on plant selection, understanding product labels, and other topics important to pest management. Nurseryworks and Greenhouse Growers conferences focused on diagnosing plant stress and the use of biological control agents against the pests.

Application training

Through its pesticide applicators' educational program, K-State has provided training and resources for more than 15,381 landowners who apply pesticides and 6,084 commercial applicators in Kansas. Participants learn the latest regulations linked to pesticide use, as well as safe methods to protect the applicator, other people and animals, and the environment.

A new integrated pest management and pesticide safety online training portal has the potential to provide enhanced training options to reach more citizens. Miller leads this portion of the project, as well as the overall K-State effort.

More information about K-State's integrated pest management program is available at *www.ksre.k-state.edu/pesticides-ipm/integratedpestmanagement.html.*

A participant learns how to properly identify common pests of stored products.

Student Highlights

Kaylin Fink and Rebecca Zach

Gloria Holcombe

Competition Teams

In 2017, the K-State Crops Team captured the national championship by winning both the Kansas City American Royal Collegiate Crops Contest and the Chicago Collegiate Crops Contest. K-State teams have now won the collegiate crops contest championship in 15 of the past 19 years. Team members were **Keren Duerksen, Kaylin Fink,** and **Nathan Ryan** with alternates **Trent Frye, Westley Jennings, Tyler Marr, Noah Winans,** and **Rebecca Zach**. Professor **Kevin Donnelly** coaches the team.

The Department of Agronomy hosted the North American Colleges and Teachers of Agriculture, or NACTA, regional crops contest on March 9, 2018. More than 100 students and faculty from 13 two- and four-year colleges participated.

The K-State Horse Judging Team claimed the title of 2017 World Champion Senior Team at the American Quarter Horse Association World Championship Show in Oklahoma City, Oklahoma. Team members were **Cameron Hayden,** high individual overall, **Joel Nelson, Tristan Parks, Dean Klahr, Bailee Porter,** and **Taylor Todd**. Assistant Professor **James Lattimer** coaches the team with assistant coaches **Katie Jordan** and **Rachel Johnson**.

The 2017 K-State Meat Judging Team were reserve national champions at the International Meat Judging Contest in Nov. 2017. Team members are **Eric Koehlmoos, Caleb Hurst, Kolton Aubuchon, Trevor DeHaan,** and **Jayne Bannister.** Associate Professor **Terry Houser** and graduate students **Lane Giess** and **Allie Hobson** coached the team.

The 2018 Meat Judging Team took top honors at the National Western Intercollegiate Meat Judging Contest in Greeley, Colorado. This marks the first time since 1985 K-State has won this competition. They placed first at the 40th Annual Iowa State Meat Judging Contest and second at the Houston Livestock Show and Rodeo Intercollegiate Meat Judging Contest. Team members are **Sam Davis, Kaci Foraker, Keayla Harr, Cole Liggett, Grace Luebcke, Joel Martin, Leah Parsons**, and **Hannah Taylor**. Assistant Professor **Travis O'Quinn** coaches the team.

The 2018 Livestock Judging Team claimed the championship at the Nebraska Cattlemen's Classic in Kearney, Nebraska; a reserve champion finish at the Iowa Beef Expo in Des Moines, Iowa, and fourth overall ranking at the San Antonio Livestock Show. Team members include: **Kolton Aubuchon, Cody Boden, Cara Comstock, Payton Dahmer, Wyatt Durst, Hannah Frobose, Cameron Hayden, Emilee Holt, Dean Klahr, Cody Lafrentz, Shayne Myers, Jacob Pettigrew, Shilo Schaake, Lucas Tuck,** and **Whitney Whitaker.**

A team of bakery science and industry students — **Christopher Reusz, Georgeanna Stockemer,** and **Julia Sprouse** — were among the four finalists to compete at the American Society of Baking Product Development Competition.

Courtesy of Horticulture and Natural Resources

Karen Schneck, senior in horticulture with a minor in entomology, was named the 2018 Greenhouse Product News/Nexus Intern of the Year. She was nominated by Associate Professor **Chad Miller**. "Without a doubt, Karen will be successful and a great addition to the horticulture industry," wrote Miller. "Karen has certainly grown as an individual in the last year and her passion comes through in the classroom, the labs, extracurricular activities, and work experiences."

Kansas State University Global Campus awarded College of Agriculture Scholarships for Distance Education Students to **Katelyn Meiwes**, master's student in agricultural education and communication; **James Williamson**, master's student in agribusiness; **Courtney Montgomery**, master's student in agricultural education and communication; and **Tyler Swallow**, senior in food science and industry. **Amy O'Grady,** senior in food science and industry, received the K-State Global Campus Scholarship for Distance Education Students.

At the Governor's Water Conference, agricultural education students **Zachary Callaghan** and **Katelyn Bohnenblust** received Runner-Up Research Poster for their study on the Youth Water Advocates Conference.

Nolan Brennan, Bowling Green, Ohio, was awarded the Mennel Milling Company Scholarship that provides financial assistance to a K-State student enrolled in milling science and management. The scholarship covers $10,000 of out-of-state tuition and $1,000 for travel costs.

Graduate Students

Two plant pathology students placed — **Daljit Singh** (second) and **Mokhles Rahman** (third) — at the National Association of Plant Breeders Conference at the University of California, Davis.

Three agronomy graduate students — **Garrison Gundy**, under the supervision of Professor **Anita Dille**; and **Nate Thompson** and **Marshall Hay**, both mentored by **Dallas Peterson**, professor and extension weed specialist — took first place honors in their respective divisions for their oral research presentations at the North Central Weed Science Society annual meeting in St. Louis, Missouri.

Ashley Kelly, park management and conservation, and Stuart Sprague, horticulture, were among 10 K-Staters chosen to present research posters at the Capital Graduate Research Summit in Topeka. Kelly's poster was *Inspiring future conservationists through a Junior Zookeeper Program*, and Sprague's was *Expression of AtGRXS17 in maize increases yield under heat stress*.

A snack food created by food science graduate students **Karthik Sajith Babu, Yuda Ou**, and **Priyamvada Thorakkattu** is among the top 6 finalists in the National Dairy Council New Product Development Competition. A panel of judges will evaluate their project and announce winners in late April. Associate Professor **Jayendra Amamcharla** advises the team.

Division of Communications and Marketing

Three College of Agriculture graduate students advanced to the finals of the Three Minute Thesis Competition. They are Gabriela Magossi, food science, *From dust to dinner: Salmonella in feed mills*; Rachel Wilkins, entomology, *Feeding the world by implementing robust management programs for insect pests after crop harvest*; and Vinicius Perin, agronomy, *Nitrogen fertilizer: When to apply urea?* The competition encourages students to hone their science communication skills by presenting a compelling oration on their thesis topic and its significance.

3MT® THREE MINUTE THESIS
FOUNDED BY THE UNIVERSITY OF QUEENSLAND

Data Driven

As a freshman working with the K-State swine nutrition group, Cassandra "Cassie" Jones had no idea how that experience would shape her career and the future of hundreds of students. As undergraduate research coordinator for the Department of Animal Sciences and Industry, Jones helps pair the research interests of students with faculty mentors.

After earning bachelor's and master's degrees at K-State and a Ph.D. in swine nutrition at Iowa State University, Jones returned to K-State in 2012 as assistant professor of feed technology in the Department of Grain Science and Industry. When the coordinator position was created in 2016, she welcomed the challenge.

Jones describes undergraduate research as an opportunity to perform in-depth study, gain transferable skills, develop critical thinking and problem-solving abilities, define academic and professional interests, and form relationships with other students, mentors, and professors.

"Students work with faculty and graduate student mentors on a project that is rewarding and helps them prepare for their next goals," Jones said.

"The College of Agriculture promotes undergraduate research because it helps students understand the value and constraints of data," said John Floros, dean of the College of Agriculture and director of K-State Research and Extension.

"Whether they go on to graduate school, return to the ranch, or venture into industry, these students will use data every day to make decisions. Overall, research experience will make them more productive scientists and more successful professionals."

Strong interest

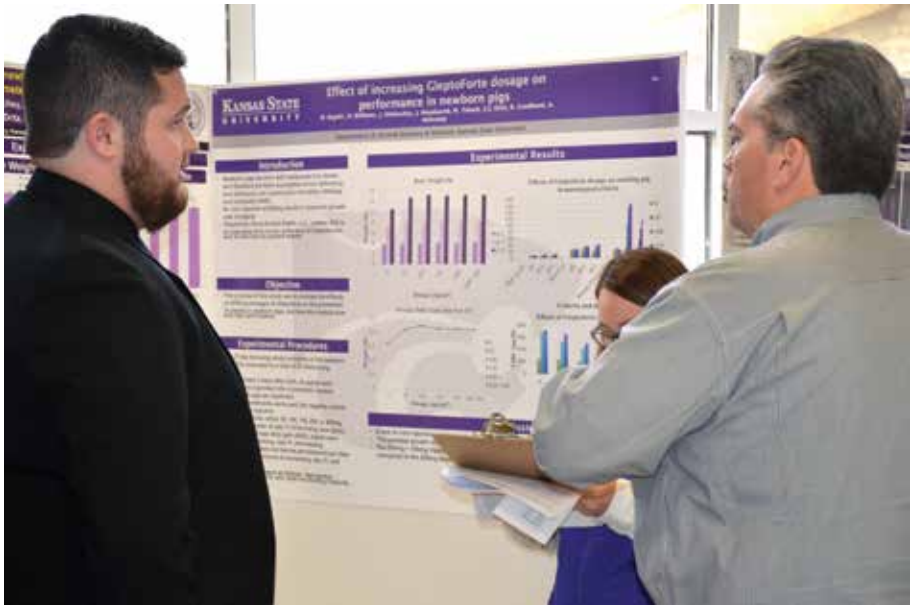
Jones surveyed freshmen enrolled in animal sciences and food science about their interest in undergraduate research — 78 percent expressed strong interest.

To address the growing need for research projects, she created a database with students' interests and faculty mentors. Jones compares the student's time commitment, calendar, and project scope to find a compatible mentor.

She teaches Undergraduate Research in Animal Science and Undergraduate Research in Food Science classes.

This semester's animal science project compares substitution of distillers grains for another ingredient in sheep and

Above photo: Student Linnea Rimmer (left) listens as Cassandra Jones, undergraduate research coordinator, explains how to record weights for the student's research project at the K-State Sheep and Meat Goat Center north of Kimball Avenue.



Gloria Holcombe

Gage Nichols (left), senior in animal sciences and industry, and Mark Young, alumnus and forum judge, discuss posters at the Animal Sciences and Industry Research Forum.

goat feed and its effects on the animal's growth. Projects in the food science course vary by student.

Whether the undergraduate student shadowed a graduate student, helped collect data, or was in charge of the project, he or she is required to create a poster that demonstrates knowledge of the research and its results.

Students can present their posters at department, college, and university poster sessions. Some are chosen to exhibit their posters at national and international professional conferences.

Additional resources

Conducting the research, creating posters, and attending conferences require faculty time and financial resources. To help cover department research expenses, Mark and Kim Young recently established the Dr. Mark and Kim Young Undergraduate Research Fund through an endowed gift.

"It is the generosity and foresight of people like the Youngs that help us improve the educational experience of our students and facilitate their scholarly and professional success," said Dean Floros.

For Mark Young, undergraduate research contributed major benefits to his career — during and after college. As a student, he worked with Professor Keith Bolsen.

"I learned a tremendous amount from assisting in conducting research with Dr. Bolsen's group, and that morphed into an opportunity to attend grad school, which changed everything for me," Mark said.

Whether they go on to graduate school, return to the ranch or venture into industry, these students will use data every day to make decisions.

"Receiving my bachelor's, master's, and doctorate from Kansas State University has allowed me to pursue my dreams and become the president and owner of a successful feed additive business."

According to Jones, the fund will be used for supplies to support undergraduate research projects, to fund travel to scientific meetings, and for awards at the department's Undergraduate Research Forum each semester.

At the fall forum, the top five students received $1,000 scholarships based on their scientific abstract, poster, and data presentation. Winners were: Gage Nichols, Russell; Madison Smith, Hutchison; Alexis Pedrow, Richmond; and Katelyn Thomson, Riley. The People's Choice Award was presented to Carrie Cromer, Churchville, Virginia.

"I hope the undergrad research program allows the students to have a more well-rounded education — teaching them that research is important and is part of a real-life decision-making process," Mark said. "The opportunities given to me by K-State have truly changed my life. The connections I made at K-State have helped forward my career as well."

Project example

Gage Nichols, senior in animal sciences and industry who plans to pursue a master's degree in feed science, chose to do his research project on the effects of medium-chain fatty acids on broiler growth performance with Chad Paulk, assistant professor of Grain Science and Industry.

"I chose to get involved with undergraduate research as I look toward a future in graduate school and a career in animal nutrition," Gage said. "Research allows me to hone the skills required when conducting research and to learn how to effectively manage and analyze data."

He credits learning to design projects and how to look for novel ideas for future projects as the most important thing he learned.

"It will allow me to hit the ground running when I transition to grad school. I will be able to plan and design research with little to no learning time."

Nichols added: "Regardless of future career plans, I would encourage all students to consider undergraduate research. Being able to understand research results allows everyone to make decisions that can affect the profitability and performance within any career plan they choose based on facts not feelings."

Agronomy Faculty Garner Major Recognitions

Courtesy of Vara Prasad

Vara Prasad in a Cambodian field of cassava, a major source of carbohydrates in tropical and subtropical countries.

Vara Prasad, university distinguished professor and director of the U.S. Agency for International Development Feed the Future Innovation Lab for Collaborative Research on Sustainable Intensification (SIIL), received the Irvin E. Youngberg Award in Applied Sciences.

Prasad's research mainly focuses on understanding responses of food grain crops to changing environments — temperature, water, and climate variability — and developing suitable farming systems with efficient crop, soil, and water management strategies to enhance grain yields.

As director of SIIL, Prasad provides overall leadership and oversees all research and capacity building activities. He leads a network of 100 scholars from 40 national and international organizations. SIIL conducts interdisciplinary, knowledge-sharing and capacity-building activities to improve food and nutritional security of smallholder farmers in Asia (Bangladesh and Cambodia) and Africa (Burkina Faso, Ethiopia, Malawi, Senegal, and Tanzania).

The award includes a citation and a $10,000 award for ongoing research efforts, which can be used for research materials, summer salaries, fellowship matching funds, hiring research assistants, or other support related to research.

The Youngberg award is part of the Higuchi-University of Kansas Endowment Research Achievement awards that recognize faculty at Kansas Board of Regents universities. The awards were established in 1981 by Takeru Higuchi, a distinguished professor at KU, and his wife, Aya.

Charles "Chuck" W. Rice, university distinguished professor, received the $5,000 Iman Outstanding Faculty Award for Research. He teaches courses and conducts research on soil carbon and nitrogen, microbial ecology, and how climate variability impacts agriculture.

The annual award is sponsored by the K-State Alumni Association and made possible through the generosity of Ron and Rae Iman.

John Floros, dean of the College of Agriculture and director of K-State Research and Extension, nominated Rice. "Dr. Rice's achievements in research have followed his success in obtaining extramural funds," Floros said. "Over his entire career, Dr. Rice has been associated with more than $44 million in grants from highly competitive programs."

For example, Rice and Walter Dodds, university distinguished professor of biology, will lead an interdisciplinary university team collaborating with four other Kansas universities to investigate how microbiomes of aquatic habitats, plants and soils — known as MAPS — can enhance agricultural productivity, mitigate environmental problems, and conserve native grasslands.

One area the group will investigate is how microbes associated with water quality differ in cropland and natural grassland, and how those microbes wash into water and, for example, make it more susceptible or resistant to harmful cyanobacteria blooms that can make people sick.

Chuck Rice inspects a soil sample.

The K-State group will receive $2.65 million of the total $20 million award. The work is funded through the National Science Foundation Established Program to Stimulate Competitive Research, or EPSCoR, which aims to build research and development capacity.

Rice, recipient of the Mary L. Vanier University Professorship, has earned awards for his international accomplishments from K-State and various national professional organizations. Rice serves on the board of trustees for CIAT, the International Tropical Agriculture Research Center based in Cali, Colombia. He also chairs the board on agriculture and natural resources of the U.S. National Academies of Science, Engineering, and Medicine.

Faculty Earn National Awards for Teaching and Leadership

Chad Miller (left) and Ernie Minton

Courtesy of Shannon Washburn

Chad Miller, associate professor of horticulture, and J. Ernest "Ernie" Minton, associate director of research and associate dean of research and graduate programs, were honored by the Association of Public and Land-grant Universities at the 130th APLU Annual Meeting in Washington, D.C.

Miller, who joined K-State in 2011, earned a 2017 U.S. Department of Agriculture's Best New Teacher Award for Food and Agricultural Sciences. It includes a $2,000 stipend to strengthen the honoree's teaching and advising program.

In addition to teaching several horticulture courses, including an orientation course, he advises an average of 25 students, serves as co-advisor for the Horticulture Club, and helps develop and lead departmental international study-abroad experiences. Miller was chosen to speak at the 2017 fall commencement ceremony.

Horticulture senior Amanda Woolley has taken Miller's plant propagation and plant identification courses.

"Dr. Miller's classes are not easy," Woolley said. "But everything I learn is applicable to my future, and that's important in my field. He challenges his students to do better and makes the content relatable and interactive."

During his K-State tenure, Miller has received the Perennial Plant Association Academic Award, North American Colleges and Teachers of Agriculture Educator Award, APLU Innovative Teaching Award, Big 12 Faculty Fellow, and the Greenhouse Product News Top 40 under 40 Award as well as numerous teaching and advising awards from the university and college.

Excellence in Leadership

Minton received the 2017 Experiment Station Section Award for Excellence in Leadership. He was also recognized in April 2017 for serving consecutive terms as chair of the North Central Region Association of Experiment Station Directors.

In his dual role as associate dean and associate director, he is responsible for administration of research and graduate programs in the college and the broader research mission of the Kansas Agricultural Experiment Station, which includes faculty in the colleges of Veterinary Medicine, Arts and Sciences, Engineering, and Human Ecology. During his tenure in these roles, grant awards in the college increased from approximately $20 million annually to more than $50 million annually.

During the 2012–2013 academic year, he initiated the K-State Ag Research Scholars (K-StARS) program to help new faculty get acquainted with resources on campus and at the national level. The program includes taking faculty to Washington, D.C., to meet with federal funding agencies.

Minton joined the K-State faculty in 1983. Before entering research administration in 2008, he held a research-teaching position in the Department of Animal Sciences and Industry. He has mentored 24 graduate students and five undergraduate research scholars.

Kansas Master Farmers and Master Farm Homemakers

Six couples have been honored as the 2017 class of Kansas Master Farmers and Master Farm Homemakers in recognition of their leadership in agriculture, environmental stewardship, and service to their communities. The statewide award program is in its 91st year and is sponsored by K-State Research and Extension and *Kansas Farmer* magazine.

Robert and **Charlotte** (B.S.'88 human ecology) Anderson, Cloud County

Mark (B.S.'84 animal sciences and industry) and **Evelyn** (B.S.'88 medical technology) Diederich, Washington County

Clifton (B.S.'80 agricultural technology management) and **Kathy** (B.S.'83 home economics education) Heiniger, Brown County

Douglas and **Jean** Higbie, Franklin County

Kendall (B.S.'78 agronomy) and **Melinda** Hodgson, Rice County

Willard and **Phyllis** McClure*, Stafford County

*recently deceased

Department Updates

Agricultural Economics

Brian Coffey (Ph.D.'05), assistant professor, volunteered in Tajikistan with the Farmer-to-Farmer Program, working with local fruit and vegetable growers to encourage strategic marketing and business planning.

Agronomy

Gary Pierzynski, university distinguished professor and department head, represented the Food and Agriculture Organization Intergovernmental Technical Panel on Soils at the United Nations celebration of World Soil Day on Dec. 5.

Anita Dille, professor, earned the Outstanding Teacher Award from the Weed Science Society of America at the organization's annual meeting in Arlington, Virginia.

Mary Beth Kirkham, professor, received the Distinguished Alumni Award from the University of Wisconsin-Madison, where she received her M.S. and Ph.D. degrees in botany with a minor in soil science. She was the first UW-Madison female graduate student in soil science.

Colby Moorberg, assistant professor, received the Soil and Water Conservation Society's Outstanding Service Award for engaging the next generation of conservationists.

Animal Sciences and Industry

The department hosted the 50th annual Swine Day on Nov. 16. It is the oldest and longest running swine event in the country. "Attending Swine Day and being able to network with industry professionals makes me excited about the field I am going into," said **Annie Clark,** swine nutrition doctoral student. Visit *KSUSwine.org* to download copies of research reports and watch videos.

Evan Titgemeyer, graduate program director and research coordinator, has been named interim department head. **Ken Odde**, who led the unit for 11 years, will continue to teach and conduct research in the department.

Communications and Agricultural Education

At the Agricultural Media Summit, the Agricultural Communicators of Tomorrow placed first in membership, leadership, and community categories as well as being named the 2017 Chapter of the Year.

Entomology

Entomology Society of America recognition: Professor **Raymond Cloyd** earned the 2018 Distinguished Achievement in Horticultural Entomology Award from the ESA–North Central Branch. **Kun Yan Zhu,** university distinguished professor, is vice president-elect for Physiology, Biochemistry and Toxicology section of ESA. Adjunct faculty with USDA/ARS **Dana Nayduch** is vice president-elect for Medical, Urban and Veterinary Entomology (MUVE) section and chair of the Journal of Medical Entomology Editorial Board and **Lee Cohnstaedt** is MUVE section representative for the *Journal of Medical Entomology*.

International IPM (Integrated Pest Management) Symposium: Two teams received International IPM Awards of Excellence: The North Central Soybean Entomology Research and Extension Team with Associate Professor **Brian McCornack** and the Megacopta (Kudzu Bug) Working Group with Department Head **John Ruberson**.

Food Science Institute

Carol Shanklin, dean of K-State's Graduate School and professor of dietetics, received the 2018 Flinchbaugh Family Wildcat Pride Award. FSI encompasses faculty in 11 departments.

Horticulture and Natural Resources

The Friends of the K-State Gardens hosted Planting a Seed to Grow the Gardens, An Evening Extraordinaire fundraiser at the Hilton Garden Inn Ballroom on Dec. 7, 2017. Bill and Sharon Snyder were distinguished guests, and the Westervelt family were honored guests. Approximately 100 people attended and more than $62,000 was raised for the gardens. Contact Scott McElwain, *mcelwain@ksu.edu.*

Grain Science and Industry

On February 3, the department hosted a Feeding the Future Discovery Day for 57 prospective junior high, high school, and college students. Three interactive labs involved milling wheat into flour, producing breads and cakes, and making pet treats.

Courtesy Grain Science and Industry

K-State professor **Jack Fry** and **Amika Chandra**, associate professor, Texas A&M University, developed KSUZ 0802, trade named Innovation™ Zoysia, which is being planted at turf farms across the U.S. and overseas. It is poised to benefit the turf industry from Indiana to Florida and from Virginia to Texas.

K-State Research and Extension

Freddie Lamm '90, Northwest Research-Extension Center; **Dan Rogers** '76, '77, Department of Biological and Agricultural Engineering; **Jonathan Aguilar** '09, Southwest Research-Extension Center; and **Andres Patrignani**, Department of Agronomy, with other members of USDA-NIFA Multistate Project W-3128, are joint recipients of the 2017 National Water and Energy Conservation Award provided by the Irrigation Association. K-State has been active in this multistate project since 1992 with early participation by Lamm, who initiated subsurface drip irrigation research in 1989.

Beth Drescher earned the 4-H Meritorius Award and the 4-H Military Partnership Award from the National Association of Extension 4-H Agents for her work as K-State Research and Extension, Sedgwick County 4-H Youth Development agent from 1996-2017. She now works as a grant specialist at the Kansas State Polytechnic Campus.

John Strickler, professor emeritus for the Kansas Forest Service, was recognized by seven professional Kansas natural resource societies. The 2018 Kansas Conservation Champion Award honors his outstanding long-term dedication, innovation and leadership for the conservation, protection, enhancement and stewardship of Kansas' natural heritage and resources.

Phillip Stahlman earned the 2018 Public Service Award from the Weed Science Society of America for advancing public understanding of the scientific principles of weed science. He retired in 2017 after 42 years of service to K-State, mostly at the Agricultural Research Center in Hays.

Plant Pathology

Richard Todd, associate professor, received one of five $50,000 grants awarded by the Kansas City Area Life Sciences Institute and the Hall Family Foundation to research fungi that produce bioactive compounds with harmful or beneficial effects on human and animal health.

Bikram Gill, university distinguished professor, spoke at the Kansas Wheat Innovation Center March 14 dedication of the new 12,750 square-foot greenhouse expansion. The four new bays will house critical wheat research for the K-State Wheat Genetics Resource Center and the Poland Lab for Wheat Genetics and Heartland Plant Innovations.

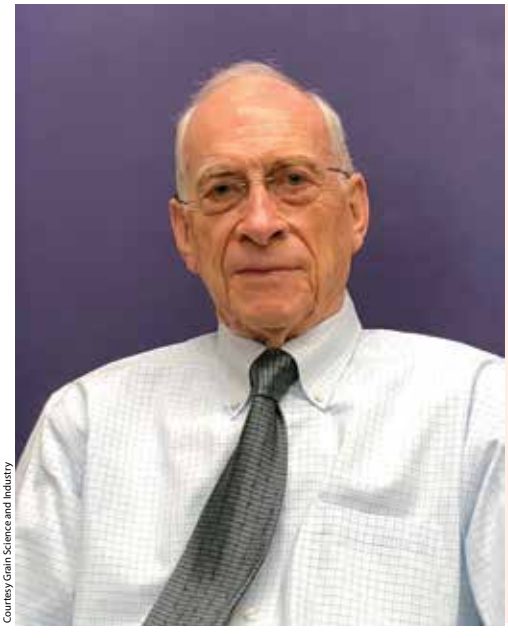
Rodrigo Pedrozo, postdoctoral research fellow, was selected as the Public Policy Early Career Intern for the American Phytopathological Society.

In Memoriam

Jack Riley, 77, Manhattan, died Dec. 26, 2017. He was active in beef cattle research, especially in the areas of protein requirements, crop residue utilization, and feed additives. He loved teaching and advising students, and he taught more than 7,000 students over 35 years in the classroom. He was faculty coordinator of the K-State Beef Research Unit for 16 years and served as head of the Department of Animal Sciences and Industry for 17 years.

Norman C. Warminski, 75, Wichita, died Sept. 21, 2017. He worked as a county extension agent in Johnson, Harvey, and Sedgwick counties. He helped establish Botanica, The Wichita Gardens; the Wichita Extension Master Gardener program; and the Wichita Garden Show.

Robert Clore, 75, Manhattan, died Nov. 7, 2017. He taught in the Art Department for 32 years and coached the K-State Rodeo Team from 1971 to 1979.



Courtesy Grain Science and Industry

Seib honored for innovation

The National Academy of Inventors honored Paul A. Seib, professor emeritus of grain science and industry, for his prolific spirit of innovation. He is among 155 academic inventors and innovators named as the newest fellows of the National Academy of Inventors.

"The best part of a professor's job is discovery — doing research with students and sharing new knowledge with others," Seib said. "I feel honored to accept the award as a tribute to the K-State community."

Seib, who retired in 2008 from the Department of Grain Science and Industry, is named on 22 U.S. and several international patents that have generated more than $10 million in licensing revenue by the Kansas State University Research Foundation.

"Paul Seib is one of K-State's most prolific inventors," said Peter Dorhout, vice president for research. "He has been adept at finding a need in industry and filling that need, especially in the field of developing ingredients for human and animal food. He used his expertise to improve people's lives and livelihoods."

Class Notes

'60s

Larry Benyshek (B.S.'69) received the Distinguished Alumnus Award from the Department of Animal Sciences and Industry. He has had a notable career as a researcher, professor, university department head (University of Georgia), and entrepreneur (Benyshek and Hough Consulting Services).

'70s

Sam Hands (B.S.'70 animal sciences) was honored on March 1 as the Stockman of the Year at the 48th Annual Stockmen's Dinner. The Hands family operates Triangle Ranch in southwest Kansas.

Jerry McReynolds (B.S.'70 agricultural economics) received the Distinguished Service to Agriculture Award from Kansas Farm Bureau at the organization's annual banquet.

Jerry Meng (B.S.'73 agricultural economics) retired after 44 years in community banking and ag lending. He spent the past five years as senior vice president of First Security Bank in Overbrook.

'80s

Clint Rusk (B.S.'80 animal sciences), head of the Department of Animal Science at Oklahoma State University, was a featured speaker at the 2018 Kansas Cattle Drive.

Ron Graber (B.S.'82, MS'85 animal sciences), K-State Research and Extension watershed specialist, was named a Top 10 exceptional extension specialist by Successful Farming.

Ron Honig (B.S.'87 agricultural education) joined the staff of K-State Research and Extension, Stevens County as an agriculture and natural resources agent. He previously worked for Seaman Crop Consulting and South Dakota State University.

Jeff Chaltas (B.S.'85, horticulture) has published a book of 25 one-panel cartoons called *Dogbone Boulevard*.

Marlin Rice (Ph.D.'87), product biology technical manager with Syngenta, was named Distinguished Alumnus by the Department of Entomology. He has worked as an entomologist at Texas A&M University, University of Idaho, Iowa State University, senior research scientist at DuPont Pioneer, and product biology technical manager at Syngenta.

Gregg Doud (B.S.'89 animal sciences, M.S.'91 agricultural economics), president of the Commodity Markets Council was the featured speaker at the 105th Cattlemen's Day. In September, he was honored as Distinguished Alumnus by the Department of Agricultural Economics. He was recently confirmed as U.S. Chief Agricultural Negotiator in the Office of the U.S. Trade Representative.

'90s

Jill Zimmerman (B.S.'95 animal sciences) is president of the Kansas Agriculture and Rural Leadership, Inc. program. Class XIV will visit Cuba in March 2019.

Nicole and **Randall Small** (B.S.'94 agronomy) received the 2018 Good Steward Award from the National Corn Growers Association at the Commodity Class convention in Anaheim, California. The award recognizes farmers who demonstrate superior commitment to sustainable farming practices.

'00s

Tracey Mann (B.S.'00 agricultural economics) was appointed lieutenant governor of Kansas. He served as K-State student body president from 1998 to 1999.

Courtney Meyers (B.S.'03 agricultural communications and journalism), an associate professor and graduate studies coordinator with Texas Tech University's Department of Agricultural Education and Communications, has been named a 2018 Integrated Scholar by Texas Tech.

Rizana Mohamed Mahroof (Ph.D.'04 entomology), assistant professor at South Carolina State University, received the 2018 Governor's awards for: Excellence in Scientific Research, Excellence in Scientific Awareness, the Young Researcher Award for Excellence in Scientific Research, and Excellence in Scientific Research at a Predominantly Undergraduate Institution.

Nathan Smit (B.S.'08 food science and industry) received the Learner Achievement Award from the National University Technology Network.

Sheridan Wimmer (B.S.'08 agricultural communications and journalism) is the communications and social media manager at Kansas Farm Bureau.

Robyn Schmitz (B.S.'09 horticulture), owner of High Prairie Landscape Group, LLC, was selected for a Thinking Bigger Business Media Inc.'s 25 Under 25 Award. This is the first time a horticultural company has been recognized with this award.

'10s

Cody Crowther (B.S.'11 horticulture) was named 2017 Assistant Superintendent of the Year by the North Texas Golf Course Superintendent Association of America. He works at the Dallas Country Club.

Shannon Rogge (BS.'14 animal sciences) joined K-State Research and Extension, Sedgwick County as a 4-H Youth Development agent. She transferred from Pawnee County where she had been the agriculture and natural resources agent.

Lindsay Shorter (B.S.'15 agribusiness) is the new K-State Research and Extension, Greenwood County agriculture and natural resources agent. She had been a grain originator at Gavilon Grain LLC in Wichita.

Kaliramesh Siliveru (Ph.D.'16 grain science) is an assistant professor in the Department of Grain Science and Industry, working with undergraduate and graduate students in the milling science and management program. He previously was a research associate in the Department of Biological and Agricultural Engineering and the USDA Agricultural Research Service.

Faith Orth (B.S.'17 horticulture) joined K-State Research and Extension as the Hamilton County community vitality agent.

In Memoriam

William H. Borst (B.S.'50 agronomy), 92, Overland Park, died Sept. 30, 2017. From 1953 to 1990, he worked as a county club agent in Osborne and Wyandotte counties then as an area extension 4-H specialist.

Kathryn Morton Krista (BS '99 ASI, DVM '03), 41, Bluemont, Virginia, was killed in a car accident on Jan. 5, 2018. She was an ambulatory veterinarian at Piedmont Equine Practice in The Plains, Virginia.

Emery Castle (B.S.'48, M.S.'50 agricultural economics), 94, Portland, Oregon, died Oct. 31, 2017. He spent most of his career at Oregon State University as a professor, department head, dean of faculty, and dean of the Graduate School. He received a Distinguished Service Award from the K-State College of Agriculture and spoke at the May 2012 commencement.

Keep us updated

Let your fellow College of Agriculture alums know what you've been up to. Send news and address changes to:

Mail: Gloria Holcombe
Kansas State University
208 Umberger Hall
1612 Claflin Road
Manhattan, KS 66506

Online: ksu.edu/agreport

Email: *gloria@ksu.edu*

National Honors for Kansas 4-H Volunteers

James Bassett, Topeka, and Ray Bartholomew, Hutchinson, were honored in October 2017 for their dedication to Kansas 4-H Youth Development. Bassett was named to the National 4-H Hall of Fame. Bartholomew received the Friend of Extension Award from the national chapter of Epsilon Sigma Phi, an association of county extension agents and specialists.

Bassett (B.S.'59 feed science and management) joined the Kansas 4-H Foundation Board of Trustees in 2004, bringing 38 years of Cargill global executive management experience.

"I know of no other organization that can do more for youth than the 4-H programs that are so dependent on the role of volunteers," Bassett said. "I know of nothing more important than growing the volunteer ranks and providing them the resources they need to implement 4-H programs."

He is the 15th Kansan inducted into the National 4-H Hall of Fame, more than any other state.

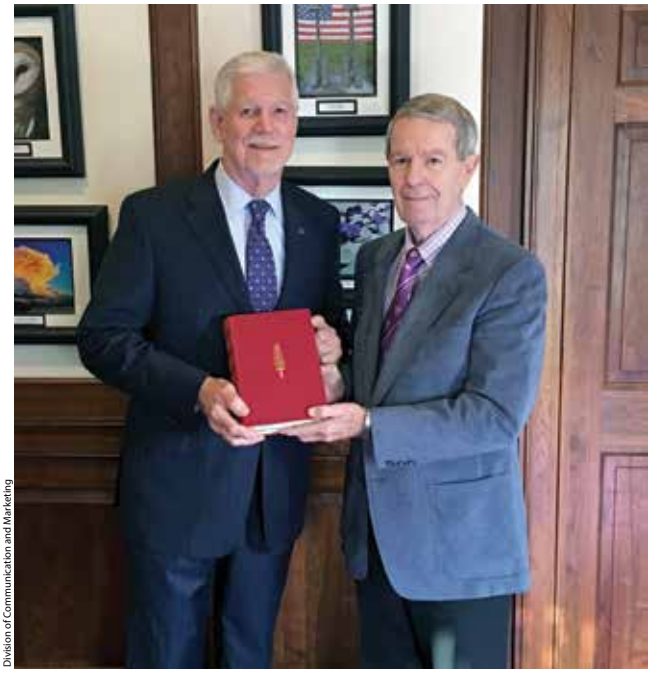
Bartholomew (B.S.'77 agricultural economics) has volunteered for the Kansas 4-H shooting sports program for 20 years, serving as the program's state volunteer coordinator for the last 10 years.

"For me, it's a passion," said Bartholomew, who credits his time as a 4-H member in Osborne and Rooks counties for teaching him leadership and commitment to service. "I get to do something I enjoy doing and pass on those opportunities to work with firearms, work with archery equipment, and to do it safely."

He is a farm loan manager for USDA's Farm Service Agency.

K-STATE Research and Extension

Alumnus Donates Rare Eisenhower Book



Division of Communication and Marketing

Richard D. Rees (B.S '61 feed science and management, M.S. '64 agricultural economics) presented *Crusade in Europe* written by Dwight D. Eisenhower to Kansas State University, K-State Libraries, and the university's president and first lady, Richard and Mary Jo Myers. Rees made the gift in memory of his late parents, Leonard and Beatrice Rees, who were K-Staters.

The donated book is number seven of 1,426 copies printed in 1948. The first 25 copies were bound in leather and reserved for Eisenhower to give to family and friends. Gen. Eisenhower had presented it to Milton Eisenhower, his youngest brother and K-State president from 1943 to 1950.

Research team discovers how weeds develop herbicide resistance

Breakthrough

Mithila Jugulam (l-r), Dal-Hoe Koo, Bernd Friebe, and Bikram Gill examine weeds.

Glyphosate-resistant weeds pose a huge problem for Kansas farmers and the state economy. A team of K-State scientists has made a breakthrough in controlling these weeds.

Researchers have discovered how weeds develop resistance to the popular herbicide glyphosate, the key ingredient in products such as Roundup.

Their work is detailed in the *Proceedings of the National Academy of Sciences*, known as PNAS and considered to be one of the most-cited journals for scientific research in the world. According to its website, PNAS receives more than 21 million hits per month.

"Herbicide resistance in weeds has been a huge problem, not only in Kansas and the U.S. but many parts of the world," said Mithila Jugulam, weed scientist in the Department of Agronomy

Jugulam co-authored the PNAS article with plant pathologists Dal-Hoe Koo, Bernd Friebe, and Bikram Gill, university distinguished professor and director of K-State's Wheat Genetics Resource Center.

The team found the mechanism that makes weeds resistant to glyphosate, the herbicide commonly used in agriculture.

Palmer amaranth and common waterhemp are troublesome pigweeds in Kansas agricultural fields. The group also published research on common waterhemp in Plant Physiology.

"We found that glyphosate-resistant Palmer amaranth plants carry the glyphosate target gene in hundreds of copies," Jugulam said. "Therefore, even if you applied an amount much higher than the recommended dose of glyphosate, the plants would not be killed."

Normally, the genetic material in all organisms — including humans — is found in long, linear DNA molecules, called chromosomes, Gill said.

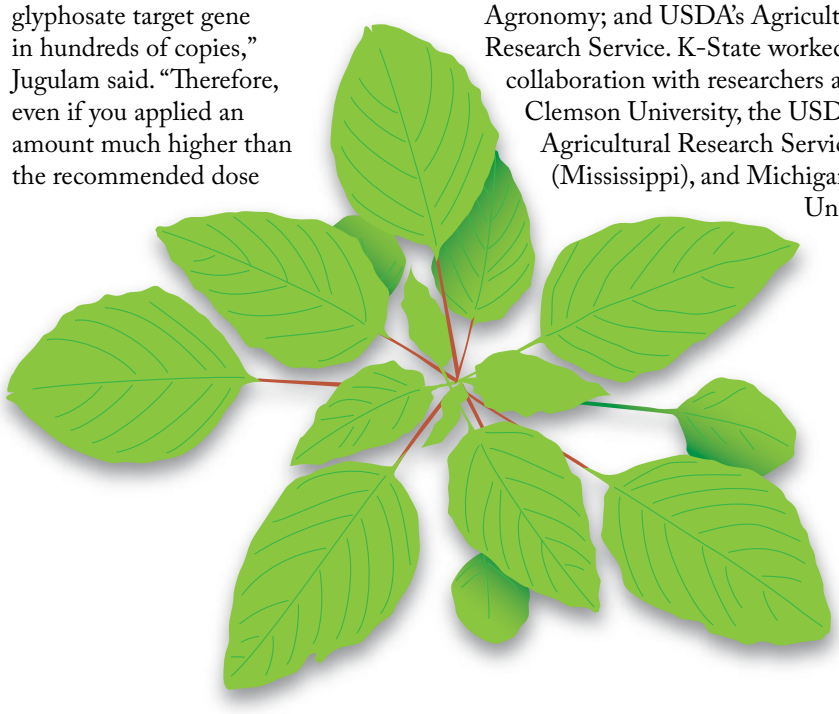
In glyphosate-resistant weeds, the glyphosate-target gene, along with other genes actually escaped from the chromosomes and formed a separate, self-replicating circular DNA structure. Scientists refer to this structure as extra-chromosomal circular DNA (eccDNA). Each has one copy of the gene that produces an enzyme that is the target for glyphosate.

"Because of the presence of hundreds of eccDNAs in each cell, the amount of the enzyme is also abundant," Gill said. "Therefore, the plant is not affected by glyphosate application and the weed is resistant to the herbicide."

"We think that the resistance via eccDNA is transitory: It can be passed to the weed's offspring and other related weed species," he said.

Armed with their new knowledge, the researchers can begin work on developing strategies to negate resistance in weeds.

This research was partially funded by grants from the Kansas Wheat Commission; the Kansas Crop Improvement Association; a National Science Foundation grant received through the Wheat Genetics Resource Center; the Department of Agronomy; and USDA's Agricultural Research Service. K-State worked in collaboration with researchers at Clemson University, the USDA Agricultural Research Service (Mississippi), and Michigan State University.



Dean and Director John Floros (l-r), Julie Voelker, and Donnie Young

Gloria Holcombe

More than a Position: *A Way of Making a Difference*

Donnie Young owns and manages Young Farms near Ulysses, and Julie Voelker serves as president of Community National Bank & Trust in Independence. They live on opposite sides of the state and work in different occupations, but Young and Voelker share a common passion for agriculture and Kansas State University.

They have agreed to serve as representatives to the Council for Agricultural Research, Extension, and Teaching (CARET) that was created in 1982 by the Association of Public and Land-grant Universities, or APLU. The volunteers advocate for greater national support and understanding of agriculture.

Young, a first-generation farmer, earned a degree in agronomy in 1978 and was a member of the Kansas Agriculture Rural Leadership Class IV that toured Chile and Argentina.

"All I ever wanted to do was farm," Young said. "Since I was from a nonfarming family, K-State and an agriculture major seemed as close as I could get."

He has served on multiple boards, including Grant County Farm Bureau, Southwest Kansas Groundwater Management District, the Kansas Corn Growers Association, and the Kansas Corn Commission. He also was a member of the College of Agriculture Alumni board, serving a term as president.

Young said he volunteers because, it's always fun to help and meet new people. "Also, I try to do some good," he added.

Voelker (B.S.'86 animal sciences and industry) grew up on a farrow-to-finish hog operation and had been active on the farm from a young age.

"My family was involved with the Kansas Pork Producers, and I had a lot of background on the impact of agriculture on our economy and as a way of life," Voelker said. "I knew I wanted to continue to be involved in the industry somehow. If you are going to major in ag in Kansas, was there anywhere else to go? I was the first in my family to attend K-State."

Voelker also has a long list of community service activities and deep family roots in 4-H and FFA. To explain her affinity for volunteerism, Voelker uses a quote from Lily Tomlin, "I always wondered why somebody doesn't do something about that. Then I realized I was somebody."

"That quote really impacts me," Voelker said. "There are so many things that need changed and people that need help in society today. I feel that God provided me so many opportunities, and it is my responsibility to share what I can with others."

Voelker and Young attended their first CARET meeting in Washington, D.C., in early March.

"Washington is always a fun place to go and always fun to talk and share about K-State," said Young.

"I look forward to advocating," Voelker said. "I feel that K-State Research and Extension and what is being done at the land-grant universities is still vital today. I think we are actually lucky that many of our legislative delegation understands that already, but it certainly doesn't hurt to remind them."

Henry C. Gardiner Global Food Systems Lecture Series

Sara Menker to deliver 2018 lecture

Courtesy of Sara Menker

Sara Menker, a native of Ethiopia who quit a prestigious job as a commodities trader on Wall Street to form a company that aims to find solutions to world hunger, has been chosen as the fifth speaker in the Henry C. Gardiner Global Food Systems Lecture Series.

Menker will deliver the talk, "Why there doesn't need to be a global food crisis," in Kansas State University's McCain Auditorium on Oct. 8 at 7 p.m. Admission is free, but patrons are encouraged to arrive early because the lecture series typically draws large crowds.

She is the founder and chief executive officer of Gro Intelligence, a technology company that is bridging the information gap in agriculture by providing data that can help farmers and others in the agricultural industry determine the most efficient way to grow food in different regions around the world.

"Everyone talks about the importance of big data, often without a tangible way of getting good information," Menker said. "What we do at Gro is make big data analysis possible because we are helping our clients make sense of the fragmented, messy, large world of agriculture data. And the potential impact of this is huge. Not only can we support our clients to spend more time on analysis and far less on data procurement, but by bringing all this data together and making sense of it all, we can also help tackle major issues around forecasting crop yields and food security on a global scale."

Her hope is that by making best use of available information, areas of the world where there is an abundance of uncultivated arable land can help to meet the growing food needs of a world in which the population is expected to reach nearly 10 billion people by the year 2050.

"Our initial focus was in Africa because the data needs were more severe there," Menker said. "When I began to conduct research and ask farmers about their crop insurance and forecasting yields, the questions could not be answered. I realized this was a systemic problem not only in Africa, but globally, and that tackling supposed African issues meant addressing the fragmentation of agricultural data on a global scale."

Menker earned degrees in economics and African Studies at Mount Holyoke College and the London School of Economics. She also obtained an MBA from Columbia University.

The Henry C. Gardiner Global Food Systems Lecture Series aims to provide science-based education about the global food system. The series allows university students, faculty, staff, and Kansas citizens to interact with U.S. and international food industry leaders. Kansas State University and Gardiner Angus Ranch of Ashland initiated the lecture in 2015.

KANSAS STATE UNIVERSITY | College of Agriculture
Waters Hall, Manhattan, Kansas 66506–4015

Connecting with Alumni

April 28, 2018

Awards Reception, 4 p.m. , K-State Alumni Center

2018 Award Winners

Distinguished Alumnus: **Charles Munson**, B.S. '65 agricultural economics
Outstanding Young Alumnus: **Justin Kastner**, B.S. '98 food science and industry
David J. Mugler Outstanding Teaching Award: **Andrew Barkley**, Professor, Department of Agricultural Economics

New Graduate and Alumni Dinner

6–8 p.m. — K-State Alumni Center Cost: $25
Recognition of fall and spring graduating seniors

For additional information, contact Alyson Lister at 785-532-5121 or alister@ksu.edu