

# THE LINK

LINKING INNOVATION AND NEW KNOWLEDGE

VOL. 1, NO. 1 FALL 2015



**KANSAS STATE**  
UNIVERSITY.

College of Engineering  
Department of Biological  
and Agricultural Engineering

## Message from the Department Head



We've all had an opportunity to observe change during the past year. Change at K-State is evident by construction fences, heavy equipment and cranes, movement of materials, and the hard hats and visible florescent clothing being worn by many. The department of biological and agricultural

engineering is changing to fulfill our commitment of "Making a World of Difference," while holding onto our "Tradition of Excellence." In doing so, we also continue to explore effective ways to communicate and connect with those beyond the campus boundaries.

We hope you find the change in the BAE newsletter format an effective approach to how we communicate with friends and alumni. This is the first edition of The Link. Our goal is to provide friends and alumni a way to "link" back to the campus and our department. In these pages, we will highlight some of the innovation occurring in our research labs and our exciting undergraduate activities, as well provide you with new knowledge about BAE.

Innovation and knowledge are woven throughout our teaching, research and extension efforts in biological systems engineering. If you would like to learn more about how you can strengthen your connections or linkage back to campus, please get in touch. We are open to exploring opportunities to work together.

Joseph P. Harner III  
Professor and Department Head  
Biological and Agricultural Engineering

## THE LINK

Vol. 1, No. 1, Fall 2015

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Philip L. Barnes, associate professor  
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Daniel K. Flippo, assistant professor  
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Trisha L. Moore, assistant professor  
Danny H. Rogers, professor  
Ajay Sharda, assistant professor  
Aleksey Sheshukov, assistant professor  
John W. Slocombe, professor  
Susan Sun, ancillary faculty  
Donghai Wang, professor  
Lisa R. Wilken, assistant professor  
Naiqian Zhang, professor

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## UNDERGRADUATE RESEARCH AWARDS

# OUTSTANDING STUDENTS EARN DEPARTMENTAL SCHOLARSHIPS

Kseniya Sheshukova, BAE junior, was recently awarded a \$1,250 undergraduate research scholarship from the BAE department. She works in the bioprocessing and bioseparations lab under Lisa Wilken, BAE assistant professor, and is currently investigating the extraction and stability of recombinant human serum albumin (rHSA) in transgenic rice extracts and rHSA purification. Her research is key for making this unique, pharmaceutical product more economically feasible, and will provide critical insights into use of rice seed as an expression system for recombinant proteins of pharmaceutical and nutraceutical interests.

Sheshukova is a talented, meticulous and diligent researcher who has made significant contributions to her project. She received the grand prize in the 2015 Institute of Biological Engineering undergraduate poster competition, first place in the 2015 American Society of Agricultural and Biological Engineers K.K. Barnes Undergraduate Paper Competition, third place in the spring 2014 College of Engineering undergraduate research poster forum and was awarded the 2015 K-State Tau Beta Pi Underclassman of the Year award.



Luke Snider, BAE senior, received a \$1,000 undergraduate research scholarship from the BAE department. He is currently working under Lisa Wilken, BAE assistant professor, to design and optimize a modified dry milling process for improved separation of grain fractions and efficient biomass utilization. His project could benefit the bioenergy, food and bioproduct industries. Snider's project is supported by the 2014-2015 Undergraduate Research Experience Award from the Engineering Research and Graduate Programs, or ERGP. He presented his research at the spring 2015 College of Engineering undergraduate poster forum and placed third overall.

Snyder has a strong passion for agriculture and intends to use his engineering degree to develop locally resourced food products and build agriculture-based businesses. He brings a wealth of knowledge and unique international experiences to his project.

"The ERGP Research Award enabled me to apply my knowledge gained through the biological and agricultural engineering program towards a real-world problem in corn dry milling, and then to present it to other faculty at the Undergraduate Research Poster Forum" Snider said. "It was a great opportunity with hands-on experience."



# SCHOLARSHIP RECIPIENT USES K-STATE EXPERIENCE TO MAKE A



# GLOBAL IMPACT

*“As we’re creating opportunities for the workers and their families, there’s also a bigger picture of economic development in Indonesia.”*

*Luke Snider*

Sometimes, a gift to support education at K-State continues making a difference more than two decades later and more than 9,000 miles away. Just ask Luke Snider.

The K-State senior will earn his undergraduate degree in biological systems engineering this December, with help from scholarships supported by gifts from department alumni and friends.

In turn, Snider has also lent help to those in need. With help from K-State faculty, Snider connected with farmers in Indonesia and Laos who are developing new ways of processing soybean oil and drying rice and mangos. He has used his class projects at K-State to help the farmers create critical items like a food safety plan.

Snider has even worked in Indonesia alongside the mango farmers. The farmers see their business as an unprecedented economic opportunity that makes college education a real possibility for their children. Snider views it as a chance to apply skills learned at K-State and affirmation that he’s on the right academic path.

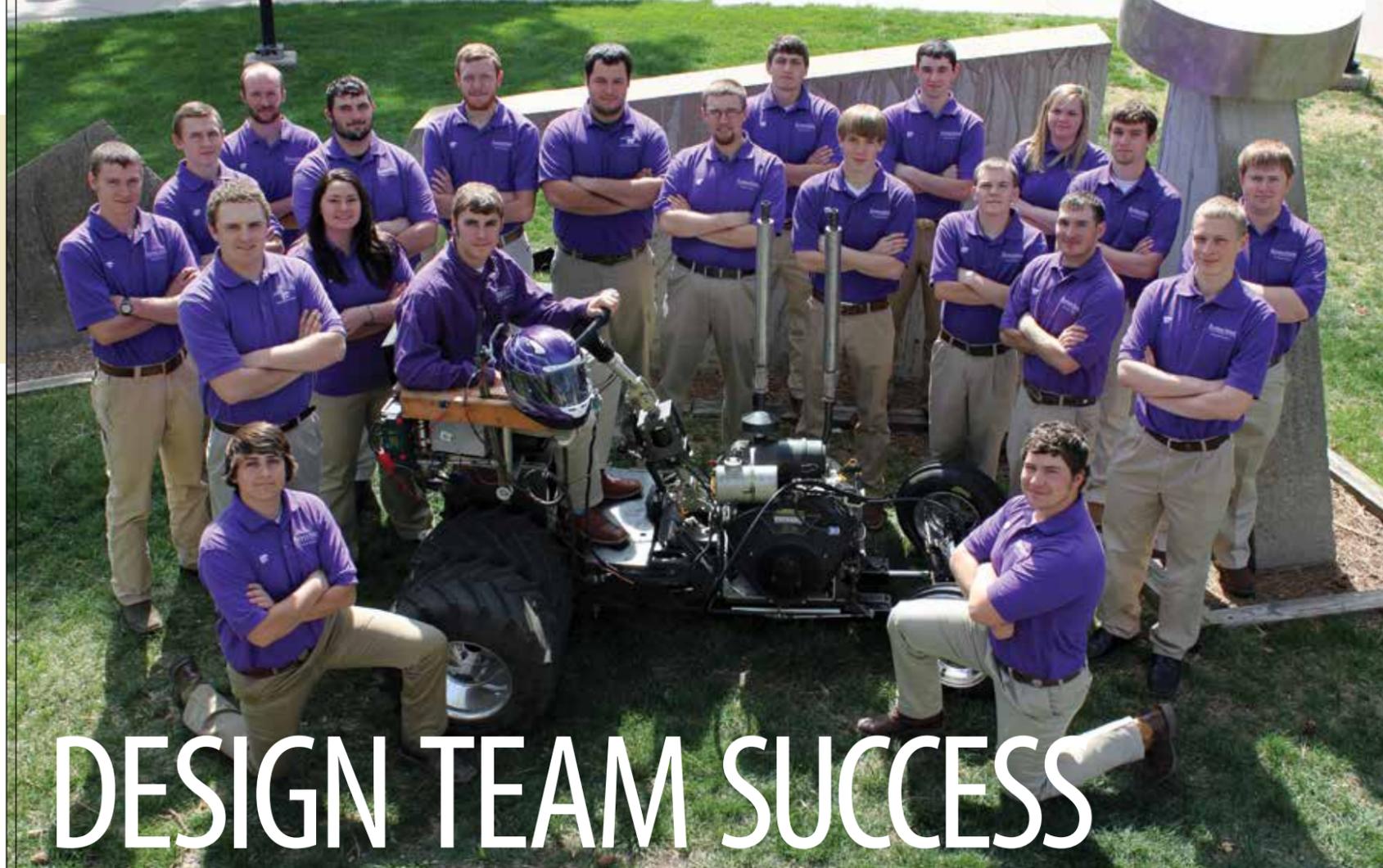
“I really appreciated what we were able to do in the village and the very meaningful things we were able to accomplish,” Snider said of this time spent working overseas with global nonprofit Resource Exchange International. “I want to be involved in the equipment and technologies for processing food. As we’re creating opportunities for the workers and their families, there’s also a bigger picture of economic development in Indonesia.”

Without hesitation, Snider credits the financial support of K-State alumni and friends in making his journey possible.

“I know I’ve been encouraged through their financial support in its various forms — scholarships, research awards, and quality equipment and facilities in Seaton Hall.”

#### **Invest is success**

Your investment in the College of Engineering will make a difference for K-State students. To learn more, contact the engineering development office at 785-532-7609 or [engg@found.ksu.edu](mailto:engg@found.ksu.edu)



# DESIGN TEAM SUCCESS

K-State's BAE Powercat Tractor team successfully competed in the 2015 ASABE IQS competition in Peoria, Illinois, in June. The competition included three tractor pulls, a maneuverability event, design judging, sound testing, a written report, presentation and new for the 2015 competition — a durability course featuring a bump track and 50-foot sand pit. The 2015 team took home second-place overall honors this year.

The 2015 Powercat Tractor departed from the four-wheel drive approach the team has used for many years, and featured an all new, two-wheel-drive design that included dual wheels and an adjustable-length frame. The new design competed very closely with the

eventual competition winner by forcing “pull-offs” in two of the competition pulls and was the first tractor to successfully complete the new durability event.

The 2015 effort began in the fall of 2014 with extensive tractor configuration testing. Development continued through the winter, with the final tractor design being built in April 2015 for the June competition. This year's team had 34 student members majoring in biological systems engineering, agricultural technology management, mechanical engineering and elementary education; and were from six different states: Kansas, Nebraska, Iowa, California, Missouri and Illinois.



ABOVE: 2015 POWERCAT TRACTOR COMPETING IN THE 1500-LB. TRACTOR PULL, DRIVEN BY AARON SPARE, BAE SENIOR.

BELOW LEFT: AARON SPARE AND KYLER MACY BSE SENIORS MAKE LAST MINUTE ADJUSTMENTS TO THE TRACTOR PRIOR TO TECHNICAL INSPECTION.

BELOW RIGHT: THE 2015 POWERCAT TRACTOR FEATURED DUAL TIRES — A FIRST FOR THE COMPETITION.



# BAE MACHINERY — STORM2050

The machinery option group of the BAE department is a forward-thinking, sustainable-minded team devoted to developing innovative machinery systems to meet the food, fiber and energy demands of the world in 2050. The group is currently working with precision agriculture and automation systems that will achieve higher yields with less environmental impact. Precision spray techniques, land- and air-based automation, remote sensing, spectral analysis, and unconventional food production systems are a few examples of the research and instruction performed as part of the group's efforts.



# BANKING INTERNSHIP OFFERS INSIGHT ON FARMING BUSINESS

This summer I had the privilege of interning in my hometown of Atchison, Kansas, at the Bank of Atchison/ Union State Bank. Before I began my internship, banking was simply borrowing money and repaying it. After getting exposed to the internals of banking and how a bank operates day in and day out, I began to see all the different opportunities banking offers.

For my internship, I primarily dealt with the ag loans — anything from helping a farmer purchase

a farm to a simple equipment loan. What I like most about banking is that it touches every aspect of farming. If the grain or cattle markets drastically drop, it is going to affect each of your customers, which begins to be an issue for you as their lender. If there's a bumper crop, you may be assisting a producer to upgrade machinery or possibly purchase land to grow his or her business. I plan to go into banking when I complete my college career in the spring.

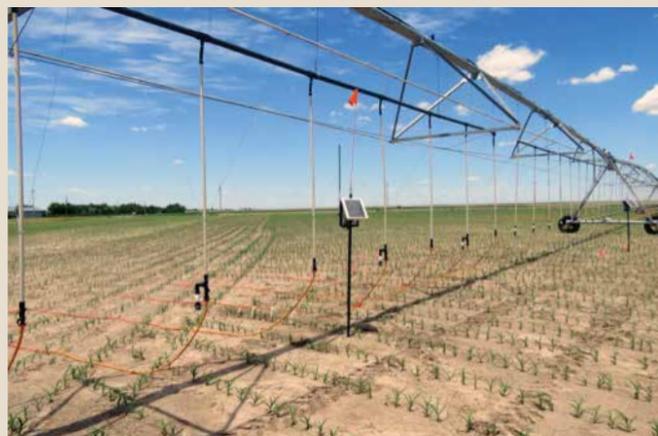
— Erik Cummings  
senior ATM



# KSRE AND THE KANSAS 50-YEAR WATER VISION PLAN

The 50-Year Water Vision Plan for Kansas addresses two major issues of concern — water supplies from reservoirs and aquifers, and identification of many educational, policy and research goals. Some of these are directly related to KSRE irrigation engineers such as promotion of efficient irrigation application technologies. A new center-pivot nozzle package option was installed for a study in 2015 and will

compare use of micro-irrigation drip lines to in-canopy spray nozzles for corn. The latter are the most common type of nozzles in use in the area. The mobile drip line could increase efficiency by limiting canopy and soil evaporation losses. KSRE irrigation engineer, Isaya Kisekka, BAE assistant professor, is the lead investigator for the project.



THE MOBILE DRIPLINE DRAG HOSE VERSUS SPRAY NOZZLE (NOT SHOWN) STUDY AT THE SWREC — THE DEVICE IN THE CENTER OF THE PICTURE IS A SOIL WATER RECORDING STATION CONNECTED TO FOUR SOIL WATER SENSORS AT THAT LOCATION.



KSRE IRRIGATION ENGINEER, ISAYA KISEKKA, CHECKS THE ZONE CONTROLLER FOR DRAG LINE VERSUS SPRAY NOZZLE COMPARISON STUDY LOCATED AT THE SWREC NEAR GARDEN CITY, KANSAS.

## STREAM BANK EROSION FOCUS OF STUDY

Stream bank erosion is now recognized as a major contributor to sedimentation in surface waters, including many Kansas reservoirs used to supply municipalities and industries with water. Working to improve approaches to manage this erosion is Kari Bigham, BAE graduate student working with Trisha Moore, BAE assistant professor. Bigham developed a keen interest in streams from childhood and after completing her B.S. from the BAE department, worked as a design engineer to help stabilize eroding stream banks throughout the state.

In her M.S. research, Bigham is working in the Little Arkansas River watershed of south central Kansas to measure rates of stream bank erosion, and to develop and test effectiveness of predictive erosion models in agricultural streams in this region. Her research complements ongoing efforts by BAE faculty in the Little Arkansas River watershed to understand and reduce sediment losses from agricultural and urban areas. Results of her work will provide watershed managers in Kansas and other Plains states with improved methods to estimate sediment losses from streams — a critical step in targeting stream stabilization



KARI BIGHAM, NEAR TWO OF HER STUDY BANKS ON THE LITTLE ARKANSAS RIVER, TRACKS RATES OF STREAM BANK EROSION THROUGH REPEATED MEASUREMENTS OF BANK GEOMETRY.

and restoration efforts to the most vulnerable stream banks. Follow Bigham's and other BAE water research on Twitter @KStateWater.

# AGRABILITY PROJECT ASSISTS DISABLED

The Kansas AgrAbility Project (KAP) assists people with disabilities who work in agriculture. AgrAbility's vision is to enable a high-quality lifestyle for farmers, ranchers and other agricultural workers with disabilities. While the term "disability" often brings to mind conditions such as spinal cord injuries and amputations, KAP addresses these and many other conditions such as arthritis, chronic back pain and behavioral health issues. Through education and assistance, KAP staff helps 100 Kansas farmers and ranchers minimize or eliminate obstacles that inhibit success in production agriculture or agriculture-related occupations each year.

In the past year, one Kansas cattle rancher with a spinal cord injury needed to get in and out of his tractor and other equipment independently. KAP staff helped him identify a boom lift with a seat that could be mounted on a trailer for increased access to equipment and work sites. Accessible gate openers were also selected to allow him access to all areas of his ranch. A funding justification was submitted to Kansas

Rehabilitation Services (KRS) and a variety of nonprofit organizations for the boom lift and gate openers. These items were secured through a collaborative effort of KRS, nonprofit organizations and personal funds. Now the rancher is able to independently transfer in and out of his pickup, tractor and other farm machinery, so he can work in the fields and handle his cattle.

AgrAbility is funded by the United States Department of Agriculture (USDA) National Institute for Food and Agriculture (NIFA), and consists of a national project and state/regional projects including the Kansas AgrAbility Project. Each project is a collaborative partnership between a Land Grant university and one or more nonprofit disability services organizations. Kansas AgrAbility partners are Kansas State University, Southeast Kansas Independent Living (SKIL) and Assistive Technology for Kansans (ATK). Contact the group at 1-800-KAN DO IT (1-800-526-3648) or visit <http://agrability.bae.ksu.edu>.

## COLLABORATIVE RESEARCH WITH HORSCH

Common interests stemmed in collaborative research among K-State's BAE department, Horsch LLC and Horsch Maschinen GmbH. K-State is leveraging the high-end precision agricultural equipment developed by Horsch to further its research, and provide Horsch expert feedback to improve its product line and features for North American markets. This collaboration journey has witnessed many milestones with Ryan Strasser, BAE undergraduate, and Devin Mangus, BAE graduate student, leading the research projects within Ajay Sharda's, assistant professor, precision agriculture and machinery systems team. An important facet of this partnership is the setup of the Horsch Advanced Planting Systems (HAPS) Lab at K-State enabling further research by the university team, apart from providing an opportunity for undergraduate students to engage with hands-on training and development on newer precision agriculture technology. Research projects are being conducted in HAPS lab at K-State and Horsch corporate headquarters, and at a production facility in Mapleton, North Dakota, on newer technologies such as electric motor seed metering, contour farming technology and active planter downforce control.

Another research focus is development of lightweight thermal imaging systems for on-demand crop status monitoring with support of thermal cameras from DRS Technologies, Inc. Mangus, in Sharda's lab, is leading this research effort to develop an imaging system for precision irrigation management for water sustainability.

Over the last year, in connection with this project, Strasser has won the outstanding undergraduate student award and travel grant to ASABE; and Mangus won a national imaging competition, SARE-USDA graduate student grant and a couple of outstanding graduate research paper awards at the annual ASABE International Meeting.



DEVIN MANGUS USES THERMAL INFRARED IMAGING SYSTEMS FOR SMALL UNMANNED AIRCRAFT SYSTEMS FOR ON-DEMAND CANOPY TEMPERATURE MEASUREMENTS.



RYAN STRASSER ADJUSTS AN ELECTRIC MOTOR METERING SYSTEM WITH CONTOUR FARMING TECHNOLOGY FOR HIGH SPEED PLANTING.



# INTERNATIONAL CONNECTIONS

The BAE department's strong international profile has created rich opportunities for dynamic engagement and connections with the international community through various areas of activities including research, outreach, and education. The department, through its activities in many regions throughout the world, has been creating an environment that actively promotes international links and enhances cross-cultural understanding.

The department has fostered undergraduate student participation in learning and service programs in various countries including Bangladesh, China, Ecuador, Laos, Panama and the Philippines. Faculty have gone beyond borders to establish international experiences and partnerships with several universities and organizations in many countries including China, Pakistan, Philippines, France, Russia and Brazil. The department has hosted students and scholars from around the world to be a part of the K-State BAE family. More than 50% of BAE graduate students originate from 11 foreign countries; they provide a global perspective, expand research and outreach connections, and help engage students to experience other cultures. With a high percentage of international graduate students, student participation in

service abroad and many dynamic international partnerships, BAE department connections span the globe, and it is committed to continuing and increasing student and faculty exchanges and research collaborations.

## Countries of origin of recent and current graduate students

- |            |               |
|------------|---------------|
| • China    | • Philippines |
| • Colombia | • Russia      |
| • Ghana    | • Sri Lanka   |
| • India    | • South Korea |
| • Iran     | • Thailand    |
| • Iraq     | • Uganda      |
| • Panama   | • Vietnam     |

## Recent and existing partnerships/collaborations

- |              |               |
|--------------|---------------|
| • Bangladesh | • Laos        |
| • Brazil     | • Panama      |
| • China      | • Philippines |
| • Ecuador    | • Russia      |
| • France     |               |

# STRONG SHOWING ONCE AGAIN FOR FOUNTAIN WARS TEAM

Always keeping cool under pressure. That's the motto of K-State's Fountain Wars team, a student group that applies hydraulic principals to design and build a water fountain capable of performing assigned technical tasks as part of the annual design competition held by the American Society of Agricultural and Biological Engineers (ASABE).

In this year's competition, held during the annual ASABE meeting in New Orleans, team members were given just two hours to construct their fountain, after which time they were judged on their ability to perform an aesthetic display and other pre-assigned technical tasks. True to their motto, the 2015 Fountain Wars team kept its cool — even after an electrical issue shorted one of its pumps — to secure a third-place finish in this national competition. Congratulations, Fountain Wars team!



**TOP PHOTO AT RIGHT:** THE TEAM ADOPTED A MEDIEVAL-THEMED FOUNTAIN FEATURING A DRAGON-SLAYING KNIGHT AS PART OF ITS AESTHETIC DISPLAY.



**MIDDLE PHOTO AT RIGHT:** TEAM MEMBERS, FROM LEFT, DEVON BANDAD, AARON AKIN, KAYLA WEHKAMP, CHLOE BUDREAU, PHIL MAHONEY, KEVIN GARMAN AND CONNER LEGLEITER, WERE AWARDED THIRD PLACE IN THE FOUNTAIN WARS COMPETITION.

**BOTTOM PHOTO AT RIGHT:** COMPETITION JUDGES STRUGGLE TO KEEP COUNT OF THE TEAM'S POINTS IN A FAST-PACED, WATER-POWERED BASKETBALL SHOOT-OUT, ONE OF TWO TECHNICAL TASKS ASSIGNED.



**NEAR RIGHT:** FOR THE SECOND TASK, THE TEAM HAD THREE MINUTES TO COMPLETE AS MANY REVOLUTIONS OF THE FOUNTAIN AS POSSIBLE WITH THEIR HAND-CRAFTED BOAT.



# AIR QUALITY



When people think of air pollution, they typically relate it to industry. But in Kansas, agricultural operations, including livestock production and prescribed burning, are also major sources of air quality issues.

In livestock production, ammonia emissions represent loss of nutrients and inefficient conversion of feed nitrogen into animal product, while methane emissions represent loss of energy and inefficient use of feed energy. Also, concerns about the climate impact of livestock production produce significant debate among producers, consumers and scientists.

Prescribed pasture burning is a longstanding practice for ecosystem management, but it can contribute to exceedances of air quality standards in downwind communities. In 2015, an air quality group at K-State conducted research aimed at addressing these issues, including modeling air emissions from livestock through meta-analysis, exploring innovative mitigation technologies such as UV/TiO<sub>2</sub> treatment and developing guidelines for conservation strategies such as vegetative environmental buffers.

Workshops and factsheets support management of smoke emissions from pasture burning, as well as air emissions and carbon footprint from livestock production. The group's goal is to effectively inform and influence producers and consumers to move agricultural production toward practices that are environmentally sound and economically viable.

*ABOVE, BAE DOCTORAL STUDENT, YANG "JEANNE" LIU, WORKS ON THE UV/TIO<sub>2</sub> REACTOR WHICH IS DESIGNED TO REDUCE AIR POLLUTANTS.*

*LEFT, JON ZELLER, MS STUDENT AND BAE RESEARCH TECHNICIAN, ESTABLISHES AN ENVIRONMENTAL VEGETATION BUFFER TO MIGRATE AERIAL EMISSIONS FROM A SWINE FACILITY.*



# NEW TECHNOLOGY FOR CAMELINA VALUE-ADDED PROCESSING

Donghai Wang, BAE professor, and his research group in collaboration with Susan Sun, grain science and industry professor, has developed a value-added process technology for camelina seeds to improve processing efficiency, separation yield and final product quality, which will strengthen utilization of camelina for food, feed, biorefinery and industry applications. With new technology, soluble polysaccharides (gums) with high purity can be harvested at high yield and low cost; protein content in camelina meal increased from 39.2% to 56.3% and glucosinolate content in camelina meal decreased significantly, which increased meal values for food and feed applications as well as for industrial

applications. Yield of the camelina protein isolates from camelina meal increased by 48% compared with previous technology. The new technology also increased end-use quality of the isolated products. For example, camelina gum has super gelling and viscous properties, which is two times and 15 times higher than that of κ-carrageenan and HEC gums, respectively. The wet adhesion strength of camelina protein isolated using the new technology increased by 70% and the camelina film can be used for edible food packaging materials. Guangyan Qi, BAE visiting scholar, has been conducting research on development of camelina film and camelina protein adhesives as well.

# ON-FARM DEMONSTRATIONS AID IN IRRIGATION SCHEDULING TO OPTIMIZE WATER USE

KSRE agricultural engineers, led by Jonathan Aguilar, SWREC extension specialist, in cooperation with other private and public entities, are using on-farm demonstrations to evaluate use, operation and management of telemetric soil water sensors to monitor root-zone soil water levels during the growing season in irrigated fields.

The soil-based water budgets will be correlated with information from an ET-based irrigation schedule program and overall water use of the field. Advances in soil water sensors have revived interest in this technology since the sensors can provide field-specific information and allow a crop water balance budget to be developed using a separate information stream from the ET-based schedule. Combination of the two methods results in a powerful management tool that should increase farmer confidence in using irrigation scheduling to optimize irrigation water applications without yield impact.



*JONATHAN AGUILAR OPERATES A NEUTRON PROBE USED IN RESEARCH TO MEASURE SOIL WATER. THESE READINGS ARE PART OF THE EVALUATION OF THE OVERALL EFFECTIVENESS OF DEMONSTRATION MANAGEMENT TOOLS BEING UTILIZED IN PROJECT FIELDS BY KSRE ENGINEERS.*

# BIOLOGICAL SYSTEMS ENGINEERING SENIOR DESIGN

The BSE Senior Design class continues a long tradition of innovative design work and award-winning performance. In the summer of 2015, the “rotational anatomy” design team added to this tradition by winning two awards — the KSU Kirsmer Research Award and the ASABE Gunlogson Open Design Competition Award, for its design of a cadaver lift system.

This innovative design reduced the labor necessary to rotate a cadaver in a teaching laboratory setting from four individuals to one, while preserving and extending the educational value of cadavers used for teaching. The KSU BAE department has a long history of winning national design awards extending back to the 1970s and starting with the AGCO National Student Design Competition. In all, KSU/BAE Senior Design class

teams have won first place in national student design competitions 11 times, finished second two times and place third two times.

Additionally, design teams in the BSE Senior Design course have worked on quarter-scale tractor designs that have gone on to win awards as well. BSE Senior Design course projects over the years have received patents, aided disabled farmers, improved products, developed research tools, addressed urban water problems and solved many, many other problems for farmers, businesses, individuals and researchers.



ROTATIONAL ANATOMY DESIGN TEAM MEMBERS, FRONT ROW, FROM LEFT, CHLOE BOUDREAUX AND KEVIN GARMAN; BACK ROW, FROM LEFT, ADVISER, ED BROKESH, AND PHILLIP MAHONEY AND JACK EZELL



ABOVE LEFT, MODEL OF CADAVER LIFT AND ROTATIONAL DEVICE, AND, ABOVE RIGHT, DEMONSTRATION OF THE CONSTRUCTED LIFT WITH “ROTATIONAL ANATOMY” TEAM MEMBER PHILLIP MAHONEY.

# JET WORKSHOP

Intensified sedimentation of water supply and flood control reservoirs is generally caused by transport of suspended sediments carried by rivers and creeks from upstream soil and stream bank erosion. A team of BAE students and faculty is working on understanding physical and geomorphological processes of soil erosion. A submerged jet erosion test (JET) is a standardized method for deriving erodibility parameters of cohesive soils in a laboratory setting or *in situ*, which can be used to estimate erosion rates of cohesive stream banks or cultivated croplands.

On June 8-9, 2015, the BAE department and Aleksey Sheshukov, assistant professor, hosted a two-day JET workshop. The first day contained in-class presentations and demo training, while participants ran JETs on the banks of Campus Creek, and the second day visited the Konza Prairie Biological Station. The workshop was supported by K-State and USDA, and provided training for nine faculty and 15 students from five universities. More information can be found at: <http://www.bae.ksu.edu/watershed/other/jetworkshop/>



TOP: JET WORKSHOP ATTENDEES  
BOTTOM: BAE GRADUATE STUDENTS SETTING UP JET APPARATUS FOR TESTING THE SOIL ERODIBILITY.

## STUDENT AND FACULTY AWARDS

### BAE Faculty Awards

#### Phil Barnes

Larry E. and Laurel Erickson College of Engineering Public Service Award

#### Mark Casada — adjunct professor

Kansas Section ASABE Member-of-the-Year Award

#### Mei He

K-State Academic Excellence Award

Innovative Research Award (K-State Johnson Cancer Research Center)

#### Stacy Hutchinson

The Myers-Alford Memorial Teaching Award

Edison Award (Edison Electric Institute)

POWER Magazine Water Award (POWER Magazine)

#### Ronaldo Maghirang

Robert R. and Lila L. Snell Distinguished Career Award for Excellence in Undergraduate Teaching

James L. Hollis Memorial Award for Excellence in Undergraduate Teaching

#### John Slocombe

CARET (Council for Agricultural Research, Extension and Teaching)

Regional Award for Excellence in Multistate Research for Members of the NCREA 197 Committee (CARET)

#### Donghai Wang

Frankenhoff Outstanding Research Award

Elsevier: Biomass and Bioenergy Outstanding Reviewer Status

Elsevier: Industrial Crops and Products Outstanding Reviewer Award

#### Lisa Wilken

Outstanding Assistant Professor Award

Dean's Award of Excellence for Service

Kansas Section ASABE Young Member-of-the-Year Award

Institute of Biological Engineering 2015 Presidential Citation for Service

#### Naiqian Zhang

Inspiring Educator for the 2015 SPOTLIGHT K-STATE

### RETIREMENTS:

James Steichen, Ph.D. — December 31, 2014

James P. Murphy — May 23, 2015

Phil Barnes — December 31, 2015

### BAE Student Awards:

**Quarter-Scale Tractor Team** — second place in a field of 26 international competitors

**Robotics Team** — first and third place (two entries)

**Fountain Wars Team** — third place

**Kseniya Sheshukova** (Manhattan) — first place in the K.K. Barnes Student Paper (undergraduate research; Lisa Wilken, adviser); title: Extraction Analysis of Recombinant Human Serum Albumin in Transgenic Rice Extracts

**Devin Mangus** (Kanorado) — Third place in the Boyd-Scott Graduate Research Award (Master of Science graduate, Ajay Sharda, adviser); title: Deploying a Thermal Infrared Imaging System for High Spatial and Temporal Resolution Crop Water Stress Monitoring of Corn within a Greenhouse

**Devin Mangus** (Kanorado) — first place in Master Paper Award from Association of Agricultural, Food and Biological Engineers of Indian Origin

**BSE Senior Design Team** — first place (tie) in Gunlogson Open Competition. Team members: Chloe Boudreaux (Olathe), Jack Ezell (Shawnee), Kevin Garman (Burr Oak) and Phillip Mahoney (Salina); Ed Brokesh, adviser

**Kansas State Biological Systems Engineering Club** — first place in Association of Equipment Manufacturers for Outstanding Student Engineering Branch

**Kansas State Ag Technology Management Club** — second place in Association of Equipment Manufacturers for Outstanding Student Technology Branch

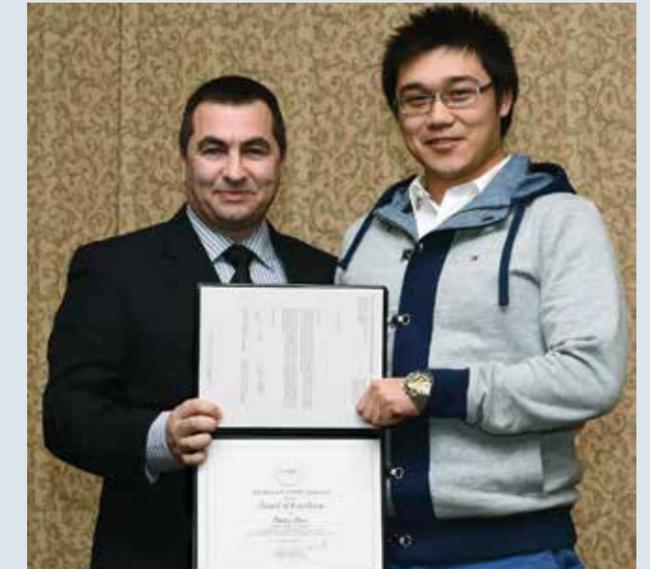


2015 WINNING BAE ROBOTIC TEAM. LEFT TO RIGHT: SRIRAMANA SANKAR, JUSTIN FRAZIER, YUQI SONG, TINGTING WU, AND NAIQIAN ZHANG (ADVISER).

# BAE SENIOR WINS POSTER COMPETITION

The biological systems engineering program in BAE focuses on biological living systems and health, particularly in the area of bio-instrumentation and biomedical devices. This emphasis prepares both graduate and undergraduate students with strengths for bridging medical and engineering disciplines, and providing solutions for overall enhancement of human health.

The department has actively engaged undergraduate student participation in biomedical-related research through partnering with the Terry C. Johnson Cancer Research Center and the Kansas IDEa Network of Biomedical Research Excellence, or K-INBRE, including attending symposiums and promoting activities of summer research scholars. BAE senior, Zheng Zhao, was recognized for having the outstanding poster presentation at the 13th annual K-INBRE Symposium in Topeka. He worked with Mei He, BAE assistant professor, on developing a portable, mobile device for blood-based cancer diagnosis.



BAE SENIOR, ZHENG ZHAO, RIGHT, IS PRESENTED THE BEST POSTER AWARD AT THE 13TH ANNUAL KANSAS IDEa NETWORK SYMPOSIUM IN TOPEKA.

## KANSAS STATE UNIVERSITY

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# WE'RE NOT IN KANSAS ANYMORE

Having the opportunity to live and work in a foreign country is a great experience. Having the opportunity to live with a French family in rural Burgundy watching wheat harvest, hiking through sunflower fields, sampling wine and doing your best to communicate in French is just plain fun!

This past summer, Stacy Hutchinson, BAE professor, and her husband, Shawn Hutchinson, geography associate professor, spent two weeks working at the French National Institute for Agricultural Research in Toulouse, France. They presented research at two conferences — the second European Association of Remote Sensing Laboratories Workshop on

Temporal Analysis of Satellite Imagery and the eighth International Workshop on the Analysis of Multitemporal Remote Sensing Images. The pair are working with French colleagues, Anne Jacquin, Université de Toulouse, INPT, Ecole d'Ingénieurs de Purpan, and Michel Goulard, Institut National pour la Recherche Agronomique, to develop improved methods for evaluating the condition of grasslands using satellite imagery. The Hutchinsons also joined Jacquin and her family on vacation in rural Burgundy.

While visiting her great-grandparents' farmhouse and asked how long her family had farmed in the area, Jacquin said, "Well... forever!"



LEFT, CLAUDE AND MICHELLE JACQUIN, HOSTS IN THERMES, FRANCE.

ABOVE, LEFT TO RIGHT, SHAWN HUTCHINSON, MITCHELL HUTCHINSON, STACY HUTCHINSON, MARLEIGH HUTCHINSON



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