



UNIVERSITY OF
ARKANSAS

College of Engineering
Biological & Agricultural Engineering

Spring / 2018

Newsletter

UofA

DIVISION OF AGRICULTURE
RESEARCH & EXTENSION

University of Arkansas System



Biological and Agricultural Engineering

Our mission is to develop sustainable water, food, energy, and related systems through innovative teaching, research, extension, and economic development via technology transfer.

It is a pleasure to share the progress made in our department since January 2017. Twenty four students in seven teams showcased their senior design projects on May 3rd. Ms. Ali Ezell, one of our 23 graduating seniors was selected as the “Most Outstanding Graduating Senior” in Biological Engineering and was recognized at the College of Engineering student recognition reception and graduation ceremony on May 12th. Three of our graduating seniors, Ali Ezell, Casey Gibson and Kendrick Hardaway were honored as “Seniors of Significance” with their mentor Dr. Scott Osborn by the Arkansas Alumni Association. Dr. Osborn, student club advisor organized and accompanied 16 students to the ASABE Southeast Student Rally in Lexington, KY during April 5 to 8.

Seven outstanding alumni were inducted in the Arkansas Academy of Biological and Agricultural Engineering (AABAE) on April 20th. Senior design teams and the student club officers made presentations at the Academy Banquet. AABAE provides valuable support annually through scholarships, student membership in ASABE, travel for student competitions and student club activities. The AABAE is engaged in helping us grow the departmental scholarships. We would like to raise funds to endow the Carl Griffis Memorial Scholarship and would appreciate your support. On April 21st, Mr. Gregory Baltz (BSAGE 1980) of Running Lake Farms in Pocahontas, AR was honored as a “Distinguished Alumnus” and Mr. Drake McGrudder (BSBE 2006) of Kraft Heinz Co. in Ft. Smith, AR was recognized as an “Early Career Alumnus” of the College of Engineering.

Dr. Ben Runkle is the recipient of the prestigious NSF CAREER Award. He was also recognized with the “Rising Teaching Award” in the College of Engineering. Distinguished Professor Yanbin Li was inducted as a 2018 Fellow of the Institute of Biological Engineering in Norfolk, VA on April 7, 2018. He was also awarded a College of Engineering “Excellence in External Research Award.” In March it was announced in Washington, DC that Dr. Marty Matlock is the winner of the prestigious “2018 Borlaug CAST Communication Award.” Drs. Tom Costello, Jin-Woo Kim and Brian Haggard were recognized for excellence in teaching, research and service to students in our department, respectively. Mr. Julian Abram was awarded the Division of Agriculture Non-Classified Support

Personnel Award in January for his superior service. I had the opportunity to make a keynote address at the inaugural conference of the Pan-African Society for Agricultural Engineering in Nairobi, Kenya.

Please send us your news and updates, call (479-575-2351), e-mail (lverma@uark.edu), or visit us on campus at your convenience. I invite you to visit us or look us up at www.bio-ag-engineering.uark.edu about our programs, faculty, staff, and students. Your continued support of our programs is deeply appreciated.



A handwritten signature in black ink that reads "Lalit Verma". The signature is written in a cursive style and is underlined.

Lalit Verma, professor and department head
Biological and Agricultural Engineering
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BAEG FACULTY

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A Busy Year for Dr. Runkle

Benjamin Runkle, assistant professor of biological and agricultural engineering, has received a \$500,199 Faculty Early Career Development award from the National Science Foundation to expand his research on sustainable rice production. The NSF award will enable Runkle to quantify the climate impact of these water-saving irrigation strategies. Rather than the traditional paddy style of rice farming, which involves flooding the field, one new strategy focuses on irrigating and drying the furrows between rows of rice plants. Another strategy uses plastic piping with multiple inlets to more efficiently irrigate fields. In addition to saving water, these practices deliver oxygen into the soil, which both prevents microbes from producing methane and inhibits their growth, thus significantly reducing methane emissions from the field. Additionally, with this practice, less carbon dioxide is produced, because by saving water, less energy is used by the pumps that pull groundwater from the aquifers for irrigation.



On top of his research, he received the 2018 College of Engineering Rising Teaching Award. This award is awarded to an assistant or associate professor based on contributions made at the University of Arkansas during a maximum of three calendar years prior to the year of the award.

Dr. Verma addresses 'Grand Challenges' at Africa conference

Dr. Lalit Verma, gave a keynote presentation on the importance of engineering last month to government and education leaders from across Africa.

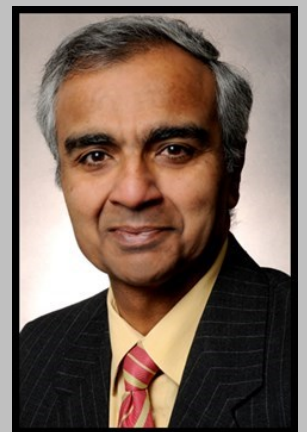
Verma's remarks were given at the inaugural meeting of the Pan-African Society for Agricultural Engineering in Nairobi, Kenya in late March.

The presentation focused on the important role biological and agricultural engineering plays in addressing the grand challenges of food, energy and water security. The issues are especially pressing for many African nations.

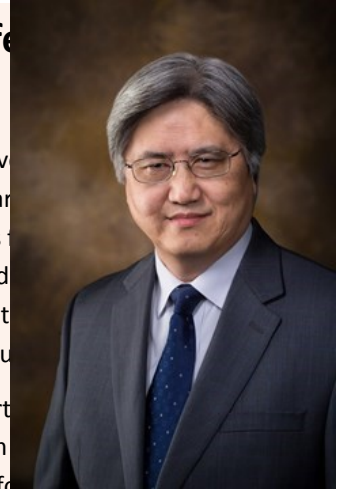
Verma said biological and agricultural engineers can play a unique role in meeting a crucial need as the global population continues to grow. According to the United Nations, the global population is expected to reach 9.8 billion in 2050, with 26 African nations expected to double in size in that timeframe.

"The interdisciplinary approach and hands-on training embedded in agricultural and biological engineering training, positions us to design systems to solve complex problems at the nexus of Food-Energy-Water (FEW), while embracing entrepreneurship and utilizing a systems approach," Verma said. He pointed to the white paper *Global Partnerships for Global Solutions: An Agricultural and Biological Engineering Global Initiative*, developed by the American Society of Agricultural and Biological Engineers (ASABE), as a guide to understand these goals and objectives under the overarching umbrella of sustainability and climate challenges.

Verma's presentation was titled "Agricultural and Biological Engineering for a Sustainable World: ASABE's Global Initiative: Vision, Goals, and Outcomes."



Dr. Li's Work with Walmart to Improve Food Safety



Food-borne diseases cause more than 600 million cases of illness and thousands of deaths and cost over \$100 billion each year. Dr. Yanbin Li is leading an international and interdisciplinary team working with the Walmart Center to conduct a research for improving food safety in poultry supply chain in China. The project is funded by a grant from the Walmart Foundation. The project focuses on innovative biosensing technology to rapidly detect and antibiotic residues in poultry supply chain and advanced dynamic risk-assessment models integrated with supply chain management to help the industry and regulators make better decisions for ensuring food safety in poultry supply chain.

The project encompasses the entire poultry supply chain, from farms, processing plants, and transportation centers, and markets, which requires systematic and interdisciplinary approaches by researchers from various disciplines including food science, microbiology, biological and agricultural engineering, industrial engineering, electrical and information engineering, business management, and more. Dr. Li is working with researchers from the Supply Chain Management Research Center in the Sam M. Walton College of Business, the Reliasoft Risk, Reliability and Maintenance Lab in the College of Engineering, and the Center of Excellence for Poultry Science in the Division of Agriculture at the University of Arkansas. The project also involves researchers from South China Agricultural University, China Agriculture University, Zhejiang University and Zhejiang Academy of Agricultural Sciences in China. In addition, three Chinese poultry companies, New Hope Liuhe, Fujian Shengnong and Guangzhou Jiangfeng, have actively participated the project, providing their information and feedback.

China is the second largest producer of poultry meat and eggs in the world and is faced with unique challenges in food safety because of great variation and many uncertain factors in their poultry supply chain. It is expected the biosensing technology and dynamic risk assessment model will help better monitor and control pathogenic contamination and antibiotics use in poultry. The impact of this project should extend beyond China considering our food supply chain is already global.



2018 Borlaug CAST Communication Award Goes to Marty Matlock

The Council for Agricultural Science and Technology (CAST) announces that the 2018 Borlaug CAST Communication Award goes to Marty Matlock. The Borlaug CAST Communication Award is presented annually for outstanding achievement

by a scientist, engineer, technologist, or other professional working in the agricultural, environmental, or food sectors for contributing to the advancement of science in the public policy arena. Primary consideration will be given to candidates who are actively engaged in promoting agriculture through research, teaching, extension, or mass communication; who have made significant contributions to their discipline or field; and who demonstrate a passionate interest in communicating the importance of agriculture to policymakers, the news media, and the public.



Drs. Costello, Kim, and Haggard were honored this year at the Faculty and Staff Awards this year. Dr. Costello, for teaching. Dr. Kim, for research. Dr. Haggard, for his service to students.

Julian Abram Awarded Division of Agriculture Non-Classified Support Personnel Award

Julian Abram joined Biological and Agricultural Engineering in 2004 as lab manager for research and education facilities at the Arkansas Agricultural Research and Extension Center. He also coordinates inventory for the entire department, including facilities on the University of Arkansas campus and other locations around the state. This includes managing a vehicle pool of research trucks, passenger vans and specialty trailers. He works seamlessly with the MREC director and supervises two support personnel within the department. He has also provided support as needed for other departments. Abram routinely steps up to take on additional responsibilities in support of Division research and education efforts. A skilled craftsman, he has designed and built renovations and furnishings for various BAEG facilities and has expedited the completion of new and renovated facilities. He is always thinking of creative ways to enhance research and education efforts. Abram is a critically important professional and vital to the Divisions mission.



Dr. Suvocarev and Colby Reavis doing a little field equipment maintenance at the flooded rice fields near Humnoke, Arkansas.

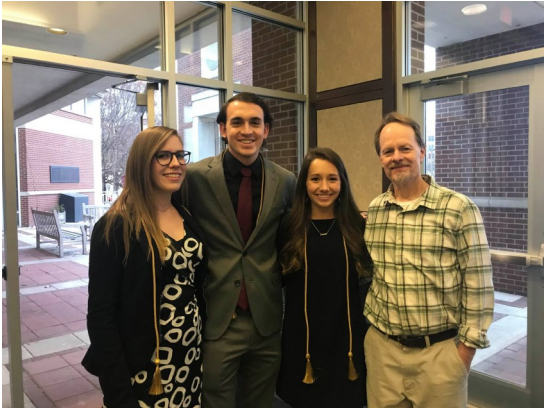


Abbie Lasater enjoying the day while collecting water samples from Jones Creek, near the Lake Hinkle Dam



Anthony, Joselinn, Linda, and Janelle at the AABAE Ceremony

Life Line Students



Ali Ezell, Casey Gibson, and Kendrick Hardaway were honored at the Arkansas Alumni Association Seniors of Significance. Pictured with their mentor G. Scott Osborn, PhD



The Biological Engineering Student Club making sure people are starting their day off right by passing out doughnuts in BELL during EnginWeek

Laura Gray, Sarah Gould, Casey Gibson, And David Su were honored at the State and National Awards Reception at the Faulkner Performing Arts Center.

Laura was awarded an NSF-funded position in a summer REU program – Research Experience for Undergrads, where she will perform biology research in Thailand. Casey is an honorable mention for the NSF Graduate Research Fellowship program.

Sarah was awarded a summer position through Germany's DAAD Research in Science and Engineering (RISE) program. David Su is a member of the 1st place team for the Horticulture Judging Contest, Club Judging Fruit and Nut and Vegetable, from the Southern Region of the American Society for Horticultural Science.

Pictured with their mentors Drs. Osborn and Runkle



This years ASABE Student Regional Rally took place in Lexington Kentucky .





The Arkansas Academy of Biological and Agricultural Engineering held its annual induction ceremony on April 20. The event was held at Mermaid’s Restaurant. There were over 140 guests in attendance for the induction of seven new distinguished members.

The Seven inductees (pictured above from left to right) were John Chris Brock, who graduated from the University of Arkansas in 1999 with a bachelor’s degree in Biological Engineering. He went on to serve in the Arkansas Army National Guard where he is a Field Artillery Targeting Officer. Currently, John is the Site Lead for Stanford Research Institute.

Dylan Carpenter is a fellow of the American Board of Orthopedic Surgery, and is an orthopedic surgeon at White River Medical Center in Batesville, Arkansas. Carpenter obtained his B.S. in Biological Engineering in 2002 and M.S. in Biological Engineering in 2004.

Zach Dalmut received his B.S. degree in Biological and Agricultural Engineering. Upon graduating he accepted a job with United States Department of Agriculture - Natural Resources Conservation Services (NRCS). In 2013, he accepted a promotion to the South Area in Pine Bluff, Arkansas, where he presently provides engineering support and assistance to the lower 29 Counties of Arkansas.

Kyle Kruger Kyle Kruger is a licensed professional engineer with over 10 years of experience and he currently serves as the Oklahoma treatment plant team leader for Garver. He obtained his Bachelor’s Degree in Biological Engineering in 2005 and went on to obtain Master’s Degree in Environmental Engineering 2009.

Toni McCrory is a Director with Walmart’s U.S. Environmental, Health and Safety (EHS) Compliance organization, focusing on water compliance. She received her B.S. in Biological Engineering in 2007

Katherine Merriman-Hoehne received her B.S. in Biological Engineering in 2005. She is a hydrologist with the U.S. Geological Survey, since joining the National Research Program in Boulder, CO in 2008. She transferred to the USGS Arkansas Water Science Center as a Hydrologist in 2010 and then Illinois Water Science Center in 2013.

Shelly Thomas graduated with a B.S. in Biological Engineering in 2005. Shelly is a Professional Engineer, currently working in the Industrial Sales division at Morton Salt.

Steve Danforth, President, Arkansas Academy of Biological & Agricultural Engineers welcomed the attendees and thanked them for their tireless work in support of the programs in the Department of Biological and Agricultural Engineering. The graduating seniors and scholarship recipients were recognized at this event. The senior class gave brief presentations of their Senior Design Capstone projects. John English, dean of the College of Engineering, thanked the academy for all of the support that it provides to the students, the department and the College of Engineering. Steve Danforth, president of the Academy and Lalit Verma, department head, inducted and welcomed the inductees into the Academy and presented them with a plaque to commemorate the event.



Congratulations to the Graduating Class of 2018

<i>Mckenna Belcher</i>	<i>Ryan Clark</i>	<i>Merrisa Jennings</i>	<i>Madison McMillen</i>	<i>Will Richardson</i>
<i>Brooke Benham</i>	<i>Ali Ezell</i>	<i>Zach Johnson</i>	<i>Kami Parmenter</i>	<i>Rachel Schlais</i>
<i>Seth Boles</i>	<i>Kendrick Hardaway</i>	<i>Andreas Kleveland</i>	<i>Alex Parr</i>	<i>Allison Sites</i>
<i>Colton Bryant</i>	<i>Thomas Helvick</i>	<i>Samuel Lahodny</i>	<i>Pablo Pena</i>	<i>Jacob Stanosheck</i>
<i>Linden Cheek</i>	<i>Rose Hendley</i>	<i>Madeline Ludwig</i>	<i>Mason Puckett</i>	<i>Megan Woodworth</i>

Biological and Agricultural Engineering

Scholarship Recipients

Arkansas Academy Biological and Agricultural Engineering Scholarship

Thomas Helvick
Bailey Keller

Biological & Agricultural Engineering Scholarship

Kendrick Hardaway

Billy B. and Mildred V. Bryan Scholarship

Mckenna Belcher

Riggs Tractor Scholarship

Nicholas Cross
Lillian Glaeser

Xzin McNeal Scholarship

Mckenna Blecher
Laura Gray
Trent Woessner
Brooke Benham
Megan Woodworth
Gavin Heller
Wesley Jones
Mary Lawson
Taylor Butler

Joe Steele & Hardy Croxton Scholarship (Beaver Water)

Trent Woessner

Mike & Yvonne Jones Scholarship

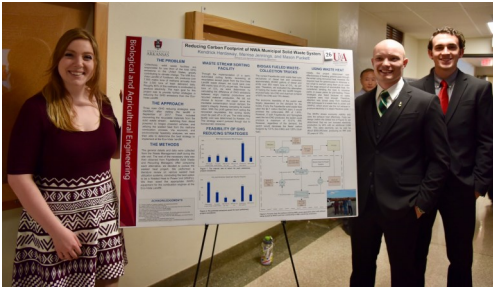
Lillian Glasser
Natalie VonTress
Kendrick Hardaway

Division of Agriculture

Ryan Clark
Trent Woessner

John W. and Trannye Odom White Scholarship

Natalie Von Tress



Reducing Carbon Footprint of NWA Municipal Solid Waste System

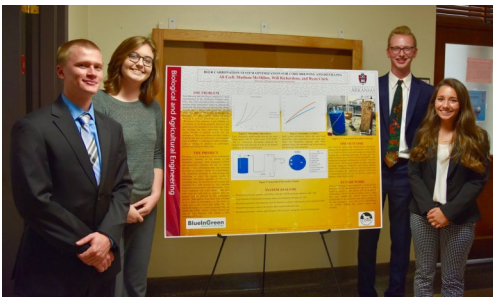
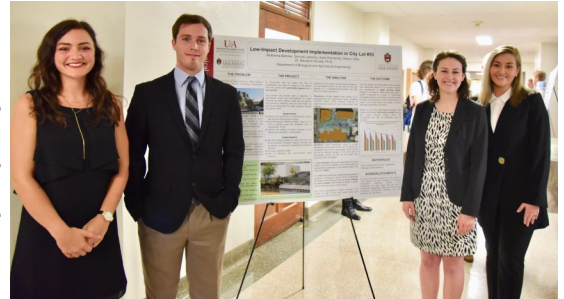
Kendrick Hardaway, Merrisa Jennings, Mason Puckett

Mentor: Dr. Thomas Costello

Low-Impact Development Implementation in City Lot #55

McKenna Belcher, Samuel Lahodny, Kami Parmenter, Allison Sites

Mentor: Dr. Benjamin Runkle



Core Beer Carbonation

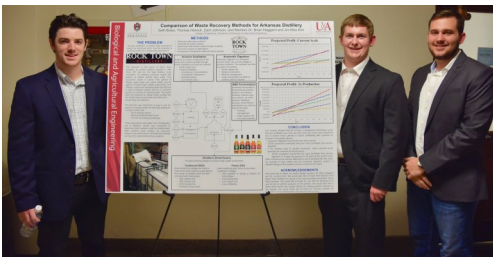
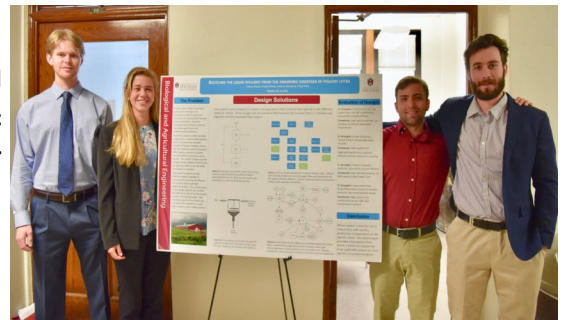
Ryan Clark, Ali Ezell, Madison McMillen, and Will Richardson

Mentors: Dr. Scott Osborn

Recycling the Liquid Effluent from the Anaerobic Digestion of Poultry Litter

Colton Bryant, Linden Cheek, Andreas Kleveland, Pablo Pena

Mentors: Dr. Jun Zhu



Comparison of Waste Recovery Methods for Arkansas Distillery

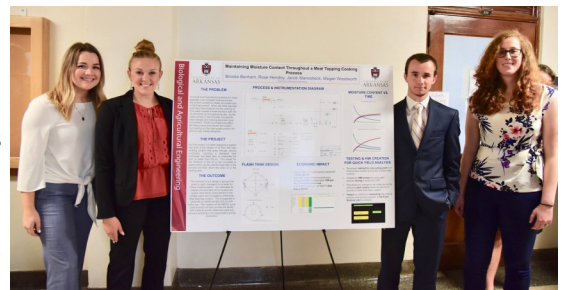
Seth Boles, Thomas Helvick, Zach Johnson

Mentor: Dr. Brian Haggard, Dr. Jin-Woo Kim

Maintaining Moisture Content Throughout a Cooking Process

Brooke Benham, Rose Hendley, Jacob Stanoscheck, Megan Woodworth

Mentor: Mr. Mark Christie P.E.



Dissolved Air Flotation Device for the Removal of Algae from Lakes

Maddie Ludwig, Alex Parr, and Rachel Schlais

Mentor: Dr. Scott Osborn

Scholarship Donation Opportunities

Please accept my contribution to the following scholarship(s). My check for \$ _____ is enclosed.

Billy B. and Mildred V. Bryan Scholarship _____

Joel T. Walker Memorial Scholarship Fund _____

Carl L. Griffis Memorial Scholarship Fund _____

Biological and Agricultural Engineering **General** Scholarship Fund _____

Biological and Agricultural Engineering **Student Support** Fund _____

NAME: _____

ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

PHONE: _____ E-MAIL ADDRESS: _____

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Dept. of Biological & Agricultural Engineering

203 Engineering Hall

University of Arkansas Fayetteville, AR 72701

