



UofA
UNIVERSITY OF ARKANSAS
DIVISION OF AGRICULTURE

Department of Biological and Agricultural Engineering Newsletter

Dale Bumpers College of Agricultural, Food and Life Sciences
and the College of Engineering

From the Head

Lalit R. Verma
Department Head



I am pleased to report that our new science-based undergraduate program in **Biological Engineering** has been approved and this exciting program will be officially effective from Fall 2001.



A new brochure describing Biological Engineering was completed and was mailed to all in-state and a few adjoining out-of-state High Schools in Spring. An electronic module on Biological Engineering was also prepared and is available on CD or videotape. Several requests for this module have been received from counselors and prospective students. We need your help to publicize this program and recruit students.



We have also completed the hiring of three faculty members while a fourth position is being filled now. Drs. Jin-Woo Kim and Sreekala Bajwa will be joining the department as assistant professors in July in the areas of Biotechnology Engineering and Biomechanical Engineering, respectively. Dr. Marty Matlock will join us in September in Bioenvironmental Engineering.



Spring 2001 started off with our first Annual program review on the morning of January 11 followed by the second meeting of the BAE

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Web Page to Get a New Look

If you haven't visited the departmental web page lately, it's time to take another look. Shobhit Varshney, a Computer Science/Computer Engineering student, has been hired to redesign the departmental web page. Content, structure and graphics are all being updated. After a couple of "brainstorming" brown bag sessions to discuss format, Shobhit has been working with faculty and staff to gather information for the revised content. The new version is "up and running", with more revisions and additions due in the coming months. Check it out at <http://www.baeg.engr.uark.edu> ■

Highlights, Presentations and Awards

The following BAEG students received Chancellor's or Dean's list honors:

Gabriel Chedister, Tyler Gipson, Amber Gosnell, Chris Long, Johnny Mason, and Katherine Seward were named to the Engineering Dean's List, Fall 2000. **Bradley Chedister** and **Scott Millsap** made the Agriculture Dean's List, Spring/Fall 2000 and **Chris Long** and **Netlavanh Thepsouvanh** were on the Chancellor's List, Spring/Fall 2000. Congratulations to all!!

Department and Dale Bumpers College Scholarship recipients for academic year 2000-2001 were honored at a luncheon April 19, 2001.

Willie H. Dillahunty, Andrea L. Ludwig, Ryan E. Nelson and **Elizabeth B. White** received Biological & Agricultural Engineering Departmental Scholarships. BAEG students receiving Xzin McNeal Scholarships were **Dylan P. Carpenter, Bradley M. Chedister, Gabe R. Chedister, Rachel A. Davis, Jerry W. Fendley, Tyler G. Gipson, Amber P. Gosnell, Andrea L. Ludwig, Johnny M. Mason, Christopher M. Pixley, William R. Riddle, Katherine L. Seward, Sunny N. Wallace, and Elizabeth B. White**. Riggs Tractor Scholarships were awarded to **Dylan P. Carpenter** and **Tyler G. Gipson**; and **Andrea L. Ludwig** also received the Staplcoth Scholarship.

Lalit R. Verma participated in the National ASAE Department Heads Retreat, January 12-14, 2001, South Padre Island, TX. Dr. Verma chaired the session on ABET Assessment Measures for Accreditation of BAE programs. This retreat is held once every three years and provides a forum for discussion of important items for Biological and Agricultural Engineering Programs.

Rong Y. Murphy was invited to speak during the Biochemistry and Biotechnology symposium at the 98th SAAS annual meeting, January 29, 2001, Fort Worth, TX. Her presentation was entitled "Pathogen thermal inactivations kinetics in commercial meat products."

Jason Beck presented a poster entitled "Long-Term Nutrient Transport Assessment of Animal Manure from Agricultural Watersheds" at the American Water Resources Associate annual spring specialty conference held in San Antonio, TX, April 30-May 2, 2001.

Three BAEG faculty and one student were honored with awards at the May Engineering Faculty Meeting. **Yanbin Li** was named Outstanding Researcher, **Carl Griffis** received the Outstanding Teacher Award and **Tom Costello** was honored for Outstanding Service to Students. **Katie Seward** was named Outstanding Senior for BAEG.

(Continued on page 2)

From the Head — continued from page 1

Advisory Board. We plan to make this an annual event providing opportunity to share our progress and plans with others. Members of the BAE faculty made a brief presentation on their research and teaching accomplishments in 2000 and plans for the year 2001. This review program was attended by Extension Engineers, administrators of the UofA Division of Agriculture and some BAE Advisory Board members. Our next program review will be January 11, 2002.



The weekly Brown-Bag Program continued in Spring with guest speakers in Computational Biology, Auto Immune Technology, ABET Assessment, Recruiting and Retention, and other relevant topics.



A brown-bag program was also arranged to meet with Recruiting Coordinators and staff of the University; College of Engineering; College of Agricultural, Food and Life Sciences; and Pre-Med Program to discuss the UofA **Biological Engineering** program.



Seven students graduated with a B.S. degree in May 12 commencement ceremonies, including two who completed degree requirements in Summer and Fall 2000. A reception was held for them and their guests in the Department on graduation day. In addition, three advanced degrees were awarded at spring commencement, one M.S. (Summer 2000) and two Ph.D. (Fall 2000 and Spring 2001).



Significant progress has been made with the construction of new lab rooms for research and teaching in our laboratory facility at the Central Research and Education Center. This project is expected to be completed in the fall and will provide high-quality space for the activities of our growing faculty.



Please help us recruit students in **BIOLOGICAL ENGINEERING**.

Highlights... — continued from page 1

"Distinguished Engineer Award for 2000" was presented to **Lalit R. Verma** on May 17, 2001 at the Annual Meeting of the Louisiana Section of ASAE in Natchez, MS by Wendall Meaux, Chairman of La. Section of ASAE.

Yanbin Li, Yulai Cheng, Betty Stroud and **Hong Yang** attended the IFT meeting in New Orleans, LA, June 24 - 26, 2001. Dr. Yang presented a paper entitled "The cross-contamination model for *C. jejuni* and *S. typhimurium* during poultry chilling" and Ms. Stroud presented "Electrochemically activated water dipping treatment of fresh-cut vegetables to reduce bacterial contamination and its effect on shelf life". ■

Featured Personnel

We welcome **Lyndall Watkins** who joined the department last November as full-time Machinist. Lyndall worked for Physical Plant for 11 years prior to moving to BAEG. He is single and likes to fish.

Betty L. Stroud (soon to be Betty L. Swem) is a Research Specialist in Dr. Li's laboratory, researching in the area of pathogenic microbe destruction in fresh-cut vegetables. Betty has a B.S. in Animal Science and is currently finishing an M.S. in Food Science, specializing in food safety. She joined the Department in January.

Dr. Chuanmin Ruan joined Dr. Li's research team as Research Associate in January. He was previously a visiting researcher in Poultry Science. Dr. Ruan is married.

Dr. Yongcheng Liu joined the Department in January from Poultry Science. He is a Research Associate working with Dr. Li in his biosensor research. Dr. Liu and his wife are the proud parents of a new baby boy.

Faculty & Staff News

Lalit Verma attended a Pre-Med Program Advisory meeting with UA Pre-Med advisors Tim Kral and Jeanne McLachlan, at UAMS in Little Rock, AR, April 27-28.



Julie Carrier attend a Biotech/Bioconversion meeting in Greenville SC, March 7-9 and an ACTA meeting in Forrest City, April 25-26.



Carl Griffis represented the department at the American Society of Engineering Educators, June 25, in Albuquerque, NM.



Juan Gutierrez-Ibarra accepted a position in February with Sunkist Growers in California. We wish him well in this new phase of his career.

WE NEED OUR ALUMNI

Our alumni are a **valuable resource** to the Department. Consider visiting **high school science classes** in your area to speak on **careers** in Biological Engineering.

We can provide you with an MS Powerpoint presentation on CD or

videotape as well as brochures to distribute.

Please clip and return the form below if you would like to **contribute** to the continuing **success** of YOUR department.

Yes! I will visit a high school in my area!

Please send me a CD _____ or videotape _____ (check one) and _____ (indicate number) brochures.

NAME: _____
ADDRESS: _____
CITY: _____
STATE: _____ ZIP: _____

Return to: Biological & Agricultural
Engineering Department
203 Engineering Hall
Fayetteville, AR 72701

Graduation Spring 2001



BAEG class of 2001 (from left to right): Ryan Nelson, Jerry Fendley, Katie Seward, Sunny Wallace, Sean Kelley and Net Thepsouvanh. (Not pictured: Annette Cusher, who completed her degree requirements in August 2000.)

The Department proudly conferred six of seven B.S.B.A.E. degrees during College of Engineering ceremonies, held in Barnhill Arena. Students received their degrees from Dean of Engineering **Dr. Otto Loewer** and **Dr. Lalit Verma**. **Dr. Carl Griffis** and Dr. Verma represented the departmental faculty at the College of Engineering ceremonies, while **Dr. Julie Carrier** attended the Dale Bumpers College of Agricultural, Food and Life Sciences ceremonies, which were held in the Randall Tyson Indoor Track Facility.

In addition, three graduate degrees were awarded during 2000-2001 by the department. **Mark Christie** completed his M.S.B.A.E. degree in August 2000. Mark worked under the direction of **Dr. Joel Walker**. **Hong Yang** completed her Ph.D this spring under the direction of **Dr. Yanbin Li**. **Yi Hua Che** completed his Ph.D., also under **Dr. Li**, in December 2000. Congratulations to Mark and Drs. Yang and Che on their accomplishment!

Katie Seward - Outstanding Senior in BAEG, 2001



Katie Seward and **Sunny Wallace** will be continuing their studies with the Department as Master's students beginning this summer. Both will be working with **Dr. Julie Carrier**. Katie's research will involve extraction of lycopene from watermelon, while Sunny's research will be on the extraction of flavanolignans from milk thistle.

Engineering for Life

www.baeg.engr.uark.edu

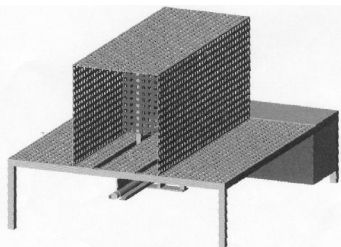
FOCUS ON:

Senior Design 2000-2001

Apparatus for Effecting the Space of Leghorn Layers

Design Team: Zach Dalmut, Rachel Davis, Scott Dennis, and Chris Pixley

Cage density for laying hens has been decreased with the intention of improving living conditions for the bird although no real data regarding size preferences, from a bird's perspective, are available. The students in this group were challenged by their client, Poultry Science professor Dr. Billy Hargis, to provide a cage in which a laying hen could peck a switch pad to indicate a preference for a larger sized cage. The students designed a cage with 3 fixed walls and one moveable wall mounted on a ball screw. The screw is turned using a stepper motor controlled by a laptop computer. The students also designed a user-interface and selected hardware interfaces that will allow Dr. Hargis to conduct trials with layers in his lab. The system will automatically record the wall position and bird pecking frequency during experimental trials. The students have delivered a fully functional apparatus that will measure bird preferences. The students provided the technology needed to facilitate this research. The design was submitted to the 2001 ASAE National Student Design Competition.



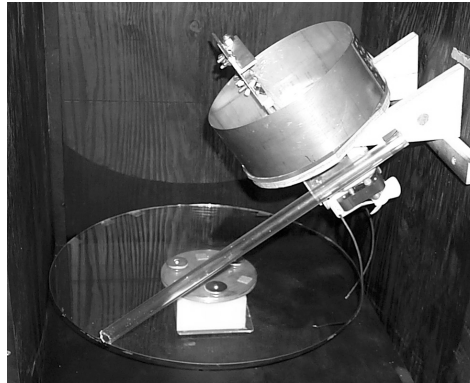
Computer-generated sketch of chicken cage design. The sides, top and back are fixed, while the front wall is adjustable.

Non-Destructive Separation of Rough Rice Kernels for Image Analysis

Design Team: Sean Kelley, Net Thepsouvanh, and Sunny Wallace

The goal of the project was to design a component in a system that will replace manual inspection of rough rice. The separation system has the ability to

accurately differentiate healthy kernels from damaged kernels while the kernel is still in its hull. The design used the concept of a seed plate to separate kernels and to drop them into a tube for transport to a rotating glass plate. Once singulated and positioned on the plate, the rice kernels are viewed for imaging. The student team worked with clients Dr. Carl Griffis and Dr. Juan Ibarra to develop this technology for the rice processing industry. The design was submitted to the 2001 ASAE National Student Design Competition.



Rice kernel separation system, showing seed plate (top), transport tube and glass plate.

Quarter Scale Tractor Design

Design Team: Gabe Chedister, Amber Gosnell, Johnny Mason, and Ryan Nelson

The objective was to design, build and test a tractor to compete in the 2001 ASAE Quarter Scale Tractor Competition. The team decided to improve traction and performance by: (a) mounting the engine and drive train in the rear, (b) changing the hitch design and location, and (c) providing a way for the driver to shift weight forward during the pull. The design facilitated driver-position shifting using a long, narrow seat and no steering wheel to obstruct forward movement. Steering was accomplished using an electric linear actuator controlled by a joy-stick. The unique features of the design resulted in a tractor with a distinctive appearance. The design should result in superior performance as the team represents the Department and the University on June 2, 2001 at the Quad Cities for the national competition. (Results of all the competitions will be announced in the next issue of BAE Lifeline.)

ASAE Student Branch News

Gabe Chedister, President
 Rachel Davis, Vice President
 Amber Gosnell, Sec./Treas.
 Dr. Griffis, Faculty Advisor

The American Society of Agricultural Engineers student club at the University of Arkansas enjoyed an eventful semester during the spring of 2001. In addition to monthly club meetings, members participated in a spring outing, Engine Week, held an election, and also submitted four design projects to national competitions.

The spring outing was held at Devil's Den State Park. At the outing, club members went caving, swimming and had a barbecue. The club also held elections at the outing. **Rachel Davis** is the new president, **Chris Long** vice president and **Tyler Gipson** was elected to treasurer.

Club members also helped the BAEG department to place well in the Engine Week competition held on campus. Members competed against students from other engineering departments and placed first in the Stick-em-up event, second in dodge ball, and did well in other events.



This unique-looking tractor and its design team represented UA BAEG at the 2001 ASAE Tractor Competition.

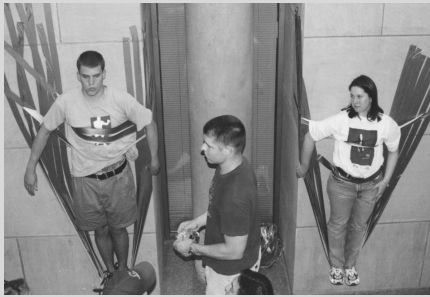
The sophomore design class also submitted a project to the ASAE National Student Design Competition. The project involved both engineering & biological principles. The students designed, built and tested an aeroponic plant growth chamber to nutrients directly to plant roots, which are suspended in air.

Chris Long (r) & Tyler Gipson examine the progress of a plant in the growth chamber.



Departmental Activities

Stuck Up Students?



Tyler Gipson (l) and **Rachel Davis** (r) just hanging around during Engine Week! Also pictured is **Gabe Chedister** (center). Tyler, at 198 lbs, took first place, while Rachel came in third place.

Dead Day Feed

With the early advent of summer heat, the Department's end of semester celebration featured a refreshing **salad bar**, along with Jalene's famous Ro-Tel dip. It was almost standing-room only as graduating seniors were honored. Dr. Verma presented each graduate with this year's Senior Achievement Award - an acrylic paperweight engraved with the graduate's name, the Department name, graduation year and the Engine Hog. Seniors and graduates honored were **Annette Cushner** (summer 2000), **Jerry Fendley** (fall 2000), **Sean Kelley** (spring 2001), **Ryan Nelson** (spring 2001), **Katie Seward** (spring 2001), **Net Thepsouvanh** (spring 2001), and **Sunny**

Wallace (spring 2001). Also honored were faculty **Tom Costello**, **Carl Griffis**, and **Yanbin Li** for their awards (page 1).

Farewell Feast

The Department bid a fond farewell to Juan and Betty Ibarra on Feb. 7 by hosting a luncheon in their honor. Dr. Ibarra was presented with a UA Razor-back plate to remember Arkansas by and a candle to help them through the rolling blackouts that have been plaguing California this year! In commemoration of his new position with Sunkist in California, dessert was a cake featuring a convertible pulling a trailer loaded with crates of oranges!



Juan and Betty Ibarra at their farewell luncheon in February.

Both Juan and Betty will be missed, especially Betty's contributions to our pot-lucks!



Members of the department and their families enjoy eating and chatting during the Spring Outing.

Spring Outing

The ASAE Student Branch sponsored the Spring outing for the Department on Saturday, April 21 at noon. The outing was held at Devil's Den State Park and

the weather was great, if a bit windy, and a good time was had by all!! A BIG thank you to the Student Branch for organizing it.

Graduation Luncheon



Sunny Wallace (foreground, right) and her family enjoy the Graduation Luncheon.

The Departmental Graduation Luncheon was held at 10 A.M. prior to the College of Engineering Commencement Ceremony on Saturday, May 12, in the BAEG Faculty Lounge. Since it was early in the day, finger sandwiches, veggies, chips, cookies and brownies were served. The turnout was great! Graduates and their families had a good time eating and meeting departmental faculty and staff. The graduates each received an Arkansas mug filled with candy and Arkansas souvenirs to help them remember their time with us.

Alumni News

The Department welcomes all alumni back to visit anytime. Recently, two of our grads came and spoke to undergraduate classes about "life in the real world".

Kevin Henry (1999), now with M&M/Mars in Chicago, spoke to the Senior Design Class on his experiences and responsibilities. Unfortunately, he was unable to bring any samples with him!

The freshman class had a visit from **Luke Wright** of Sibley Industries in Anderson, Missouri. Luke talked to the class about an engineering task, involving simple calculations and a drawing, that he performs for many of Sibley's customers. He felt that it was possible to do these tasks by using a computer program. The freshman class took on the project of writing a Visual Basic program to do the job. The project is nearing completion.

If you would like to visit with one or more of our classes, please let us know.

Calendar of Events

JULY

- 4 Independence Day (UA closed)
- 18-20 Faculty Retreat
- 20 Advisory Board Meeting

AUGUST

- 27 Classes Begin

SEPTEMBER

- 3 Labor Day (UA Closed)

OCTOBER

- TBA Fall Outing

NOVEMBER

- 10 UA Homecoming
- 22-23 Thanksgiving Holiday

DECEMBER

- 12 Dead Day
- 13-19 Final Exams

BAE Lifeline

Department of Biological and Agricultural Engineering

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