



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



This is our first newsletter of the new millennium.

We pledge to initiate two such communications with our alumni and friends every year. I want to take this opportunity to introduce myself. My tenure with the Department of Biological and Agricultural Engineering at the University of Arkansas began on July 31, 2000 after being at LSU for more than 20 years. It is my goal to improve and strengthen departmental programs and get to meet as many of you as possible. We are in the process of revamping our academic programs and refocusing our research and service functions.

The first order of business for our faculty this summer was to revise our undergraduate program to a *science-based Biological Engineering* curriculum to be implemented in the Fall of 2001. This is a high priority with the Accreditation Board for Engineering and Technology visit scheduled in less than two years. The proposal was completed in August and is undergoing review for University approval. *Biological Engineering* is the branch of engineering that prepares students to apply engineering to solve problems in biological systems. Some examples

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Departmental Advisory Board Reconstituted

The new Biological and Agricultural Engineering Department Advisory Board had its first meeting October 13, 2000. The Board is comprised of alumni and former faculty, as well as industry representatives. Board Members for 2000-2001 are: **Stan Andrews** (BS-AGEG '90, MS '93), **David Beasley**, **Billy Bryan**, **Dennis Carman**, **Steven Danforth** (BS-AGEG '81), **Fred Fowlkes** (BS-AGEG '68), **Michael Freer** (BS-AGEG '76, MS '78), **John Langston** (BS-AGEG '71, MS '74), **Jeff Madden** (BS-AGEG '88), **Albert Miller** (BS-AGEG '55), **Stanley Reed** (BS-AGEG '73), **Wes Ritter** (BS-AGEG '79, MS '81), **Michael Shook** (BS-AGEG '82) and **Randy Young**.

The Advisory Board will provide advice and guidance for the Department.

Officers and terms of service will be voted on at the next meeting, to be held with the Departmental Program Review in January. ■

Department Faculty Growing

The Department added three new faculty members in 2000 — **Indrajeet Chaubey**, **Julie Carrier** and **Lalit Verma** (see Featured Personnel) — with three more to be hired by July 1. These faculty will add to the teaching and research programs in BioEnvironmental, Food and BioProcess and Biomechanical Engineering.

Three candidates for the BioTechnology position have been interviewed, and applications are being reviewed for the Waste Management position with interviews to be conducted in early December. Applications are being received for the BioMechanical and Machine Vision positions. ■

Highlights, Presentations and Awards

Xin Chen, **Zikuan Chen**, **Hansong Jing**, **Xuemei Cheng**, **Yibin Ying**, **Rong Yan Murphy**, **Indrajeet Chaubey** and **Juan G. Ibarra** gave presentations at the American Society of Agricultural Engineers meetings in Milwaukee, July 9-12. Ibarra served as lecturer for the ASAE seminar "Optical Processors in Agriculture."

Joel Walker taught two sections of the Continuing Professional Development program, "Power and Energy Systems" and "Machinery and Control Systems," at the ASAE meetings.

Yang Tao, Ibarra, Walker and **Carl Griffiths** received a 2000 Superior Paper Award for "Internal Temperature of Cooked Chicken Meat Through Infrared Imaging and Time Series Analysis" at the ASAE meetings.

Lalit Verma, along with Loren Bode of LSU, received a President's Citation at the ASAE meetings for leadership in developing accreditation criteria for educational programs that involve engineering in agricultural, food and biological systems.

The State Section ASAE meeting was held October 5-6 in Little Rock. **Lalit Verma** presented the Strategic Plan for the department. Faculty attending were **Lalit Verma**, **Joel**

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From the Head — continued from page 1

of this are **biomedical**, **bioprocess** (food, nutraceutical, pharmaceutical, bioconversion, bioreactors), **biomechanical** (machine design, precision agriculture, mechanization), and **bioenvironmental** (bioremediation, water quality, natural resources and non-point source pollution) engineering.

The revolution of biotechnology, genetic engineering, biomedical, and bioprocess engineering has just begun. Engineers trained to apply their expertise to various biological scenarios will have exciting job opportunities to choose from. Additionally, this engineering program will allow students to enter medical, dental, veterinary school or pursue graduate engineering programs in biomedical or biotechnology engineering.

The undergraduate numbers presently at the U of A are low (in the thirties), and we must increase them. The experience I gained at LSU during my eight years of administrative experience showed that a true **biology-based engineering curriculum** has great potential of attracting and graduating high-ability young minds through this program. We have defined the specializations in Biological Engineering to be **Food and Bioprocess Engineering**, **Bioenvironmental Engineering**, **Biomechanical Engineering** and **Biomedical Engineering** (including Pre-Med). These will also have a close match with research focus areas of our department.

There is sound rationale behind changing the curriculum to Biological Engineering. During the late 1980s and early 1990 traditional agricultural engineering curricula, like other agriculture programs, experienced a marked decline in students nationwide. Undergraduates from rural backgrounds entering universities to prepare themselves for jobs in agricultural-related industries were replaced largely by students from urban settings who were seeking careers in biological, environmental, and medical professions. As a consequence, agricultural engineering enrollments decreased to very low numbers. Earlier the agricultural engineering curriculum name was changed to Biological and Agricultural Engineering. The Department name was also changed to Biological and Agricultural Engineer-

Newsletter and Graduate Handbook to Go Online

An electronic copy of this newsletter is available on our web site at <http://www.baeg.engr.uark.edu/>. Check there for updates and schedule changes. We have revised our **Graduate Student Handbook** and made it an e-document. It can be viewed at <http://www.baeg.engr.uark.edu/>. A CD-ROM version is being considered for mailing to prospective graduate students. We invite your feedback.

Highlights... — continued from page 1

Walker, Carl Griffis, Julie Carrier, Indrajeet Chaubey, Yanbin Li, Ivan Berry, Billy Bryan, Dennis Gardisser, Gary Huitink, John Langston, Phil Tacker and Karl vanDevender. Students attending were **Rachel Davis, Katie Seward, Amy Cotter, Sean Kelley, Net Thepsouvanh, Zach Dalmut, Gabe Chedister, Scott Dennis, Amber Gosnell, Johnny Mason, Chris Pixley and Ryan Nelson.** **Katie Seward**, senior, was selected as Outstanding Student for BAEG at the UA. ■

ing. Major efforts were put forth by the faculty to attract students. It appeared that, to be successful, further changes were necessary, both in name and curriculum. Since biology and agriculture go hand in hand, biological engineering had the potential of appealing to students while continuing to serve most agricultural interests in the state. Thus, changes were initiated. These changes have resulted in redefinition of coursework now leading to the development of a **science-based curriculum in Biological Engineering (BE)**. U of A is not alone in this effort. This same scenario has occurred and continues to occur at university after university throughout North America.

This effort in no way diminishes our commitment to "agriculture," which we have pursued all along. We will continue this and will expand our scope and

Faculty & Staff News

In August, **Yang Tao** began his new position at the University of Maryland. We wish him well in his new endeavors. **Joel Walker** has accepted a position at The Ohio State University. He will begin his new assignment in January. Best of luck to Dr. Walker in his new projects and a big THANK YOU for his service and leadership as Interim Department Head.



Indrajeet Chaubey was featured in the The American News Service (September 28, 2000), an internet subscription news service. Dr. Chaubey's development of the Animal Waste Pollution Potential Index software provides a simple tool for farmers to find sites for animal production facilities that are the least damaging to the environment. The article can be found at <http://www.americannews.com/ans/ans-001599.html>.

horizon to tap the great potential of biotechnology, genetic engineering, cellular and molecular biology, and biomedical engineering. To this end we have started recruiting four new faculty. I hope to have three new faculty on board by July 1 and the fourth in the fall.

A new brochure describing the new Biological Engineering program is ready and will be used extensively for recruiting. We need your help in this recruiting effort, which is critically important for us. The brochure will also be on the web site (<http://www.baeg.engr.uark.edu>).

Please let us know how you can help us! Please do not hesitate to call (501-575-2351), e-mail (Iverma@uark.edu) or if you are in the area, drop in for a visit. I would be delighted to pursue this further and discuss our plans for a bright and exciting future. ■

Department Celebrates 50th Anniversary

by Billy Bryan

Although the Agricultural Engineering Department was established at the University of Arkansas in 1920 to support the other disciplines in the College of Agriculture, the professional engineering program was approved in 1948 and offered in 1949 as a joint program in both the Colleges of Engineering and Agriculture with the degree being granted in the College of Engineering.

The first graduate, **Warren G. Miller** of Holly Grove, Arkansas, was a junior in another program in the College of Engineering who transferred immediately into the program. He completed the requirements for the new BSAE degree in the Spring Semester of 1950. The Department was accredited by ABET in 1958 and has retained that status.

On May 11, 2000, the celebration was preceded by a Golf Scramble at the Fayetteville Country Club for all graduates who wanted to arrive early and faculty members. Only four graduates, three faculty and the grandson-in-law of Mr. Miller appeared but it made for a very interesting two team scramble. The scores of each team have never



Mr. Warren Miller Sr., left, shows a slide rule similar to the type he used as an undergraduate, to his son, Warren Miller Jr., who used hand calculators while an undergraduate in the mid 1960s and now is a computer addict at home. Earlier he was presented a plaque by Dr Walker, interim Head of the BAEG Department.

been made public and remain a secret!

On Friday, May 12, 2000, a total of forty-five people registered including twenty-two graduates, two graduates who had also been faculty and four local faculty and staff. After registration and informal social time, the May 12 program opened with remarks by **Interim Head Joel Walker** and **Dr. Larry F. Huggins**, President of ASAE. A presentation on the History of the Biological and Agricultural Engineering Department by Emeritus Professor and former Department Head **Billy B. Bryan** followed. Dr. Walker then spoke on today's department. Remarks by **Dr. Charles Scifres**, Associate Vice President for Agriculture—Research and Dean, Dale Bumpers College of Agricultural, Food and Life Sciences; **Dr. Otto**

Loewer, Dean, College of Engineering; and **Dr. John White**, Chancellor, University of Arkansas, rounded out the program. Tours of the departmental facilities were conducted after the formal program. That evening, participants enjoyed a mixer and dinner at the Clarion Inn.

During the Commencement ceremony on May 13, Mr. Miller walked in the procession with his granddaughter, (the daughter of his son, a 1964 graduate of the Agricultural Engineering department) and presented the MS Diploma to her. In addition, the Dean of the Graduate School announced publicly that the Department was celebrating the 50th anniversary of its first graduate, Mr. Miller.

This was a great celebration! Wish that more of you were there. ■



From right to left, Warren Miller, Jerry Holloway, Gene Miller, Billy Bryan, Otto Loewer, Ivan Berry, Ray Benz and Kyle Hennarichs.

Engineering for Life

www.baeg.engr.uark.edu

The Dale Bumpers College of Agricultural, Food and Life Science unveiled its student journal, *Discovery*, in Fall 2000. This journal was created, according to Dean Scifres, "to create a reporting outlet for our undergraduate student-scientists ... (providing) a forum for the students and faculty to share their results and findings." The premier issue features an article by **Jerry W. Fendley**, senior, entitled "Fissure characterization of rice kernels using video microscopy." Also in this issue are abstracts of the student presentations of the Arkansas Chapter of Gamma Sigma Delta, including one by former graduate student **Brian J. Lloyd** (MS 2000) entitled "Antioxidant levels in rice bran as influenced by commercial milling and processing and extraction method."



Xin Chen, Hansong Jing and **Xuemei Cheng** joined Dr. Tao in Maryland. We wish them well.



The 2000 ASAE 1/4-Scale Tractor National Student Design Competition was the basis for an exciting student project. A team of students from the Biological and Agricultural Engineering Department redesigned the previous year's tractor and attended the competition held at East Moline, Illinois, on May 19-21, 2000. The goal was to build the best small "pulling tractor" within the constraints of the contest rules. A few of



Scott Millsap, Andrea Smith (now Millsap) and Warren Brandon show off their redesigned tractor at the 2000 ASAE 1/4-Scale Tractor Contest.

the requirements are listed here:

- a. 16 Hp Briggs & Stratton engine
- b. 26-12-12 rear tires
- c. 1050 pound and 800 pound weight classes (including driver!)
- d. Width less than or equal to 60 inches
- e. Length less than or equal to 96 inches
- f. Safety shields and guards
- g. Brakes
- h. Wheelie bars
- i. Safety kill switch

The primary design team included **Scott Millsap, Warren Brandon, and Net Thepsouvanh**. Faculty advisor for this project was **Joel Walker**. The students (and advisor) enjoyed seeing the numerous designs from thirty different schools. The pulling contest was loud and exciting. We didn't win, but we didn't break anything! ■

ASAE Student Branch News

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

The student branch of ASAE at the University of Arkansas is enjoying a wonderful semester. The club meets on Wednesday nights at 5:00 p.m. in the Engineering Hall. This semester the club has participated in the Dale Bumpers College of Agricultural, Food and Life Science's Carnival of Clubs. It was the first time ASAE has participated in this event, and it was a great opportunity to get involved in the college. On October 20 we had our annual fall outing at Gulley Park. Students, faculty, and family enjoyed a picnic and games. ASAE was also involved with Tau Beta Pi's Thanksgiving canned food drive. We donated 972 cans thanks to the generosity of Allen Cannery. Our next big project will be preparing for Engine Week in the spring. We are looking forward to finishing a great fall semester and getting started with things for the spring semester.

Thank you,
The officers of ASAE

Featured Personnel

The department added three new faculty and one new office staff in 2000.

Indrajeet Chaubey (MSBAE, 1994) returns to Fayetteville from the University of Alabama. Dr. Chaubey is an alumnus of the University of Arkansas, receiving his MSBAE in 1994. He also holds a Ph.D. in Biosystems and Agricultural Engineering from Oklahoma State University (1997), and B.Tech, Agricultural Engineering (University of Allahabad, India, 1991). His area of expertise is bio-environmental engineering, emphasizing non-point source pollution and water quality modeling using GIS and remote sensing. Dr. Chaubey and his wife, Shradha, have a daughter.

Danielle Julie Carrier arrived from Saskatoon, Saskatchewan, Canada. Dr. Carrier has a Ph.D. (1992) and an M.Eng. (1986) in Chemical Engineering from McGill University in Montreal and a B.Sc. in Agricultural Engineering at McDonald College of McGill University in Ste-Anne de Bellevue. She has worked in both University and industry environments. Dr. Carrier will be working on the processing of biological materials to determine the best method of processing to retain their healthful benefits. Dr. Carrier is married to Jim Smith. They have three daughters.

Lalit R. Verma became Department Head on July 31 after serving eight years in that capacity at Louisiana State University and 21 years on the faculty there. Dr. Verma received his Ph.D. (Engineering, 1976) from the University of Nebraska, MSAE (1973) from Montana State University and a B.Tech. (Agricultural Engineering, 1972), J.N. Agricultural University, Jabalpur, India. Dr. Verma will serve as Department Head. Dr. Verma and his wife, Aruna, have a son and a daughter.

Cecile M. Sands comes to us from Entomology, where she served as a secretary for 14 years. Cecile is presently single, an avid bowler, practices yoga and sings in the North Arkansas Symphony Chorus and her church choir. She also enjoys cooking, cross-stitch, sports and is currently researching her family history.

Departmental Activities

2000 Spring Graduation

The department awarded BS degrees to **Jason Beck, Nathan Blevis, Warren Brandon, Amy Cotter, Andy Duvall, Scott Millsap** and **Marcus Tilley** at Spring 2000 Commencement. In addition, **Tony Cardarelli, John Cook, Brian Lloyd** and **Omar Trujillo** received their Master's degrees. The graduates were feted at a luncheon on May 12 in the department.

50th Anniversary Celebration

The department celebrated the 50th anniversary of its first graduate May 11-12. Please see feature article by **Billy Bryan**, page 3.

Kick-off Barbeque

To start the 2000-2001 school year off with a bang, **Dr. Verma** and the department hosted a barbeque on the lawn in front of the Engineering Building on September 14. Students, faculty, staff and families feasted on barbeque and fixin's from Fat Toney's. The weather was gorgeous and the event provided an opportunity to meet new students and faculty.

Fall Outing

The ASAE Student Branch sponsored the Fall Outing for the department at Gully Park on October 20. Frisbee golf and croquet were the games of choice, and everyone chowed down on hamburgers, baked beans, salads and a wide variety of desserts. "THANK YOU" to **Gabe Chedister** and the **Student Branch** for a wonderful time!



Dr. Dooley Lectures on Biological Engineering

On November 16 Dr. Jim Dooley, President and CEO of Silverbrook Ltd, a product development and business incubation services company, spoke to faculty in the department as well as giving a campus-wide lecture on biological engineering. He emphasized the unique niche biological engineers occupy and the varied career opportunities open to biological engineering graduates. Dr. Dooley is the current president of the Institute of Biological Engineers.



Dr. Jim Dooley presents biological engineering opportunities to ASAE student branch members.



Faculty, staff, students and families chow down on Fat Toney's barbeque to kick off the new academic year.

Holiday Celebrations

The department celebrated Thanksgiving on November 21 with a luncheon of sliced turkey (both smoked and baked),

salads, baked beans, dressing, rolls and of course PIE! Pecan and apple were the favorites, followed by the traditional pumpkin and cherry. Something for everyone!

Neither rain, nor sleet, nor eight inches of snow could keep BAE from having its end-of-semester and Christmas "Dead Day" luncheon! Although the University closed for two days, December 13-14, we were back for business, finals and food on the 15th. Despite the weather and finals, the turnout was terrific and very few leftovers were to be found. The HOT baked potatoes were quite welcome in the cold weather, not to mention Jalene's famous Rotel dip! Ham, baked beans, cupcakes and Cecile's home-made cookies rounded out the feast. Dr. Verma thanked Jalene, Virginia and Cecile for the luncheon and for their work throughout the year and presented each of them with a token of appreciation from the faculty and staff.

Farewell and Thank You

Dr. Walker was feted at a reception in honor of his years of service to the Department and University on November 30. Students, staff and faculty from several departments attended. Dr. Walker received a plaque and a gift in appreciation for all he has done for the department and University. He will begin his new duties at The Ohio State University in January. We will miss him!



Dr. Verma presents Dr. Walker with a plaque in appreciation of his service to the Department.

Alumni News

We Need You

ALUMNI! We need you! You are a still valuable resource to our Department. Your assistance in promoting the Department and its programs would be greatly appreciated. If you are willing to visit a high school(s) in your area and give a presentation on Biological Engineering and the Department, please contact Lalit Verma at lverma@uark.edu.

Please let us know where you are and what you're doing! Send your information to Cecile Sands at cmsands@uark.edu or by mail to 203 Engineering Hall, UofA, Fayetteville, AR 72701. Please include e-mail addresses, work and/or home address and phone/numbers. And remember to update us when you move or change jobs. Thank you!

Calendar of Events

JANUARY

- 11 Program Review
- 11 Advisory Board Meeting
- 15 MLK Holiday
- 16 Classes Begin

MARCH

- 19-23 Spring Break

APRIL

- TBA Spring Outing

MAY

- 3 Dept. Pre-Dead Day Feast
- 4 Dead Day
- 5-11 Final Exams
- 12 Commencement

BAE Lifeline

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