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Celebrate ABE@Illinois
September 25-26
Greetings from Agricultural and Biological Engineering

On behalf of ABE@Illinois (the department), I am presenting, with great pleasure, to you, alumni and friends, this new issue of ABE@Illinois (the magazine). One of my most delightful activities is to keep in close touch with those who are passionate about the wellness of our department. Through your unfailing inspiration and support, our department continues to do well. We continue to aspire to be an excellent department that integrates life and engineering for enhancement of complex living systems in agriculture, food, environment, and energy. We are fully aware of the challenging economic reality. Meanwhile, we are very optimistic about our future through our commitment to developing and delivering relevant, significant, impactful and exciting programs. The editors of this magazine have done an excellent job in communicating this optimism. I am sure you will enjoy reading about the happenings related to our department and hope you will always stay in touch.

I would like to take this opportunity to invite you to attend the second annual Celebrate ABE@Illinois to be held on September 25 and 26, 2009 at the new I-Hotel and Conference Center on our campus. Please visit abe.illinois.edu for more details and to register for the event. We look forward to seeing and/or hearing from you.

With best regards,
K.C. Ting
Professor and Department Head
ABE@Illinois

ABE@Illinois Continues History of Excellence

For the fourth year in a row, the Agricultural and Biological Engineering undergraduate program at the University of Illinois has been ranked the best in the nation by U.S. News and World Report. The 2010 edition of “America’s Best Colleges” placed Illinois in the top spot, followed by Purdue University and Iowa State University.

U.S. News ranks undergraduate programs accredited by the Accreditation Board for Engineering and Technology based solely on the judgments of deans and senior faculty from participating colleges. U.S. News also asks for nominations of the best programs in specialty areas, such as agricultural engineering; those receiving the most mentions are ranked in the publication.

“The valuable contributions and support from all associated with the Department have made this possible,” said K.C. Ting, Department Head. “I deeply appreciate everything the faculty, staff, and students do to make us an excellent department.”
Phil Buriak is a Professor Emeritus in the Department of Agricultural and Biological Engineering. Buriak spent the first half of 2009 recovering from a serious skiing incident that left him with a shattered vertebra. He wore a ‘halo’ for more than three months, and he still exercises six times a day to regain the range of motion he once had.

“I shattered the C1 vertebra, where the spinal cord attaches to the skull,” said Buriak. “It’s the portion of the brain stem that controls breathing. But I had no neurological damage and no paralysis. I’m a very lucky guy. I wouldn’t wish this on my worst enemy, but I have no complaints.”

A look back at Buriak’s career at the University of Illinois reflects a similar attitude, one that sees a challenge where others might see a problem. It’s an attitude that he credits to his “very strict, but very loving” Russian father.

“I grew up with the understanding that anything that’s worthwhile takes hard work,” said Buriak. “My father said flash might get you hired, but hard work gets you noticed. And once it’s noticed, it lasts forever.”

Buriak said his father also valued education. “Pap didn’t get his bachelor’s degree until he was forty years old, and then he went on to get two master’s degrees. But he always told us, to be truly intelligent you have to be able to work with your hands as well as your head.”

Buriak said his father’s philosophy was a perfect fit for his ‘migration’ into Technical Systems Management. Buriak’s undergraduate degree was in biology, and he taught biology and life sciences in Pennsylvania for several years. He moved on to a vocational school where he taught mine maintenance (for deep coal mining), including direct current electricity and hydraulics.

“A friend asked me why I didn’t just marry my interest in mechanics with my interest in biology and go back to school to become an ag engineer,” Buriak said. “So I tried that, but at Penn State at that time, a master’s in ag engineering required me to take one course a quarter for three years, and I couldn’t afford to do that.”

Instead, Buriak decided to enroll in Agricultural Mechanization. He graduated with a master’s degree 18 months later and went on to earn a Ph.D. at Ohio State. Over the next few years, Buriak taught, first at Illinois State, then at Mississippi State.

In 1988, Buriak was recruited to revitalize the Ag Mech program at Illinois. It almost didn’t happen.

“Carroll Goering [another professor emeritus] called me first about the position, and I told him I really wasn’t interested. I was at Mississippi State. I was a big fish in a little pond. I had five acres and a beautiful home, and my wife was happy. I just wasn’t interested,” said Buriak.

“Carroll called me again. Then Roscoe Pershing [former department head] called me. He said it couldn’t hurt to send my resume. I said I had to think about it. I ended up sending my resume two days before the deadline.

“Two days after the deadline Roscoe called me back. He wanted me to come up for an interview. He told me to bring my wife, but she wouldn’t come,” Buriak said with a laugh. “She didn’t want to move.”

“Roscoe was the first person I talked with when I got here,” Buriak continued. “He said it was simple. The Ag Mech program was dying and they were thinking of canceling it. I was the only one they were interviewing. What would it take to get me to U of I?”

Buriak and his (somewhat reluctant) wife moved back to Illinois, and Buriak began the task of rebuilding the Ag Mech program.

“In my mind,” said Buriak, “you don’t build a program by lowering the standards so more kids can get in. You raise the standards and get good students. Then you make sure the courses are challenging – we required calculus and physics. You hold the line and keep the GPA high. So you bring thoroughbreds in the front door, you don’t water down the program, and you can be sure what’s going out the back door will be better than what came in.”

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“Chief’s Vendetta” Brings Pullers Long-Desired Victory

The Illini Pullers were crowned the winners of the 2009 ASABE International ¼ Scale Tractor Student Design Competition.

The Pullers’ victory was particularly sweet because it broke a multi-year winning streak by Kansas State University.

“We’ve been feeling in the last few years that we were ‘knocking on the door’ to do well,” said Alan Hansen, a professor of agricultural and biological engineering and adviser. “The quality of the students’ oral presentation and design report has been such that we’ve consistently competed in the top two or three teams in those areas,” Hansen continued. “Two years ago we had one bad pull at the competition that really made the difference. If it had been a good pull, I’m sure we would have been much more successful.”

Drew Schilling, a senior in agricultural and biological engineering and a three-year member of the team, agreed. “The last two years we had a tractor that was capable of winning,” he said, “but both times we had a mechanical breakage that took time to fix. This year we finally got all the kinks worked out.”

Josh Sander, another team member and a graduate student in agricultural and biological engineering, said, “The experience of the people on this year’s team helped create a great tractor. They knew what it took to build a tractor that could compete, and they did it.”

Hansen noted the involvement of the two founders of the Illini Pullers, Sean Landers ’02 AgE and Greg Trame ’02 AgE.

“Both Sean and Greg have been active officers and leaders in the running of the ¼ scale tractor competition,” said Hansen, “and it was really special to have them witness the Illini Pullers receiving the award and joining in the celebration.”

Hansen said he believes involvement in the competition helps foster what he calls “gracious professionalism.”

“When these students were competing with the other schools in the ¼ scale tractor competition, we saw wonderful examples of this,” he said. “If one team had a break down or they were looking for parts, everyone else came alongside and said ‘What if you do this?’ or ‘How can we help?’

“Involvement like that develops a great sense of camaraderie, and in the end, helps promote agricultural and biological engineering,” he concluded.

Rounding out the list of the top five winners were (in order): Kansas State, Purdue, Iowa State and Texas A&M.
Celebrate ABE@Illinois 2009
September 25th-26th, 2009

Join us in Celebrating the 75th Anniversary of the Agricultural and Biological Engineering Department at Illinois! Catch up with former classmates and professors, meet current undergraduate and graduate students, discover the exciting new research that professors are working on, and reconnect with the ABE@Illinois family. If you haven’t seen our “new” building (completed in 1983) it’s time that you came back! If you’ve been back or graduated since 1983, we would still love to see you.

ASABE Central Illinois Sectional Meeting
Lunch and Presentation by Professor for a Day, Jim Steck, ’90 AgM
Campus Tours
Department Tours
Poster Presentations
75th Anniversary Banquet and Reunion
Illini Pullers ¼ Scale Tractor Pulls
Barbeque
Illinois v. Ohio State Game Watch

For information on where to stay, locations of activities, and to register for the event, visit http://abe.illinois.edu/CelebrateABE. Hurry, registration ends September 15th.

http://abe.illinois.edu
Bo Zhang Wins International Alumni Award

Dr. Bo Zhang, Ph.D. ’99 AgE, is the recipient of the 2008 Madhuri and Jagdish N. Sheth International Alumni Award for Exceptional Achievement. This award recognizes alumni who are highly distinguished in their profession, and who exemplify the strength of their education at the University of Illinois. They are known, either internationally or nationally in their own country, and they have helped their nation or the world by outstanding contributions to government, humanity, science, art, or human welfare.

Dr. Zhang began his career at China Agricultural University, where he received a B.E. in Agricultural Construction and Environmental Engineering. While a student, Zhang began working to improve the economic welfare of the people in his country, and in particular, his home province of Gansu. This work became his lifelong passion.

Upon graduation in 1987, Zhang began work with what is currently the Ministry of Science and Technology as Program Officer and Division Chief. He is credited with assisting Gansu in the development of their technology infrastructure during this time.

In 1992 and 1999, respectively, Dr. Zhang received a master’s and a Ph.D. in Agricultural Engineering at the University of Illinois. Zhang credits this strong academic foundation with his ability to build the successful international career that followed.

Dr. Zhang is a 20-year member of the international business community, and he has founded or managed many successful business ventures in China. He was president of one of the first consulting firms to introduce international business practices to China. He founded a company that designed and developed advanced hydraulic rescue tools specifically for the Chinese market, now the leading tools used in earthquake disaster relief. A second endeavor developed a dynamic forage compounding system for animal feed and is today one of the largest feed companies in China.

In 1995, Zhang held a USDA fellowship awarded to him by the United States Department of Agriculture. In 1999, he was designated an agricultural expert by the Chinese government and was asked to assist in the development of agricultural strategies in China. In 2002, he was appointed to the role of Senior Expert in the United Nations-sponsored TOKTEN/STAR project promoting international technology transfer between nations including China and the United States.

Dr. Zhang has worked tirelessly to promote the University of Illinois in China. His professional ties to leaders in government, business and academia have allowed him to act as an effective liaison between China and UIUC.

http://abe.illinois.edu
Lyle Stephens Named 2009 Distinguished Alumni

Lyle Stephens, MS ’68 AgE, has been named the ABE Distinguished Alumni for 2009. Stephens has had a long and productive career as a research engineer, primarily for the Moline Technology Innovation Center with John Deere and Company.

Stephens received his bachelor's and master's from the University of Illinois, and his Ph.D. from Purdue University. Upon graduation, Stephens began his career with the United States Department of Agriculture in Lafayette, Indiana and moved to their laboratory in Manhattan, Kansas a year later. Stephens’ research focused on grain handling, drying and storage.

In 1976, Stephens made the move to John Deere. "I had worked at the John Deere Technology Center in the summer of ’64, and then at their combine factory, Harvester Works, in the summer of ’65, so I knew John Deere and the quad city community," said Stephens. "I used the contacts I made then and called to inquire if they were looking for people. It turned out they were."

During his first five years with Deere, Stephens conducted applied research on the effects of crop properties on harvesting machine performance.

"After that, I moved on to the area of soil dynamics,” said Stephens. "I was the group leader in soil dynamics for about 17 years. We worked on anything that interacted with soil."

Stephens directed and conducted research in applying soil dynamics concepts to seeding, tillage and earthmoving equipment involving both soil bin laboratory and field experimentation. He developed new tillage tool shapes less sensitive to wear from previous designs and designed new crop residue management devices for seeding machines, leading to seven patents.

In 2001, Stephens’ research focus changed once again. "As the interest in alternate renewable energy grew, we began to study the use of cellulose as a feedstock for ethanol production," said Stephens. "I was the company’s contact with several universities and private companies that we cooperated with in Department of Energy (DOE) projects. We partnered with Iowa State, the University of Wisconsin, a private company and the DOE to encourage the development of harvesting equipment for that."

Since his retirement in 2007, Stephens has continued to act as a consultant with the DOE, providing engineering expertise and industry experience to their research program planning.

Throughout his career, Stephens took an active part in the professional society for agricultural engineers, serving in a number of leadership positions, including ASAE president in 2002-2003.

“I was president of ASAE just before the name change to ASABE,” Stephens noted, “and that was probably the biggest issue that came up that year. There were a number of people who thought that the name alone did not reflect who we were.

“I think they were happy with what the society was and did at that time,” Stephens continued, “and they didn’t want to see that diluted by some new interest area. I’m sure if they had thought back through the history of the society, they would have seen that it was always growing in subject matter.

“So I learned to hold my tongue during that year,” he said with a laugh, “and I let people express their concerns. I tried to address them when I knew enough to provide an answer. And I think we survived quite well.”

Stephens said he was also very pleased with his involvement in the society’s development of the ¼ Scale Tractor Student Design Competition and Fountain Wars.

“The tractor design competition and pull, in particular, has generated more student interest than virtually anything else we’ve done,” he said. “I hope we can continue to come up with ideas that engage our creative young people in other subject areas as well.”

Stephens’ contributions to his profession have been recognized by four ASAE (now ASABE) Presidential citations and his election as an ASAE Fellow in 1992.

Stephens said since his retirement he has been able to develop a number of outside interests.

“I keep our church’s computer system running,” he said, “and I’m hoping to return to a basement full of neglected hobbies, model railroads and model airplanes being two of those.”

Stephens and his wife continue to live in Moline, Illinois. “We have a son who lives here, and our daughter lives in Crystal Lake (northwest of Chicago) with our two grandsons, so we’re still pretty deeply rooted in the quad cities.”

Stephens speaks highly of his time at the U of I and credits the Department as a lifelong influence.

“The presence of and support from the faculty in this department is outstanding,” Stephens said. “I assume it’s strong in other departments as well, but it’s fantastic in Ag Engineering. Their example was what encouraged many of us to be active in our professional society. We came to the understanding that that’s what being a professional engineer is all about,” he concluded.
Eleven students from across Illinois participated in the University of Illinois’ Illini Summer Academy through the Department of Agricultural and Biological Engineering. “These students ranged from 14 to 17 years of age,” said Anne Marie Boone, student academic program coordinator for the Department, “and they spent three days on the U of I campus, participating in activities designed to introduce them to the University, as well as the fields of ag and bio engineering and technical systems management.”

The Department’s schedule for the students offered a variety of presentations, tours and activities, said Boone, including:

• A presentation by Dr. Tony Grift on the research in agricultural robotics being done in the Department, “and they spent three days on the U of I campus, participating in activities designed to introduce them to the University, as well as the fields of ag and bio engineering and technical systems management.”

• A demonstration of an air cannon by Dr. Grift and undergraduate student Ed Roy. Air cannons are used for various purposes in agriculture, such as a “puncher-planter,” and for general safety testing. Students were able to use the cannon to shoot apples and potatoes into a mini-fridge.

• A GPS ‘treasure hunt’ designed by Dr. Grift. Students were each given a handheld GPS (global positioning system) device and the coordinates for several campus locations. The student who reached the last location first received two ABE@Illinois t-shirts.

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• A tour of the University of Illinois’ Solar Decathlon house. The US Department of Energy sponsors a bi-annual competition that joins 20 college and university teams in a competition to design, build, and operate the most attractive and energy-efficient solar-powered house. Dr. Xinlei Wang is a member of the team from the U of I.

• A tour focused on the Department’s research in renewable energy. Dr. Lance Schildeman spoke to the students about the use of algae in the production of biodiesel; Dr. Alan Hansen talked about the Department’s involvement with the Energy Biosciences Institute (EBI) and the multi-campus effort to devise viable solutions to global energy challenges. A presentation on ethanol was given in the lab of Dr. Vijay Singh, and students also heard about the research done by Dr. Yuanhui Zhang to convert swine manure to crude oil using thermo-chemical conversion (TCC).

• Individual projects to assemble a soldering kit. Dr. Kaustubh Bhalerao worked with individuals to assemble small kits that simulated a ‘wheel of fortune’ light display, the blinking light of a car alarm, the sound of a metronome, or the sound of a dripping faucet.

• Team projects to construct and race small micro steamcars fueled by ethanol. Extension specialist Randy Fonner and Matt Roberts, Visiting Research Engineer, worked with each team to construct a race car from a kit that contained all of the necessary parts. A competition was held the last day of the academy, and prizes were given to the team whose car traveled the farthest.

“11 This was the first year the Department has participated in the ISA,” said Boone, “and I almost wish we had more time. Three days wasn’t really enough. The Academy is highly intensive, and the students were occupied almost every minute of those three days.

“But we were able to show them some of the great things we do in our department,” she concluded, “and I think it was a good introduction to our program.”
Do you know a high school student who is interested in ABE or TSM? Tell them about the summer camps associated with the department.

**Illini Summer Academies**  
Agricultural & Biological Engineering: Technical Systems Management  
Check the website for further information: [http://web.extension.uiuc.edu/state4h/events/summeracademies.cfm](http://web.extension.uiuc.edu/state4h/events/summeracademies.cfm)

**Research Apprentice Program I**  
Agricultural & Biological Engineering  
This three-week career exploration and awareness camp is open to all freshmen and sophomores from under-served or economically disadvantaged groups. The costs of meals, activities, supplies, and housing are covered by the program. Students work in teams to discover the many ways in which ABE is positively impacting the world and make a presentation on what they have learned at the conclusion of the camp. Check the website for further information: [http://www.aces.uiuc.edu/Academics/Diversity/pre_collegiate/rap1.cfm](http://www.aces.uiuc.edu/Academics/Diversity/pre_collegiate/rap1.cfm)

**Research Apprentice Program II**  
Agricultural & Biological Engineering  
This program offers a seven-week intensive laboratory and academic enrichment experience working with a faculty or graduate student mentor in one of the many areas of ABE. The costs of meals, activities, supplies, and housing are covered by the program, and admission is open to all high school juniors from under-served or economically disadvantaged groups. Preference is given to previous RAP I participants. Check the website for further information: [http://www.aces.uiuc.edu/Academics/Diversity/pre_collegiate/rap2.cfm](http://www.aces.uiuc.edu/Academics/Diversity/pre_collegiate/rap2.cfm)

Above: Katrina Ponder of Tuscola, and Billy Hatfield of Wayne City, construct micro steamcars during the Illini Summer Academy for youth interested in Technical Systems Management.

Left: Zachary Ehlers of Collom, Mitchell Bentsen of Champaign, and Stanley Lloyd of Girard all participate in a micro steamcar race during the Illini Summer Academy.
Jeremy Ross CEO of First-Light USA

Jeremy Ross ’95 AgM, is the Founder and CEO of First-Light USA, a company that designs and manufactures high-end tactical flashlights, located in Seymour, IL. First-Light’s products are primarily sold to customers within the military and federal agencies.

“Our largest customer is the United States Army,” said Ross, “followed by the Marine Corps and the US Border Patrol. The Army has what they call a ‘Family of Flashlights’ list. It’s a menu of lights that the soldier can choose from. Only flashlights that have passed the Army’s testing make the list. Beyond the rigorous physical testing, each of the lights listed has been in the hands of soldiers who say it’s good enough to earn the distinction of ‘Team Soldier Certified Gear.’ First-Light has two of the 14 lights on that list.”

Prior to founding First-Light, Ross worked for a time on the family farm of a good friend, then moved on to an agricultural chemical company and from there to Pioneer Hybrid as a district sales manager.

“One day, I had this crazy idea while I was sitting in a tree stand,” said Ross. “Why doesn’t someone make a flashlight that goes on your hand instead of in your hand?”

Ross went so far as to construct what he calls a ‘Radio Shack prototype’ of the flashlight that he envisioned. Some time later, he attended the Illinois Agricultural Pesticides Conference (often called spray school by attendees) and listened to a presentation on agricultural bio-terrorism.

“The speaker ran the Champaign operations for a company called Science Applications International Corporation (SAIC),” said Ross. “At the end of his speech, he said that SAIC was one of the largest privately-owned companies committed to providing solutions to the government. If anyone had a solution for the government, he wanted to talk to them.”

Ross approached the speaker about his flashlight, and was invited to make his presentation at the company office. Although their interest in the flashlight idea was limited, they did offer him a job as a Business Development Manager for SAIC, focused on agricultural biosecurity technology solutions. Ross accepted the offer, and said he might still be there if it weren’t for “the continued encouragement of other ACES alums who said I needed to start a business with this flashlight idea.”

Ross took their advice and founded First-Light USA in September of 2004. “I knew enough to know there’s a big difference between invention and design,” Ross said. “So I surrounded myself with people who understood design and electronics and low-light tactics. My designer has been with me since day one, and we’ve been able to take my Radio Shack prototype and turn it into a robust product.”

Ross is understandably proud of the variety of groups that use First-Light products.

“We outfit the Army’s 71st ordinance group. They are a large command of EOD (Explosive Ordinance Disposal) soldiers,” he said, “These are the guys that clear the routes and diffuse IEDs (Improvised Explosive Devices). We also outfit the 2nd Marine Expeditionary Force Transition Teams. These teams work with the Iraqi Army, Police Forces, and Border Patrol to transition power back to them.”

One of the lights has a magnet mount that enables it to go inside an Abrams Tank, “so now we’re on the basic item issue list for the Abrams,” he said. First-Light flashlights will soon be standard issue for the US Army Military Working Dog Deployment kit and have been approved for standard issue at the United States Border Patrol Academy.

Ross spends the majority of his time traveling for the company. His wife Sarah helps with organizing his travel, as well as administering some of the grants First-Light has acquired. Sarah worked

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Boston Moves Ahead as Engineering Manager with Caterpillar

Michael and Kristin Boston are both 1995 graduates of the Department of Agricultural Engineering (now Agricultural and Biological Engineering). They married shortly after graduation, and today they enjoy active lives with their four children in Washington, Illinois.

Kristin graduated with a B.S. in Food Engineering, and she worked for Frito Lay, Ringer Foods (a private food company) and the Illinois Department of Health before the birth of their first daughter, Ella.

“We decided early on that Kristin would stay home with our children, because we both grew up in families like that,” said Mike, “and we wanted that for our kids.” The Bostons have four children; Ella (8), Jonah (5), Grant (3) and Sadie (1).

Boston accepted an offer from Caterpillar directly out of college, and has held numerous engineering positions with the company over the last 14 years. Since its inception over 80 years ago, Caterpillar has grown to be the world’s largest maker of construction and mining equipment, diesel and natural gas engines, and industrial gas turbines. “I’ve worked in drivetrain design, drivetrain research and drivetrain development,” said Boston, “as well as program management and system integration design.”

In 2002, the Bostons moved to Padova, Italy (near Venice) where Mike served as a project engineer responsible for drivetrain new product introduction for backhoe loader and telehandlers.

“I always said I’d be interested in an international assignment,” Boston noted. “Caterpillar has an alliance with an Italian company that does drivetrain components for our small construction equipment. An opportunity arose, and I had the experience they needed for that particular job, so we went to Italy.” The Bostons second child, Jonah, was born in Italy.

Currently Mike is an engineering manager in the Large Power Systems Division and is responsible for a team of 20 engineers who design and maintain 250 - 800 horsepower diesel engines for the petroleum market.

Boston said his time at the University and in the department provided “an excellent springboard for an engineering career.” He cites the capstone design class with Dr. Richard Coddington as one of his most memorable and beneficial college experiences.

“That was as close to real-world experience as it got, and it was an excellent example of how things work in the post-school world,” said Boston. “It also taught all of us team work. We all contributed in a little different manner. The secret was uncovering the strength of each individual, then dividing up the work and using those strengths. So I look back on that class with good memories. It was a great experience and it was fun, too. I got to spend a lot of time with my classmates.”

Dr. Carroll Goering was Boston’s advisor, and Mike credits Dr. Goering with direct and down to earth counseling.

“My junior year I was involved in a six-month work/study program in Great Britain, and Dr. Goering helped arrange that, and then assisted me in getting credit for the classes I took.” Later, Boston said he found that his co-workers at Cat recognized Dr. Goering’s name and even used his textbook.

Today, Michael and Kristin are busy with work and family and are active in their local church, but they still find time to enjoy Illini sports, particularly basketball and football.

“There are lots of Illini fans in our family,” said Boston. “Combined, Kristin and I have four siblings who are Illinois alums, as well as my father, two uncles and one aunt. We typically get to a couple of football games and meet up with family for tailgating. It’s always great to visit campus and see the latest new buildings or expansion.”

Boston has high praise for his years at the University of Illinois. “The Department re-enforced a strong work ethic, the value of teamwork, and they set the expectation of holding a deep understanding (down to first principles) of your subject,” he concluded. “Those principles are key ingredients for success in industry today, and they have served me well.”
U of I Students Work with South African Counterparts to Address Common Problems – Part 1 of 2

From the prairies of central Illinois to the fields of South Africa, there are some issues that seem to affect farmers the world over. Three of these - irrigation, herbicide application and dependence on fossil fuels - are being addressed by a small group of students from the University of Illinois and the University of KwaZulu-Natal in South Africa. These students have worked together - via phone and the Internet - for more than a semester to find answers to these problems for producers near the city of Pietermaritzburg.

Now the students from ABE@Illinois are working directly with their South African counterparts to put into practice the solutions they have devised. Together with Alan Hansen, a professor and agricultural engineer with the Department, the students traveled to South Africa in late July and will be staying in Pietermaritzburg through much of August.

Cameron Denney and Eddie Kahle have worked on the design of a field irrigation system, to be used in a village garden not far from Pietermaritzburg.

“The plot is approximately 7.5 acres,” said Kahle, “and currently the farmers can’t plant during the winter months because it’s too dry.” Kahle said they are working on a static sprinkler irrigation system using the quick coupling method, so the sprinklers can be moved around, decreasing the overall cost of the system. “The people of this area are rather poor,” Kahle continued, “and they would prefer to do more work, instead of paying for a system that covers the entire field with no manual labor.”

Paul Korczak and Tyler Larson are constructing a selective herbicide applicator.

“The applicator will only apply herbicide to plants which are taller than a certain height,” said Korczak.

“The basic design of this is to mount a rope wick applicator on a 50L tank on a small trailer that can be pulled by a small pickup truck,” Larson added.

Right: Students are excited to finish the first round testing after constructing the hydraulic valve for aiding mixing in a digester unit processing cow waste to produce methane. Left to right: Maren Somers, Albert Motloung, Mickey Trimble
Maren Somers’ and Mickey Trimble’s project “focuses on production of biogas as a renewable source of energy from decentralized digestion of farm waste,” said Somers, “namely cow manure.”

“The digesters currently in use don’t have a very effective mixing mechanism,” Trimble noted, “so with this particular model we are trying to design a hydraulic release valve that will ensure better mixing.” The methane digester is being perfected in order to lessen dependence on fossil fuels for many of the South African farmers.

Despite the time spent working on their projects, the students are quick to note that their time in the country is far from ‘all work and no play.’

“So far our trip has been a wonderful mix of work and fun,” said Somers. “In a little more than a week, we’ve been ziplining down a mountain, swimming on the beautiful beach in Durban, and we hosted a braai (barbeque) for our South African friends.”

Korczak said the braai “made for a lot of good local meat and interesting conversation,” and Denney said the South African students “were very welcoming and friendly toward us.”

The students also see their time in South Africa as an opportunity to experience a different culture. “I hope to learn more about the historical background of South Africa that shaped society to what it is today,” said Larson.

Denney noted, “It’s very interesting to see a country so recently out of apartheid, and how they’re healing.”

Alan Hansen, the professor who organized the trip, is a native of South Africa. “I know from past experience that this trip has a great impact on the students,” Hansen said. “It broadens their outlook considerably, and it has a lasting influence on their academic, professional and personal lives.”
Alpha Epsilon Serves Community and Increases Involvement within ABE

The Delta Chapter of Alpha Epsilon, the honor society for food, agricultural and biological engineers, finished out a strong year with the initiation of 16 new members. This year, the initiation was held in conjunction with the Spring Awards Banquet in April.

“There was tremendous faculty involvement in the initiation ceremony this year,” said Stephen Anderson, the 2008-09 Chapter president. “I think that’s going to encourage future collaborations between the Chapter and our course instructors.”

The Chapter began the 2008-09 school year with their traditional fall blood drive. “We host two blood drives every year with the American Red Cross,” Anderson said, “and about 15 members from the club came out each time to help. Combined with the blood drive in the spring, we donated 73 units of blood at a time when regional supplies were reaching critical levels,” he noted.

Other service activities included the Colleges for Cancer Relay for Life, where the group fielded 12 walkers and runners who helped raise funds in a search for a cure. Alpha Epsilon members also participated in the Adopt-a-Pathway campus-wide program. The club’s designated pathway was kept clean by members and inspected twice a semester.

Anderson said he worked to direct the club’s focus on service and activities within the department as well.

“We’re an honor society,” he said, “formed to recognize those who choose to excel within our field and to come together for our mutual benefit. So we tried to increase faculty, undergraduate and graduate student involvement in an atmosphere that was conducive to informal mentorship.”

Departmental activities included a fall ice cream social, and a fall barbeque and basketball tournament.

“The basketball tournament had great participation,” Anderson said. “We had five teams – one from Alpha Epsilon, one from ASABE, one from Ag Mech, and two at large teams from the department. I’m happy to announce Alpha Epsilon won the tournament,” he added, “thanks to Paul Davidson and Greg Goodwin. I think faculty demands for a rematch will ensure active involvement for years to come.”

The combined barbeque/basketball tournament drew more than 100 students, faculty, staff and families, said Anderson. In addition to the tournament, the night included a bonfire and prizes of university apparel, children’s toys, and a grand prize of a flat-screen TV.

“We had a fantastic time,” Anderson said. “It was nice to have that time to come together as a department.”

Educational activities included Alpha Epsilon’s presentation of the Chapter’s Service and Leadership Award at the Spring Banquet to Andrew Fulton, a junior in ABE. Alpha Epsilon also participated in U of I’s Engineering Open House and ExplorACES.

“We gave out a lot of information to hundreds of students, as well as public and corporate visitors,” said Anderson. “It opens minds to a field of engineering often overlooked by students from urban environments.”

Elections for officers were held in the spring, and Mark Hull was elected president for the 2009-10 academic year. In keeping with Anderson’s effort to enhance opportunities within the department, Hull said he hopes to begin a program to tutor incoming freshman.

“We were approached by one of our professors last year,” said Hull, “to start a tutoring program for freshman calculus, and possibly physics. That would be a huge benefit to the incoming freshman class, and a great experience for our members.

“If one of the goals of Alpha Epsilon is to be intellectually stimulating,” he concluded, “I can’t think of a better opportunity. It’s a way to give back, and it will probably encourage the freshman to do the same thing for someone else somewhere down the road.”
**Undergraduate Awards**

**Alpha Epsilon**

ASABE Central Illinois Section Future Leaders Scholarship

Bateman Congeniality Award

Bauling/Pershing Memorial Award

Ben and Georgeann Jones Undergraduate Student Scholarship

Bernard C. Matthew/Matthews Company Scholar

Best Undergraduate ExplorACES/Engineering Open House Exhibit Award

**Undergraduate Award Winners**

Andrew Fulton, ‘09 AgE

Jason Buss, ‘09 AgE

Ryan Richards, ‘09 TSM

Curtis Zurliene, ‘09 AgE

Anna Oldani, ‘11 ABE

Brian Campion, ‘10 AgE

David Didier, ‘11 TSM

Joshua Vonk, ‘09 AgE

1st Place — Casey Campbell, ‘09 AgE; Andrew Fulton, ‘09 AgE; Joshua Vonk, ‘09 AgE; Curtis Zurliene, ‘09 AgE; Shotaro Yatsu, ‘09 AgE; John Fleischman, ‘12 ABE; Elizabeth Brooks, ‘09 AgE

2nd Place — Stephen Hoeft, ‘09 TSM; Stephen Okleshen, ‘09 TSM

3rd Place — Anna Oldani, ‘12 ABE; Chris Wilhelmi, ‘12 ABE

Mark Hull, ‘10 AgE

Jeff Lambert, ‘11 AgE

Jordan Tate, ‘10 TSM

George Bozdech, ‘10 AgE

Sean Breen, ‘09 AgE

John Luebbers, ‘09 TSM

Jacob Mitchell, ‘09 AgE

Keith Webster, ‘09 TSM

Alex Suchko, ‘12 ECE

William Klein, ‘12 ABE

Jeff Lambert, ‘11 AgE

Stephen Corban, ‘10 AgE

Jeff Lambert, ‘11 AgE

Elizabeth Brooks, ‘09 AgE

Jacob Kesler, ‘09 AgE

Joshua Siefker, ‘10 TSM

Bradley Stubb, ‘10 AgE

Gina Francis, ‘10 AgE

Brian Fehrenbacher, ‘12 ABE

Amy Balek, ‘10 TSM

Curtis Zurliene, ‘09 AgE

**Graduate Awards**

**Graduate Award Winners**

Stephen Anderson, MS ‘09 ABE

Paul Davidson, PhD ‘09 ABE

Esha Khullar, MS ‘09 ABE

Dan Koch, MS ‘09 ABE

Jonathon McCrady, PhD candidate ABE

Gregory Byard, MS ‘09 ABE

**Faculty Awards**

**Faculty Award Winners**

Steven Eckhoff

Xinlei Wang

Robert Aherin

**Alumni Awards**

**Alumni Award Winners**

Lyle E. Stephens, MS ‘68 AgE

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Top: Winners, presenters, and sponsors of the Ben & Georgeann Jones Excellence in Teaching Award (clockwise from top left): Prasanta Kalita, Paul Davidson, Kent Rausch, Esha Khullar, Georgeann Jones, and Stephen Anderson
Green’s Research Crosses International Lines

Angela Green is an assistant professor in the Department of Agricultural and Biological Engineering. Much of her research focuses on identifying environmental conditions that affect animal well-being, and consequently, how to measure responses such as behavior. In the last year, Green has attended a variety of international conferences that address different aspects of her research.

“I attended a conference with the International Society of Applied Ethology (ISAE) in Dublin, Ireland,” said Green, “and I found that this organization was a very good fit for me. [Ethology is the study of animal behavior.] My research compliments what many members of this group are doing. One of the highlighted speakers discussed how to measure animal feedback, including existing technologies and needs.

“I’m very interested in developing technologies to measure an animal’s behavioral responses automatically,” Green continued, “so that you don’t need a person present to count the number of hoof stamps, or tell you how much time an animal spends drinking.”

Currently, Green’s lab group is building a preference chamber—four compartments, interconnected, with a different environment in each compartment.

“The animal has the choice to move around,” said Green, “and we instrument that with location detectors that tell us where the animal is. When we go back to watch the video, we don’t have to manually record where the animal is, we supplement the location information with the behavior that they are performing.” Green said she hopes to work with colleagues at the Catholic University of Leuven in Belgium to automatically analyze the video for behavior as well.

Green also attended The 8th International Livestock Environment Symposium (ILES VIII) in Iguacu Falls, Brazil.

“This is a specialty conference of ASABE that’s held every four years,” said Green, “and several of our faculty were able to attend. I presented some of my work on heat and moisture production and heat tolerance of laying hens under different environmental conditions.”

Green said she and another faculty member, Richard Gates, were also able to tour Perdigao Farms, one of the largest livestock producers in Brazil, and visit the University of Viçosa. U of I is partnered
with the University of Viçosa in the FIPSE program [Fund for the Improvement of Postsecondary Education] and will be accepting and sending exchange students as part of that program beginning next fall. A ‘Maymester’ tour is planned in conjunction with this exchange for 2009, and Dr. Green will be traveling with a group of students for three weeks, visiting at least two Brazilian universities.

In May, Green attended a conference sponsored by the Animal Transport Association (AATA) in Sydney, Australia. AATA is an industry group that addresses the shipping of live animals. The meeting had one section on new research and Green gave an invited talk on the science for animal-environment interactions that focused on measuring animal physiological and behavioral feedback. Green talked about some of the studies she worked on in the past, and the general process of identifying factors of the environment that are important to an animal’s well-being.

“The goal of my talk was to share what I do and ultimately find ways to work together to answer some of the questions that they have about transportation and shipping of live animals,” said Green.

Green said the study of animal behavior and measuring animal feedback is “an up and coming” topic, and she looks forward to her continued involvement in the field. She will be working with the ISAE to organize the group’s 2011 conference in the United States.
Jeremy Ross CEO of First-Light USA

as Director of Alumni Relations for the College of ACES from 1998 to 2006. The Ross family have three children; Mary Grace (7), William (4) and Rachel (2).

Ross has always enjoyed hunting and fishing, but says that starting a business and having a family changes your priorities. “I spend so much time traveling that when I’m home, my family comes first,” he said, “although I am the master of the 20-minute fishing trip. We have a fishing pond in our subdivision, and if we can distract the kids for 20 minutes, I’m out trying to catch a bass. Twenty minutes later I’m back, and nobody even knows I was gone.”

Ross said his time in Ag Mech (now Technical Systems Management) at the U of I is a time he will never forget. “More than anything else, this department instilled the value of relationships,” he said. “From Loren Bode to Phil Buriak to Mike Hirschi, they made their students feel welcome, and they weren’t afraid to form a relationship with them. That was pretty important for a group of shell-shocked, small-town farm kids at a big university. I loved bragging to my fraternity brothers about the relationship I had with the faculty here. It was very unique.”

Ross said that even though he no longer works in the agricultural industry, his life and training in agriculture have enabled him to carry the ag mindset into everything he does.

“The ag industry is the most common sense industry out there,” he said. “I told the Army - and I think it got their attention - that where I come from, if you want something it’s not available, you build it. And if it doesn’t work, you tear it apart and you build it again until it does.

“That,” he concluded, “has been our design strategy from day one.”

Buriak Faces New Challenges with Hard Work and Humor

Buriak said they also decided that the name, Agricultural Mechanization, was too limiting. “We wanted to change the name because the public had a narrow perception of Ag Mech. We thought Technical Systems Management was a good name, but some people thought it was too nebulous,” he said. “So we proposed a name that we knew connected our program with [another program] because we knew it wouldn’t fly with them. And of course they said, ‘No, no you can’t name it that.’ So we feigned disappointment and said ’What about Technical Systems Management.’ They said ‘Sure, that sounds good.’ They were relieved, we got the name we wanted, and everybody was happy.

“The name is nebulous,” Buriak continued, “and that was deliberate. It opened up doors that were previously closed to Ag Mech majors. Now our students compete for jobs with ag econ majors or ag engineering majors. It’s expanded their opportunities instead of limiting them.”

Buriak worked with 300+ students in his time at Illinois, and when he retired in 2007, more than fifty of them came to a reception to pay tribute to their professor.

“I’m not sure exactly how many were there,” Buriak said, “but I cried all night. If I have a legacy,” he said, “it’s those kids. They’re all special to me.”

Today Buriak works part-time as a consultant on a United States Agricultural International Development project. He is working with 30 Ph.D. students in Egypt to design an agricultural technology curriculum that will be used in ag tech schools in southern Egypt. He and his wife Carol have purchased property on Smith Mountain Lake in Virginia, and they will be building a home there in the near future.

When asked his opinion about the University and his time in the department, Buriak concluded with, not surprisingly, a story.

“A few years ago I was asked to give a speech to the top 300 high school students in Illinois. I said, ‘You guys don’t know me, but my three greatest passions in life are fly-fishing for trout, hunting and Alpine skiing.

‘Now, there’s not a live trout that lives in the state of Illinois, you have to get permission if you want to hunt anywhere, and the only ski hill in the state is a garbage landfill that they built up about 150 feet. So the first question in your mind should be, why would this guy be at the University of Illinois if he didn’t think it was pretty darned terrific?’”
Giving Back

At a time when so many of us have had to make tough financial choices, why do alumni and friends choose to give back to the Department of Agricultural and Biological Engineering? To find out the answer to this question, ACES students asked our alumni “Why do you give?” during the 21st annual College of ACES Thank-A-Thon held March 16 through 18. Responses included “loyalty,” “being part of a family,” “it’s the right thing to do,” “outstanding faculty and staff,” “great preparation for professional success,” “want to be associated with a winning program,” and “because I was asked.” Whatever your reason for giving back, thank you! Please know that we couldn’t do it without your continued support.

Be assured that we do not take a single gift for granted. From funding merit and need-based scholarships through annual gifts or endowments to updating classrooms with the latest instructional technology to providing opportunities for students to engage in research with faculty members, private support impacts every aspect of your alma mater.

I am pleased to highlight three recent gifts to ABE that will benefit its students. Larry (’60 BS, ’62 MS) and Lola Huggins have created a new endowment providing merit-based scholarships for ag engineering students who demonstrate academic performance and are leaders on campus and in the community. Wendell Bowers (’48 BS, ’56 MS) has established a new annual scholarship for students enrolled in ag engineering who are in active leadership roles and who have the respect of his/her classmates. And, two new ABE merit-based undergraduate scholarships will be provided by the Caterpillar Foundation.

My husband Steve and I both earned degrees from the College of ACES. Our experiences here have enriched our lives and careers. I feel fortunate to be able to help raise funds for future leaders in ag engineering and technical systems management. Someday, we hope that our sons Mitchell and Spencer, who enjoy riding in the combine on our Central Illinois farm, will be able to experience the educational opportunities of this great university.

Continued financial support is critical to the success of the Department of ABE at the University of Illinois. If ABE played a role in your personal or business success, then please consider giving back. Gifts can be made online at http://abe.illinois.edu/ by following the “Make a Gift” button in the bottom left-hand corner. You may even consider making a long-term donation through your estate planning. For more information contact me at kmeenen@illinois.edu or at 217-333-9355. Thank you!

Kimberly Meenen, ’87 BS ACES, ’08 EdM
Director of Development

Above: The Huggins’ present their inaugural scholarship to Elizabeth Brooks, ’09 AgE at the 2009 ABE Spring Awards Banquet.
Agricultural and Biological Engineering
Technical Systems Management

Integrating life and engineering for the enhancement of complex living systems

SOIL & WATER ENGINEERING
OFF-ROAD EQUIPMENT ENGINEERING
BIOENVIRONMENTAL ENGINEERING
FOOD & BIOPROCESS ENGINEERING
BIOLOGICAL ENGINEERING