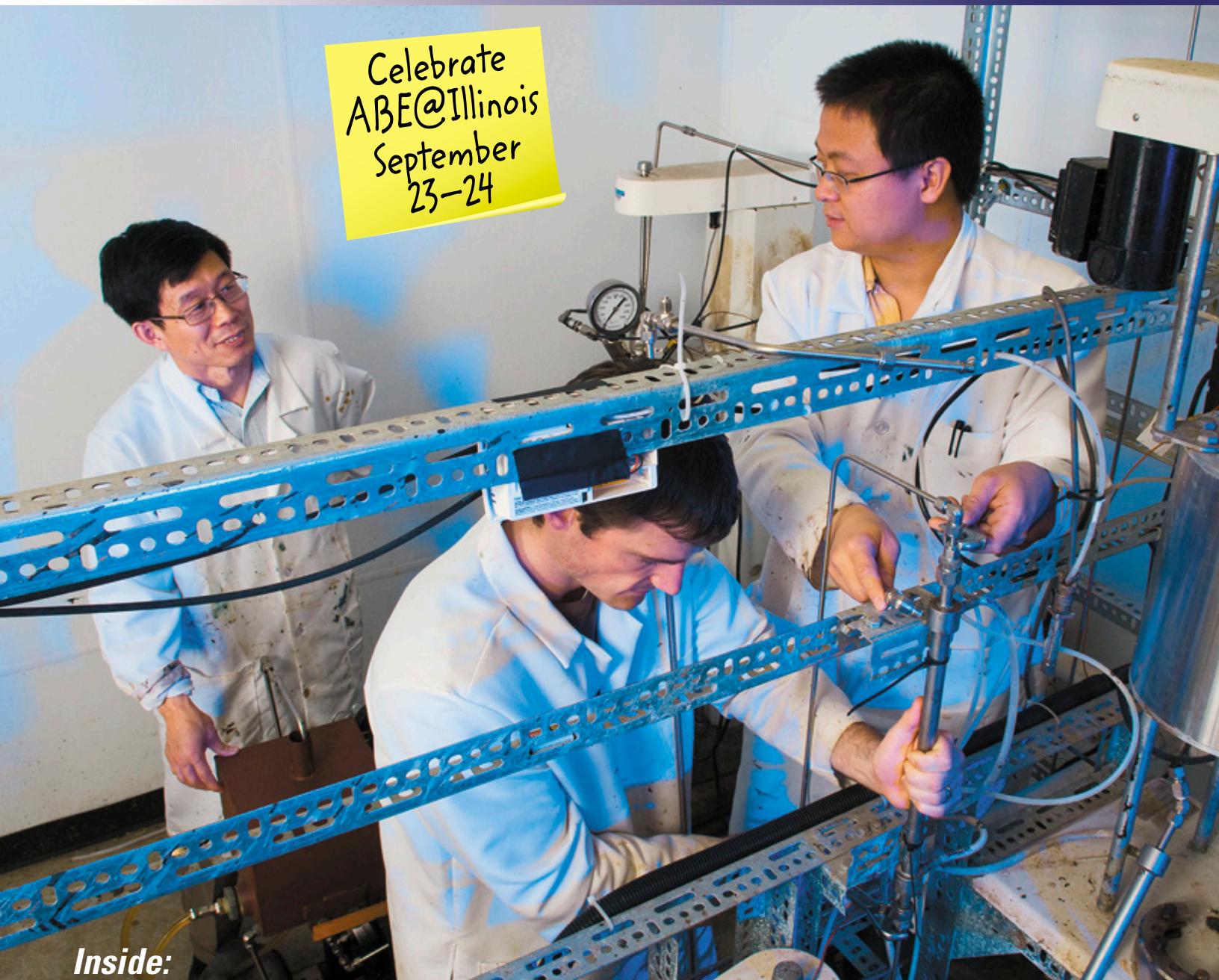


ABE @ Illinois

Agricultural & Biological Engineering

Summer 2011

Celebrate
ABE@Illinois
September
23-24



Inside:

- ABE 2011 Spring Awards Banquet
- New Programs Draw Students from Europe and Brazil
- Women in Engineering
- Realistic Solutions in the Real World
- ABE Alumni Gather to Support Illini Pullers at ¼-Scale Design Competition



ABE@Illinois
Summer 2011

Editors:

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& Leanne Lucas

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Greetings from Agricultural and Biological Engineering

On Sunday, April 10, our department had another very successful Spring Awards Banquet. This uplifting annual event provides a formal opportunity to recognize and celebrate the achievements of ABE@Illinois members. This year, we had a record breaking attendance of 165, including our students, their parents and friends, award donors, faculty, staff, emeriti, and their spouses. Forty-one awards were presented to 73 recipients. In addition to the 62 undergraduate student awardees, we also recognized five graduate students for their academic achievements and contribution to teaching; three excellent faculty and staff teachers; one retired faculty member for his outstanding service; one distinguished alumnus; and a professor for a day. The quantitative description of the awards is obviously impressive. The support from the individuals and organizations that made many of the awards possible and the achievements of the award recipients who were recognized were indeed most inspiring. Our core business is to empower people with knowledge and wisdom. When our learning environment has enabled people to succeed in various ways, we are strongly encouraged to continue to do our best.

Five days before the awards banquet, I had an opportunity to participate in an advancement resources training workshop sponsored by the College of Agricultural, Consumer and Environmental Sciences (ACES) and the College of Engineering. Drs. Yuanhui Zhang and Alan Hansen from our department were also in attendance. During the workshop, we learned the importance of communicating the vision story of an organization. As an exercise, with the help from our ACES colleagues at the same table, we came up with a vision story for ABE@Illinois: **Imagine a world without hunger, an endless supply of energy, and a healthy environment.** This vision story tells the true aspiration behind our department's mission of integrating life, engineering, and technology for the enhancement of complex living systems in agriculture, food, energy, and the environment. Please help us share our vision story widely.

We appreciate very much your continued support when we endeavor to address critical societal issues, empower human capacity to provide solutions, and enable people to succeed. I would like to invite you to visit our newly designed website at <http://abe.illinois.edu>. As you know, it is always our great pleasure to hear from you. Please stay in touch.

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

Hunt Has Lifelong Influence on the Field of Machinery Management



Dot and Donnell Hunt on vacation in Michigan.

Donnell Hunt, Professor Emeritus in the Department of Agricultural and Biological Engineering, retired in August of 1996, after 36 years of distinguished service.

Hunt graduated from high school in 1944 and served in the U.S. Army as an infantryman for two years. Much of his time was spent with the Army of Occupation in Japan.

After an honorable discharge in 1946, Hunt attended Purdue University and earned a bachelor of science degree in Agricultural Engineering in January of 1951. That spring he took a position at Iowa State University as an instructor of Agricultural Engineering, teaching machinery management, farm tractors and farm machinery design. He went on to earn his master's and his Ph.D. in Agricultural Engineering at Iowa; his Ph.D. degree included a dual major in Theoretical and Applied Mechanics.

Hunt joined the faculty of the Department of Agricultural Engineering at Illinois in 1960. He made numerous significant contributions to the field of machinery management in the course of his career. In the late 1960's, Hunt conducted an extensive survey of the repair costs of over 1100 tractors and 5000 field implements. He reduced the survey results into basic equations for estimating repair

continued on page 3



K.C. Ting,
Professor and Head

Hunt Has Lifelong Influence on the Field of Machinery Management

continued from page 3

and maintenance costs for farm machinery, and those equations were published in the (then) ASAE Standards for use by machinery management analysts. He also developed the "timeliness" factor in machinery management theory, which is a critical factor in selecting optimum farm machinery sizes.

Popular textbook opens doors

But Hunt says one of the major accomplishments of his career was the publication of his textbook, *Farm Power and Machinery Management*. "That textbook went through eleven editions," said Hunt, "and it sold almost 70,000 copies. Half of those were foreign sales, and it's been published in Arabic, Iranian and Spanish."

Because of the appeal of that textbook, Hunt had numerous opportunities to share his research on machinery management around the world. He once spoke on machinery selection at the University of Tehran, Iran. "The Shah was still active then, and I guess they had the money," said Hunt, "so another fellow and I were chosen to attend their conference."

Hunt said that trip was particularly memorable. "A German fellow and I both got bad head colds, so one of the deans of the University took us out and bought us something to take for it. Instant cure. It was powerful and it worked, but when I got back to the States, I found out - well, let's just say I probably shouldn't have taken it. I think it was illegal."

Hunt's research made him a sought-after speaker, and he has traveled to Ireland, Australia, Canada, Mexico, the Netherlands, the Philippines, Sri Lanka and India as a consultant and lecturer.

Hunt was instrumental in the development of the Agricultural Mechanization (now called Technical Systems Management) curriculum. "We wanted a curriculum for those people interested in mechanization, operation, and repair equipment," he said, "not necessarily design. We pushed for that and got it started, along with the Ag Mech club."

Hunt was also one of the first on campus to use computers for teaching and research. He wrote the first computerized farm machinery selection program which considered machinery fixed and variable costs and timeliness costs.

When the development of ethanol took off in the late '70's, Hunt was one of its first

"Don Hunt was an instructor in Ag Engineering when I was a sophomore at Iowa State. He was an excellent and popular instructor and the course was valuable. His emphasis on teaching and students was great. I also worked with Don as a graduate student at Illinois, on an Ag Machinery course for the Ag Mech Program. When he was responsible for the Illinois Engineering Co-op programs, he was a valuable ambassador to industry and helped engineering students gain great experience in industry. He's an excellent researcher, professional engineer, a booster for the ABE department, and a 'good guy'!"

**Doug Bosworth, Adjunct Professor Emeritus
1995 - 2004**

supporters. "We knew it was coming; people were suggesting it could be an alternative fuel. So I got an engine set up in the back lab, put a T-valve in it and started it on gasoline. Then I slowly turned off the gas and turned on the ethanol, and the engine just purred. I've been an enthusiast ever since.

"But I did get crossways with some people once, when I pointed out that sweet sorghum saves a step," he continued. "Corn's a starch and you have to convert it to a sugar before it becomes an alcohol. With sweet sorghum, the sugar's already there. I mentioned that, and I got shouted down. They wanted to sell corn."

Hunt pointed out that the recent jump in the price of corn has been blamed in part on the ethanol consumption of corn. "So it took quite a few years," he said, "but maybe we're getting around to the place where we can't afford to make alcohol out of corn. When you live long enough, you see these sorts of things and wonder."

Hunt left the Department in 1985 and went to the College of Engineering as Assistant Dean and Director of the Cooperative Education Program. He rebuilt the program by recruiting many new companies to accept cooperative education students, and stayed in that position until his retirement from the University in 1996.

Research interests continue in retirement

Since his retirement, Hunt has compiled two documents that reflect his interest in historical farm equipment. The first, *Horse Farming Implements*, is a pictorial record of implements designed for horse power, and farming practices and equipment that are no longer used.

"A horse can do what a tractor does when it comes to pull," said Hunt, "but a tractor gives you rotating power, and people did all sorts of things to try and get that out of horses."

continued on page 15

Cover: Yuanhui Zhang, Professor in ABE, works in his lab with two graduate students, Mitch Minarick (middle) and Guo Yu (right).

Inside:

ABE@Illinois 2011 Spring Awards Banquet	6
ABE Alumni Gather to Support Illini Pullers.....	8
Ag Safety and Health Program Provides Valuable Service to Illinois Agriculture.....	14
Alumni Spotlight	
Jeff Arnold.....	4
Jeff Behme	5
Club Update	
Women in Engineering	9
Giving Back	15
New Programs Draw Students from Europe and Brazil.....	12
Profile Emeritus	
Donnell Hunt	2
Realistic Solutions in the Real World.....	10

Arnold a Pioneer in SWAT Development

Jeff Arnold, BS '81 AgE, MS '83 AgE, is a Research Agricultural Engineer at the USDA Agricultural Research Service Grassland Soil and Water Research Laboratory in Temple, Texas.

Arnold has been with the USDA since receiving his master's from Illinois in 1983. He is a pioneer in the development of the Soil and Water Assessment Tool (SWAT), software that was designed to predict the impact of land management practices and climate on water, sediment and agricultural chemical yields in complex watersheds with varying soils, land use and management conditions over long periods of time.

SWAT a national and international tool

"There are two main uses of the model in the United States," said Arnold. "The Environmental Protection Agency identifies water bodies that are impaired by excess sediment, bacteria, pesticides, nutrients – whatever the impairment is. They don't have ten years or millions of dollars to monitor those bodies of water, so they use this model to assess the total maximum daily load (TMDL)."

Arnold said the USDA is also using the model for national conservation assessment. "They ask us to model a variety of conservation practices, and what impact they might have," he said.

"For instance, if we use cover crops in the Chesapeake Bay drainage area, what impact does that have on loadings to the Bay? We give them our best estimate, and this helps them determine which practices should be put in place, and where they should go."

In addition, SWAT is used in over 90 countries and has resulted in better management of water resources throughout the world.

Arnold was the recipient of the 2011 Distinguished Alumni award in the Department of ABE, and he was recently named the 2011 ARS Southern Plains Area Scientist of the Year.

Encouragement from faculty "a great deal of help"

Arnold said coming to Illinois as an undergraduate was not easy at first. "I grew up on a farm, and my high school graduating class had 70 kids. To get thrown into a major university with 30,000 students was difficult. Then my girlfriend (now my wife) came here to attend Parkland and that helped. After I finally got through those first two years, I was able to take more courses in Ag Engineering. I had more contact with the Department and I was able to do things I really enjoyed."

Arnold credits his advisor, Walter Lembke, now a Professor Emeritus in the Department, with a great deal of help and encouragement during his years at Illinois.

"Walt spent a lot of time with me when I wrote my master's thesis," Arnold noted. "He would mark it all up, and I'd go through it again. We did that two or three times. He was incredibly patient. He's one of the nicest people I've ever met."

Arnold received both his bachelor's and his master's degree in Agricultural Engineering from the University of Illinois. He also holds a Ph.D. in Agricultural Engineering from Purdue University.

"When I finished my master's thesis, I told my wife, don't let me go back to school – shoot me first. And I meant it. But ARS helped me. I could work my job and get my Ph.D. at the same time. I couldn't have stopped work and gone back, but I could hardly pass up the opportunity they gave me. So it all turned out okay."

Arnold and his wife Jill recently celebrated their 30th anniversary. They have a daughter Morgan, and a son, Steven, who both live in Texas. They have one grandson, Jonathan, and Morgan is expecting their second grandchild in November.

"I wasn't sure if I was ready to be a grandfather," Arnold admitted, "but it's the best thing in the world. I didn't realize how good it was going to be. We're just buds."

"As long as our kids and grandkids are in Texas," he concluded, "we'll be in Texas."



Above: Jeff and Jill Arnold with their daughter, Morgan, and son, Steven.

Below: Jeff and Jill Arnold overlooking Moraine Lake in Banff National Park, Canada.



Behme OEM Account Manager for Dickey-john

Jeff Behme '95 AgM, is a Senior Original Equipment Manufacturers (OEM) Account Manager for Dickey-john Corporation in Auburn, Illinois. Dickey-john is a world leader in the manufacturing of ruggedized, advanced-technology electronic assemblies. Their products include monitors, controllers, moisture testers, ground speed sensors, and a variety of other systems used in agriculture.

Behme joined the staff of Dickey-john in 1999. "We work with a variety of customers including both major and short-line OEMs," said Behme, "and I cater to a few key global accounts. My job entails everything from sales and overall business management through application engineering. When a customer has a problem they can't solve or needs a custom solution like a new planter monitor, I work closely with the customer to develop a specification and with our design engineering department to find a solution that meets their needs. We work hard to insure we're doing the projects that make the most business sense as well as satisfy the customer's needs."

OEMs from Brazil to China

Behme said the greatest benefit to his job with Dickey-john is the opportunity to travel the world. "In May, I spent a week-and-a-half in Brazil. Farming there is slightly different than in North America, so some of the requirements of the products are different. I try to help the manufacturers understand their challenges and then figure out ways to make the products work."

Although OEMs are Dickey-john's primary business, they also have other markets they serve, so they use after-market dealers and distributors as well. "We have a distributor in Brazil, so I had the opportunity to do some product training and go through some business issues. Any time you work in a foreign country, you want to make sure you're doing things in the best fashion so you don't get penalized with higher tariffs or taxes. Obviously, you have to have a product that works, but from there you have to make sure it's available."

Behme's other travels include Western Europe, Australia, the former Soviet Union, and currently he is working with a customer to help them design a product to meet the specific needs for China.

Behme said Dickey-john has also been instrumental in the development of industry standards that are particular to the electronics world. "Whether it's a John Deere, a Case, an AGCO tractor, the electronics have a common connector and plug-and-play. Over the course of my career at Dickey-john, I've spent a lot of time working with the ISO 11783 standard and products." The ISO 11783 standard specifies a serial data network for control and communications on agricultural tractors and implements.

Behme recently traveled to Lincoln, Nebraska, to attend Plug-Fest, where manufacturers from around the world come to plug in their equipment. "We try to figure out if the products work together, and why or why not. It's a pretty complex standard that continues to evolve. But it's important, because even though the agricultural world is getting smaller all the time, it's a global world. More than half of the people at this meeting were international." Behme also attended an ISOBUS meeting in Brazil during his last trip.

Behme loves the challenges he faces each day and said the next-best benefit of his job is the fact that it provides "a continuing education. It probably goes back to my upbringing and my formal education, but every day I get the opportunity to learn new things and adapt, and that's something I really enjoy. Somewhere along the line I picked up the saying 'Life's all about how well you handle Plan B.' That really fits here."

Time in Department a "privilege" and "tremendous fun"

Behme spoke of his time as an undergraduate student at the U of I, and his time in the Department. "I had the privilege of working with Dr. Paul Benson and Dr. Phil Buriak.

continued on page 8



Above: Jeff Behme speaks with a client at the 2011 Brazil Agrishow.



Below: Jeff Behme fishing with his daughter, Claire, and his son, Tyler.

ABE@Illinois 2011 Spring Awards Banquet

Below, left: Professor Emeritus Richard Coddington receives the Outstanding Service Award, presented by Prof. Alan Hansen

Below, right: Randy Fonner with J. Kent Mitchell

The 2011 ABE@Illinois Spring Awards Banquet was held on Sunday, April 10, at the I-Hotel and Conference Center.

Highlights of the evening included the announcement of Jeff Arnold, MS '83 AgE, as the 2011 Distinguished Alumnus. Arnold is the USDA-ARS Director at the Grassland Soil and Water Research Laboratory in Temple, Texas.

David Larson '77 AgE was named the 2011 Spring Professor for a Day. Larson is the Vice President for Product Portfolio Management at CNH Global.



Students, faculty and alumni enjoy time together at the banquet

Following is a list of the 2011 award winners:

ABE 100 Best Overall Award

1st Place "Wumbologists"

Ernie Choi, Peter Ensinger, Grant Gribble, Rachel Gross

2nd Place "Illini Irrigators"

Nicole Hutnak, Joshua Marten, Westin Montavon, Matthew Nicolls

3rd Place "Absolutely Belligerent Engineering (ABE)"

Aaron Hartman, Michael Kasprzyk, Jordan Sherman, Sean O'Leary

EOH/ExplorACES – Best Undergraduate Exhibit Award

1st Place "Popcorn Factory"

Sarah Freriks, Sanggyun Kim, Justin Lické, Eric Marburger, Ju Tian

2nd Place "Genetic Engineering Application to ABE"

Moein Azimi, Erin Brochardt, Mark Gong, Christopher Hwan, Dylan Walker

3rd Place "Evaporative Cooling"

Nathan Andre, Matthew Gill, Ryan Moser, Matthew Murphy, Micah Zehr

Alpha Epsilon Service and Leadership Award

Delayne Durdle

Illini Pullers Outstanding Member Award

Alan Volk

Illini Pullers New Outstanding Member Award

Randy Noe

ASABE Central Illinois Section Future Leaders Scholarship

Heather Norris

Bauling/Pershing Memorial Award

Nathan Gibbons

Ryan Tucker McGinn Memorial Award

Adrian Dobles Elizondo

H. Paul Bateman Congeniality Award

David Didier, Jeff Lambert

Steve Eckhoff and Pioneer Hi-Bred International Agricultural Engineering Scholarship

William Klein

Wendell Bowers ABE Student Scholarship

Kimberly Heinecke

Matthews Company Scholarship

Brian Fehrenbacher

Larry and Lola Huggins Scholarship

Jeff Lambert

J.A. Weber Outstanding Award

Matthew Nicolls

Waterbourne Environmental Scholarship for Excellence in Soil and Water Resources

Ryan Giertz, Leigh Pierce

CNH Scholarship

Blake Lehman

K.J.T. Ekblaw Outstanding Senior Award

Linhui Qi

C.E. Goering Award for Excellence

Levi Allen

E.W. Lehmann Award

Brian Krug, Steven Nolte

Lehmann Outstanding Junior Award

Mark Colgan

Frank B. Lanham Award

Jacquelyn Bell, Alexandra Knicker

Lehmann Outstanding Senior Award

David Didier

Richard C. and Helen Coddington Design Team Award

Alexei Perelet

Phillip and Carol Buriak Award

Ryan Giertz, Edward Kahle, Tyler Larson, Anna Oldani

Douglas L. Bosworth ABE Endowed Scholarship

Ross Wilken

Ben and Georgeann Jones Undergraduate Student Scholarship

Keith Koch, Randall Noe

Ben and Georgeann Jones Graduate Student Scholarship

Shih-Fang Chen

Graduate College Fellow

Zhongzhong Zhang

Ben and Georgeann Jones Excellence in Teaching Awards

Christopher Cirone, Tatiana Sales, Joseph Monical, Dr. Joe Harper, Dr. Alan Hansen

J. Kent Mitchell Teaching Excellence Award

Randy Fonner

John Deere Foundation Scholarship

Matthew Doherty

Caterpillar Foundation Scholarship

Marissa Castillo, Anna Oldani

Outstanding Service Award

Dr. Richard Coddington

ABE Futures Committee Award

Roscoe Pershing



Above: Ted Funk presents Randy Fonner with the J. Kent Mitchell Teaching Excellence Award

ABE Alumni Gather to Support Illini Pullers at ¼-Scale Design Competition



Above: Illini Pullers gather before first pull of the day.

Below: Kim Meenen, Director of Development for the ACES Office of Advancement, Roscoe Pershing, former Department Head, K.C. Ting, current Department Head, Susan Ting, and David Smith, ABE alumnus, serve lunch to more than 100 attendees at first annual "Pulling for ABE" barbecue.



Behme OEM Account Manager for Dickey-john *continued from page 5*

"I did preparations for their teaching course, and in my senior year I was a teaching assistant for Dr. Benson, assisting with welding in the fall and agricultural electrification in the spring. Dr. Benson and Dr. Buriak are both outstanding gentlemen, and I continue to stay in touch with them."

Behme was a member of ASAE in his student years ("before it became ASABE"), and he served as the national president of the mechanization branches. He remembers participating in the mini-tractor pulls before they became the quarter scale tractor pulls.

"Early on in my involvement with Ag Mech we had 1/16th scale tractors, almost little toy tractors," he said. "We'd put little airplane engines in them and gear them appropriately, then we took them to competitions at the summer meetings. We came out victorious every time. It was a tremendous amount of fun."

Behme comes from a family of U of I graduates. He has seven siblings, and five of the eight Behme children are graduates of the University. Jeff and his brothers Chris and Greg are all Ag Mech alumni and two sisters, Carol and Jen, are also Illinois alums.

Behme is married, and he and his wife, Julie, have two children, Tyler, age 10, and Claire, age 7. Behme understands the importance of providing opportunities for his children and others in the community to experience the agricultural life. "As agriculture continues to change, we need to make sure the next generation can experience some of the things we've had the opportunity to experience." To that end, Behme serves on the 4-H Foundation in Macoupin County, where his son Tyler is involved in the organization.

In closing, Behme said he appreciated the fellowship he experienced during his time in the Department of ABE. "Whether it was Ag Mech or Ag Engineering, it was just one big family," he said. "I realize that was something very unique to our department."

The ASABE 14th Annual International ¼-Scale Tractor Student Design Competition was also the setting for the first annual "Pulling for ABE" barbecue. The event was held Saturday, June 4th at the Expo Gardens in Peoria, Illinois, and faculty, students, parents and alumni all came together to support the Illini Pullers.

This year the Pullers took 1st in the team presentation, 4th in written design, 4th in design judging (the team also won the Safety Award) and 13th in the performance competition, taking 7th place overall, out of 24 teams.

David Murphy, president of the Illini Pullers, said, "This year we had close to two dozen test pulls at the South Farms before we came to this competition. We received good feedback on our design presentation, and each judge commented on our professionalism."

Another component to the competition allows new members to get involved at a more basic level. Schools are encouraged to rebuild the tractor they entered the previous year, fixing known problem areas and taking it back to competition in a separate event called the X-team Competition. This year the Illini Pullers X-Team was voted the 2011 Champion; they were also the winners of the Award for Best Tractor Pulls, having the longest pulls in both hookups.

Roscoe Pershing, former ABE department head and current member of the ABE Futures Council, helped coordinate the "Pulling for ABE" barbecue, and he was pleased with the turnout. "This is the first time we've connected an alumni event with the tractor pull," he said. "We had over 100 people in attendance, so it was a real success."

Congratulations to the Illini Pullers and the Relentless Chief, for all their hard work and achievement.

Women in Engineering

Women in Engineering (WIE) is a program dedicated to providing a supportive environment for women students in engineering at the University of Illinois. WIE provides a variety of activities for prospective and current students, all geared to encourage women in a profession often considered a male enclave.

Anna Oldani, a senior in the Department of Agricultural and Biological Engineering, has been active in the program since her freshman year. Anna attended the WIE Freshman Camp her first year at Illinois. Freshman Camp is a two-day workshop at the beginning of the fall semester. Students are allowed to move into the dorms early and get acquainted with the campus. The workshop includes sessions on adjusting to college life, study strategies and the engineering profession. It is also an opportunity for the women to meet their classmates before school begins.

"WIE gave me the opportunity to meet some of my closest friends on campus," said Oldani. "Most women in engineering can attest to the statement, 'I met my best friend at WIE camp.'"

Oldani was a camp counselor her sophomore year, she was the assistant camp coordinator in 2010, and she has been selected as Head Counselor for the upcoming Freshman Camp 2011, where she will assist in the camp's planning and organization. She has served on student panels and regularly attends luncheons with prospective students.

Another ABE student, Serena Brodsky, is also an active participant in the WIE Freshman Camp. "WIE camp is a great way to easily gain a solid network of women who are hardworking and motivated," said Brodsky. "After meeting such a supportive and friendly group, you feel very comfortable spending time with them in classes, doing homework together, as well as at social engagements not related to school."

This year the WIE camp will be held August 15-17, with early move-in on Monday (the 15th) at noon with dinner and bowling at the Illini Union that evening. Camp activities scheduled for Tuesday and Wednesday include an overnight stay at the 4-H Memorial Camp on Tuesday, and a return to campus early Wednesday evening.

WIE also provides support for G.A.M.E.S. Camp. Girls Adventures in Mathematics, Engineering, and Science is an annual, week-long camp, designed to give academically talented high-school-aged girls an opportunity to explore exciting engineering and scientific fields through demonstrations, classroom presentations, hands-on activities, and contact with women in these technical fields. This year's G.A.M.E.S. Camp will be held from July 17 through July 23 and offers participants one of four different 'camp' opportunities – Structures, Robotics, Bioengineering/Chemical Engineering, and Girls Learning Electrical Engineering.

Oldani considers WIE one of the best experiences of her time at Illinois. "Volunteering in WIE programs has allowed me to connect with other women engineers and has given me the opportunity to interact with prospective students, answer their questions and encourage them to pursue a degree in engineering at Illinois."



Anna Oldani attends Summer WIE Camp at Illinois.



Left: Participants in the WIE Summer Camp assist one another on the challenge course.

Realistic Solutions in the Real World



Above: Emanuele Graciosa observes survey work at ABE research farm.

Below: Tamara Souza collects data on erosion control project at ABE research farm.



One of the specialties of the Department of Agricultural and Biological Engineering is to give students a real sense of what the outside world looks like, said Dr. Prasanta Kalita, Professor and section leader of Soil and Water Resources Engineering.

"Not much learning happens if all you do is sit in the classroom," Kalita said. "Our students need to understand the problems that are out there so they can position themselves to solve those problems when they graduate."

A different perspective

To that end, Kalita provides his undergraduate students with numerous opportunities to get their hands dirty. Kalita works with the Illinois Department of Transportation and the Construction Engineering Research Laboratory on a manmade berm located on the Department's research farm south of Urbana. This research and training facility was constructed to conduct research in erosion control and storm water management. Last summer two undergraduate students, Ryan Giertz and Eddie Kahle, were employed at the facility, and they worked closely with Kalita to study

different aspects of the project. Both students were motivated to continue their research as part of an independent study project in the fall.

Giertz worked to calibrate the rainfall simulator in the field; he also looked at the performance of sediment control products. "The site is still under development, and there are a lot of question marks as to what to do," said Giertz. "Dr. Kalita has always been open and willing to listen to my suggestions. Some we used, some we didn't. And some worked, and some didn't. But it's been a great opportunity to learn field and research skills outside the classroom on a very applicable project."

In addition, Kalita worked with Emanuele Graciosa and Tamara Souza, two exchange students from Brazil. Both were interested in soil and water resources, but they were only in the States for one semester, so Kalita helped them develop a project that allowed them to work with some of his graduate students. They studied professional literature and collected data on erosion control products and sediment control products, two distinctly different areas.

"When we were conducting experiments in the field, they were there to collect and analyze data," said Kalita. "They participated in meetings, wrote a report and presented their results. They worked out in the field, and they loved it."

When the classroom moves to the community

Kalita also teaches ABE 456, a class which allows his junior and senior students to work on real world problems. In recent years, this class designed a stream bank restoration project for the Camp Atterbury Joint Maneuver Training Center in Indiana; another class evaluated the run-off management system at the Arlington International Race Course in Arlington Heights, Illinois.

This year Kalita's students worked with the Lake Park Home Owners Association of Savoy, Illinois, to evaluate problems that have developed at Lake Park. The class was divided into two teams, and both teams were mentored by upperclassmen who had taken ABE 456 the previous year. The teams worked closely with community residents to address the issues the lake project presented. These issues included stream bank stabilization (repairing the current erosion damage, dealing with excess sedimentation and preventing future erosion), and redesigning the outlet that was easily clogged with leaves and debris.

Both teams defined and evaluated several different options the community could use to solve these problems, and developed a budget for each option. They presented their final recommendations in an open, give-and-take meeting with the community at the end of the semester.

"This is such a good experience for our undergraduate students," said Kalita. "What we do in the classroom is so limited. Students must learn that how we do something in the classroom is not the only solution. I want them to take the background I give them, the tools I give them, and go out into the field. That's where they say 'Hey - that doesn't work out here! We have to think of something different.' That's when they start thinking differently and become innovative."

"If we want our country to remain the most forward-thinking country in the world," he concluded, "we have to start that right here in our undergraduate classes."



Left: Eddie Kahle overlooks ongoing work at dirt berm on ABE research farm.

New Programs Draw Students from Europe and Brazil

It's not just natives of Illinois who find our unpredictable weather more than a little annoying. Eight exchange students from Brazil, Ireland, Spain, Greece, and Italy agreed unanimously that the weather in Champaign-Urbana was the worst part of their study abroad experience this year. But the weather was just about the only negative thing the students had to say about their experience on the Illinois campus.

Students from Brazil and Europe were part of two new projects sponsored by the U.S. Department of Education's FIPSE (Fund for the Improvement of Postsecondary Education). Four students from Brazil were part of the FIPSE US-Brazil program, in which Illinois and Purdue have partnered with the University of São Paulo and the Federal University of Viçosa. [Four additional students came from Brazil and attended Purdue, under the auspices of the FIPSE US-Brazil program.] Four European students were part of the FIPSE-TABE.NET project, or the Transatlantic BioSystems Engineering Network, which is a partnership between Illinois and Virginia Tech. Both projects seek to receive (and send) 12 students to their foreign partners.

Richard Gates, a professor in ABE, is the director of both the FIPSE US-Brazil and FIPSE-TABE.NET programs. Several other professors in the Department (K.C. Ting, Yuanhui Zhang, Al Hansen, Angela Green and Luis Rodriguez) were co-PIs with Gates for the FIPSE US-Brazil program.

"There are very few engineering projects in these study abroad programs that have been funded recently," said Gates, "and of those that exist, three of them are related to ag and bio engineering in one way or another. Illinois is the lead on the FIPSE-Brazil project with Purdue, Kentucky is the lead on another FIPSE-Brazil project with Iowa State, and Virginia Tech partners with us on TABE.NET. When we go to Brazil, we have found it helpful to pool our resources with Kentucky and Iowa State, and that has helped us in securing internship opportunities as well as placing the students."

"We interviewed students for the programs," Gates continued, "and we asked them if they had a preference as to which institution they'd like to attend. We also looked at their backgrounds and interests. What sort of problems had they been working on? What internships had they done or what scholarships had they received? Then we looked to see if there was a professor in one of the institutions that would be most likely to work with that student, so we could make sure they got some individual attention."

Professors are very helpful - and homework? A new experience

That attention to detail seemed to pay off because the students who came to Illinois gave their highest praise to the professors that worked with them.

"We have a totally different relationship with the professors here," said Giovani Nasca, a student from the University of Bari, Italy. "It's great, especially for us, since we don't know anyone for the first weeks. The professors are the only people we know, and they are very, very helpful."

Tamara Souza, from the Federal University of Viçosa, Brazil, said "You are a little afraid sometimes to talk to the professors at home. They are focusing on research, and the class is the second thing they worry about. Here the class is the first."

Thais Bragatto, also from Brazil, said "The professors face you as equal to equal. They pay more attention and treat you as an individual."

All the students said another big difference in the educational system was homework. "We don't have homework at home," said Eoin (pronounced Owen) White, from University College of Dublin, Ireland. "The professor lectures, and we have an exam at the end of the year. There's very little structure. If you're organized, there's no problem. If you're not, it's too easy to say, 'eh, next week.' It's different here. It's very structured, and I find it very intense. It's a new experience, but I think it's a good way to learn."



Above: FIPSE students Thais Bragatto, Anny Clarindo, Pablo Garcia, Eoin White, and Katerina Kassimati attend the Spring Banquet with their advisor, Professor Richard Gates, center.

Below: From left to right: Pablo Garcia, Giovani Nasca, Eoin White, and Katerina Kassimati hiking in Champaign County.



The other students agreed, and another student from Brazil, Anny Clarindo, also said, "The classes have more application for me. They are less theory and more application for practical life, and I think that's much better."

Another practice that seems to be peculiar to Illinois is the use of a bell to signal the end of class. In their home universities, the students aren't happy when "professors think they can keep you in class twenty minutes longer," but they were all still amazed that Illinois students get up and leave at the bell, even if the professor hasn't dismissed them. "That's rude."

More classes to choose from and a variety of electives were other plusses for the international students. They also enjoyed the opportunity to take advantage of the large and varied libraries that were available to them, and several said the use of the internet as a teaching tool improved their computer skills.

All English, all the time"

There were, of course, understandable adjustments for all of them.

"The first month was a little difficult," said Bragatto. "Meeting all these different people and trying to see how they think. American students already have friendships and family, but exchange students don't have anyone, so we are our own support group."

The students spent a significant amount of time together, going to football games as a group and traveling to California, Las Vegas and Chicago over holidays. "We were the only friends we had when we came," said White, "and for us, everything was new. Even though we all made a lot of friends, the Americans sometimes had a 'been there, done that' attitude, so if we wanted to do something, we said, 'Okay, we'll do it together.'"

For seven of the eight students, English was a second language, so that provided additional challenges. Although there is a level of proficiency in English required to participate in exchange programs, "It was the first opportunity most of them had to speak all English all the time," said White, the only student whose native language was English. He stepped up to help several of the other students, especially with housing questions.

"Some of the students came with no housing, and they had to look for apartments when they got here," said White. "They stayed at the Union until they found housing, but there was a bit of a panic because they had to sign contracts. I got phone calls asking, 'Can you come help me? I can't understand this.'"

Two of the young women from Brazil eventually roomed with another student from Chicago. One of the women, Anny Clarindo, said "We thought after some weeks we would be able to understand our roommate's English, but - no."

Giovani Nasca agreed. "People from Chicago don't really speak the formal English that we are taught. The slang is weird, but you need the slang to be able to talk with American people." So Giovani listened to hip-hop and watched television and movies to help improve his English skills.

These students were the inaugural class for the FIPSE Brazil and TABE.NET programs, and Professor Gates said he hopes the things the Department has learned will help make the process smoother for the next group of students. That includes finding ways to help the exchange students connect with one another before they arrive in the States, providing opportunities for them to work on their English skills before classes begin, and working to make sure courses they take satisfy their home institutions' requirements.

For their part, the students hope to be mentors for the next student (or students) from their home universities that participate in the programs, and for the Illinois students heading to their campuses. "We can be available if they need to talk to someone about this program," Giovani concluded. "We can be their liaisons." He grinned. "My French is better than my English."



FIPSE students enjoy a going-away lunch with ABE faculty and staff.

Front row, left to right: Tamara Souza (Brazil), Thais Bragatto (Brazil), Katerina Kassimati (Greece), Anny Clarindo (Brazil) and Emanuele Graciosa (Brazil).

Back row, left to right: Giovani Nasca (Italy), Eoin White (Ireland), Pablo Garcia (Spain).

Ag Safety and Health Program Provides Valuable Service to Illinois Agriculture



Above: Aherin talks with AgrAbility client and Northern Illinois AgrAbility Field Coordinator Brenda Besse.

Below: Bob Aherin gives a presentation at the Child Safety Day Camp.



Agricultural safety and health are complex issues, says Robert Aherin, Professor and Agricultural Safety and Health Program Leader in the Department of Agricultural and Biological Engineering. "We develop training and education programs and policies, we study basic design principles to improve and enhance equipment safety, and we try to understand the behaviors and motivations that make people do what they do."

Aherin works with Robert E. (Chip) Petrea, Research Specialist in Agriculture, to provide individuals and organizations in Illinois agriculture with the information and resources they need to understand and prevent illness and injury.

Extension projects aid community

Two projects that highlight Aherin's and Petrea's involvement in the ag community include FARM (Fewer Accidents with Reflective Materials) and AgrAbility Unlimited, a program for disabled farmers.

The FARM kit was developed as part of a program by a state-wide coalition of organizations that was assembled under the leadership of Aherin, with the primary focus of reducing roadway collisions involving farm equipment. The kit significantly improved visibility of farm equipment operated on public roads and consisted of a new SMV emblem and retro-reflective and fluorescent orange strips to enhance rear and extremity visibility on all sides of farm equipment.

"The coalition worked with an industry group to encourage farmers to put reflective material on their equipment to enhance visibility," said Aherin. "Initially, about 12,000 kits were sold in the state, but there are approximately 750,000 pieces of farm equipment in Illinois moving on public roadways. When we realized that we weren't having the impact we wanted, we went to work with the state legislative committee of the Farm Bureau to pass a law that requires farmers to put SMV (slow-moving vehicle) emblems on new equipment that are visible at 1000 feet, compared to older ones, which were only visible at 400 feet."

This new law was passed by the state legislature, and today all farm equipment that is transported on public roadways in Illinois must have the newly designed SMV emblem. Illinois is the only state to have this requirement, but others are considering implementing this model legislation.

The second project, AgrAbility Unlimited, is a national program that promotes independence and productivity for farmers who have experienced a disabling illness, disease or accident. Aherin has been the program director since its inception at Illinois in the early '90s, and Petrea is the client services manager.

The program offers individualized services aimed at increasing self-sufficiency and independence.

"We also have a 'graying' population on the farm," said Aherin, "so AgrAbility addresses age-related issues as well. We want to do everything we can to help all farmers be as efficient and effective on their farms as possible."

Research analyzes "why people do what they do"

In addition to these types of outreach programs, Aherin said he and Petrea conduct significant research to evaluate the safety behaviors of various agricultural workers. "We use a model called the Theory of Planned Behavior (TPB) to understand the motivating factors in certain behaviors.

"Much of the safety work in the '70s and '80s was focused on reducing injuries and deaths," he continued. "It still is, but injury and death are the ultimate outcomes of unsafe behavior. We think it's better to evaluate those unsafe behaviors and find the most appropriate interventions to try and change them to prevent the problem, rather than wait to analyze it after someone has been seriously injured or killed."

continued on page 15



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Ag Safety and Health Program Provides Valuable Service to Illinois Agriculture

continued from page 14

Attitudes, social pressures and perceived control (the ease or difficulty of performing the particular behavior) are the three factors that the TPB model looks at when evaluating behavior. Aherin used the example of allowing children to ride on tractors to explain the model.

"Most people would agree that having a child on a tractor is a dangerous practice," he said. "But people still do it. Why? Well, if they want to teach their children how to operate farm equipment [attitude] and other children in the community are out on the tractor with their dads [social pressure] and there's no one in the home to watch the children [perceived control], all those factors will combine to make the choice to have them on the tractor, even though they realize it puts the child at significant risk."

Aherin said one factor often overrides the other two. For example, parents might believe that without someone in the home to watch the child [perceived control], having the child with them is better than leaving them alone. One way to intervene in that behavior might be to work with the community to try and provide daycare during the planting and harvest seasons.

Aherin said another example was encouraging pork producers to wear respirators in confinement facilities. "Chip worked with swine producers in the Newton area and found that the producers didn't necessarily see the importance of wearing respirators [attitude], but if the doctor told them it was important [social pressures], that might change their behavior. Availability and cost were also factors [perceived control], so disposable respirators were made available at no cost."

"These behavioral studies help us understand what is motivating a person to either perform or not perform certain behaviors, and it helps us to be more focused in our educational and intervention efforts," Aherin concluded. "We've been working on agricultural safety and health issues for a long time. We address the complexities of many issues that we believe have positive impacts on reducing some of the significant accident risks the agricultural industry faces. The investment in expertise, time and resources to understand and address safety and health issues can be significant, but it preserves the most valuable resource the agricultural industry has---its people."

Hunt Has Lifelong Influence on the Field of Machinery Management

continued from page 3

The second document is titled *When Tractors were on a Steel*. "There's not a rubber-tired tractor in the whole thing," said Hunt, "and this shows the special equipment that went along with tractors on a steel. So this is what I'm happy doing now."

Hunt and his wife Dorothea (Dot) live in Urbana. Dot has been an active member of the community since the Hunts moved here in 1960. She was a 4-H leader for more than 25 years, as well as a founding member and chair of the 4-H Foundation in Champaign County. When some Extension offices began to close in the late 80's, Dot took the lead on a successful referendum to raise taxes "to keep us going!" She retired from the 4-H Foundation several years ago, but Dot continues her 26-year involvement with the local fire department as a trustee, and she works with Church Women United to organize Meals on Wheels for 25 churches in the Champaign-Urbana area.

"Probably the best thing that's happened to me is my wife," Hunt concluded. "She's been a good companion all these years. At the last Departmental banquet, there was a prize given for those married the longest and we won it. Sixty years this September 2nd."

Congratulations to Donnell and Dot Hunt on a long marriage and a life of service!



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