From the Department Head

As I peruse the information in this newsletter it is a reminder of the many activities and accomplishments of our students, faculty, and staff. The past year has been a very good one for the Biological Systems Engineering Department, with strong undergraduate enrollment, and recognition for the achievements of our students and our faculty. Last fall our two undergraduate engineering programs underwent the typical six-year review by the Accreditation Board for Engineering and Technology (ABET), and we are pleased to receive another six years of accreditation for both programs. This spring our other academic programs, our research programs, and our Extension programs were reviewed by an external team led by USDA CSREES; we received strong affirmation for our programs from this team, with some excellent suggestions on actions we can take to ensure we sustain a high level of excellence. As you read of the happenings in the Biological Systems Engineering Department, please give us your feedback, and consider visiting the Department when you are in Lincoln.

Ron Yoder
Department Head

Student Poster Exhibition

The second Biological Systems Engineering E-Day, the annual fall poster exhibition, was held on December 6, 2005, in the Great Plains room of the East Campus Union. Included in E-Day for the first time were 13 teams from Dr. Schulte’s 118 freshman design class for the new Incredible Edible Vehicle competition. In this lively event, the vehicles had to survive rolling down an incline twice before being consumed by team members. Four posters representing AGEN/BSEN 424, Machine Design in Agricultural Engineering, nine posters from AGEN/BSEN 460, Instrumentation and Controls, and one Senior Design Capstone 480 course, rounded out the exhibit. This is the 14th year that students have shown their work in a fall exhibition. This event also supports departmental recruiting. Dr. David Jones worked with Kaylea Dunn in the College of Engineering to make E-Day the culmination of a half-day visit by interested high school students to the College and to the Department.

The event is also an opportunity for alumni to return and represent their companies. Eleven alumni, representing nine companies, attended and shared career information with students. Students have the opportunity to see a broad range of careers and may get a lead on an internship! See recent senior design projects on our web site: bse.unl.edu/undergrad/posters.htm.

If you are interested in representing your company for E-Day in 2006, please contact Dr. Jones at (402) 472-6716 or djones1@unl.edu.

Student Poster Exhibition

Winning team in the Incredible Edible Vehicle competition left to right: Jason Schmit, Brett Freese, Aaron Baumann, and Eric Horn.
Quarter-scale Tractor Team

A after months of hard work and many late nights, the UNL Quarter-scale Tractor Team headed east on June 3, 2005, for the annual ASAE International Competition held at Quad City Downs, East Moline, Illinois. The team was awarded the Serviceability Award, the Campbell Scientific Award (and a Campbell Scientific CR 5000 data logger too!), and first place in the written Design Report. Overall, the team placed tenth, the fifth consecutive year of finishing in the top ten. The team will celebrate eight years of competition when it travels to the new competition site in Peoria, Illinois, in June 2006. Help support the team and learn more by visiting the web site. bse.unl.edu/qrtscale/

Distinguished Fellowship Awards

Hosted by the Agricultural Research Division (ARD), the College of Agricultural Sciences and Natural Resources (CASNR), and the Institute of Agriculture and Natural Resources (IANR), four of our graduate students were honored for the fellowships they received during a September luncheon.

Ajay Kumar, John and Louise Skala Award, ARD  Ajay just completed his master’s degree and is continuing for a Ph.D. His research project is extrusion process modeling for starch-based products. Ajay is also the recipient of a Milton E. Mohr Fellowship from the College of Engineering, and the Raymond J. Tarleton Endowment Graduate Fellowship from the American Society of Cereal Chemists. Dr. Hanna is Ajay’s advisor.

Govindarajan Konda Naganathan (K.N.), John and Louise Skala Award, ARD  K.N. is working on his master’s degree. His research areas are pulsed electric field processing and hyperspectral images, with the core objective of predicting beef tenderness. Hyperspectral imaging couples the techniques of video-image analysis with near-infrared spectroscopy. Dr. Subbiah is his advisor.

Corey Searle, Milton E. Mohr Fellowship, CASNR  Corey is a Graduate Assistant for Dr. Jack Schinstock. His research is centered on uniform seed spacing for corn. He is conducting his research in Scottsbluff, Nebraska, at the Panhandle Research and Extension Center with assistance from Professor John Smith.

Bryan Smith, Milton E. Mohr Fellowship, CASNR  A master’s student in Mechanized Systems Management, Bryan is performing an ergonomic analysis of tractor cabs, investigating both the physical and cognitive aspects of current cab design and operation.
Scoops and Scholars

The fifth annual Ice Cream Social and Scholarship Recognition was held September 20, 2005. The weather cooperated for the event which was held in front of Chase Hall. Thanks to the social committee and faculty super scoopers for making the event a success. Forty-three scholarships, totaling $35,270, were awarded for the 2005-2006 academic year to students in the department's three majors. We are pleased to acknowledge the following scholarship recipients:

**Warren P. Person Memorial**
Zachary Alger AGEN Ravenna, OH
Fred R. Nohavec BSEN Papillion, NE

**Elenore Gakemeier Swarts Distinguished Scholarship**
Tanner Augustin BSEN Juniata, NE
Sarah Hanson BSEN Omaha, NE
Kathryn Milius BSEN Lincoln, NE

**Wayne E. and Virginia R. Thurman**
Tate Augustin BSEN Juniata, NE
Issac Mortensen AGEN Curtis, NE
Nicholas Tomsen BSEN Minden, NE

**Leroy W. and Jean E. Thom**
Matthew Beckman MSYM Elgin, NE
Clayton Bramble AGEN Hastings, NE
Jessica Graul BSEN Hildreth, NE
Aaron Herz MSYM Lawrence, NE
Nathan Jacobitz MSYM Holstein, NE
Timothy Mattson MSYM Chapman, NE
Nicholas McCready BSEN Hastings, NE
Austin Story AGEN Gallatin, MO
Kevin Tacke AGEN Greencreek, ID
Brian Twombly BSEN Troy, KS

**George Milo Petersen Memorial**
Melissa Eman BSEN Peoria, IL
Garrett Pommeranz AGEN Waterville, MN

**MR. AND MRS. W. F. HOPPE, SR. MEMORIAL**
Adam Flaugh MSYM Madison, NE

**John Deere Mentor**
Steven Fleer MSYM Hoskins, NE
Michael Hauger MSYM Canby, MN
Weston Rathje MSYM Roseland, NE
Kurt Petersen MSYM Burwell, NE

**William E. and Eleanor L. Splinter**
Violetta Balayan BSEN Sioux Falls, SD

**Lloyd W. and Margaret V. Hurlbut Memorial**
Whitney Brown BSEN Denton, NE
Amy Dimick BSEN Sioux Falls, SD

**Paul E. and Mary Beth Fischbach and Family**
Joshua Dodson BSEN Norfolk, NE
Jonathan Niebuhr MSYM Dunbar, NE
Ryan Windhorst MSYM Syracuse, NE

**John J. Sulek Memorial**
Colby Gardine MSYM Bertrand, NE

**Case New Holland**
Jonathan Hazen MSYM Sterling, NE
Grant Janousek AGEN Clarkson, NE

**Ivan D. Wood Memorial**
Ross Havlat MSYM Crete, NE
Ross Miller MSYM Davenport, NE

**Edgar Rogers Memorial**
Todd Kavan MSYM Wahoo, NE
Tyler Smith MSYM York, NE

**Leonard G. Schoenleber Agricultural Engineering**
Jakeb Riggle BSEN Elkhorn, NE

**Ken Von Bargen**
Allan Steinkraus MSYM Plainview, NE

**Tom Thompson Memorial**
Nicholas Wiese MSYM Rosalie, NE
More Student News

As a graduate student in Agricultural and Biological Systems Engineering, Melissa Halverson received a scholarship from the Nebraska Water Environment Association at its annual fall conference in Kearney, Nebraska, on November 9, 2005. The award was presented by Nebraska Governor Dave Heineman.

Environmental Engineering graduate student Nick Sutko was awarded the Colonel Theodore A. Leisen Memorial Scholarship by the Nebraska Section of the American Water Works Association. The ceremony was held November 11, 2005; the award was presented by Governor Dave Heineman.

Mechanized System Management graduate student Corey Searle received an award for Teaching Assistant Teaching Excellence. The award was presented during the Holling Family Awards Program at the East Campus Union. This program is designed to recognize outstanding contributions by faculty and teaching assistants in the College of Agricultural Sciences and Natural Resources, University of Nebraska-Lincoln Extension, and the Nebraska College of Technical Agriculture.

Brent Hanson, a freshman from Kearney, received recognition as an Honors Scholar at the Distinguished Scholars Day and Omaha World-Herald Recognition Dinner in Lincoln.

The Mortar Board Society recognized Ross Miller, a Mechanized Systems Management student from Davenport, for superior scholarship. He is president of Alpha Gamma Rho Fraternity. Mortar Board is a national honor society that recognizes college seniors for distinguished ability and achievement in scholarship, leadership, and service.

Amy Dimick was recognized as the Outstanding Senior from the department for the College of Engineering. She also served as the Chair for E-Week, 2006, a college-wide celebration of Nebraska Engineering.

Megan Krause received the O. J. Ferguson Award for the College of Engineering Outstanding Sophomore.

Erica Levorson received the O. J. Ferguson Award for the College of Engineering Outstanding Junior.

Ajay Kumar, from Patna, India, was selected as the Bill A. and Rita L. Stout Outstanding International Graduate Student for 2006 at the department Spring Banquet. Ajay has begun his Ph.D. in the department after receiving his Masters in May.
Program Objectives for Agricultural Engineering:

Upon entering the workforce, AGEN graduates (whether they are involved in machine design, sensors and controls, soil and water resources, or other professional endeavors such as business or law) will be:

1. applying their unique educational backgrounds in agricultural engineering by providing appropriate solutions to problems and adding value to the research, development, and design processes encountered in a variety of work environments;

2. considering systems as a whole when solving problems, looking beyond components and subsystems individually;

3. confidently using the necessary elements of mathematics, statistics, physical science, engineering, computer based measurement and analysis tools and current literature in solving problems and providing design solutions;

4. successfully integrating their technical knowledge with skills in communication and persuasion, leading and working effectively in teams, and understanding cultural diversity and social and political forces that impact engineering decisions, as well as having the capability of competing in an international atmosphere;

5. responsibly addressing issues of health and safety, ethics, and environmental impacts of engineering decisions.

6. continuing their personal growth, education and professional development through various opportunities provided by institutions, professional societies and other venues; and

7. valuing their educational experience by remaining involved in the department as alumni and continually promoting the agricultural engineering program and profession.

Program Objectives for Biological Systems Engineering:

After graduation, BSEN alumni will share the attribute of improving the organization for which they work, and the community and country in which they live. They will do this whether they are involved in biomedical engineering, water resources or environmental engineering, food or bioprocess engineering, or other professional endeavors such as business, law or medicine. In doing so, they will:

1. provide innovative and effective solutions to problems in a variety of work environments through the use of their unique background in biological systems engineering and the biological sciences;

2. look beyond components in isolation thereby providing holistic solutions to complex issues involving, for example, interactions at the ecosystem, organism, organ, cellular or subcellular level;

3. think logically using appropriate elements of mathematics, science and engineering to develop, manage and interpret data, to correctly interpret new research findings and, to design new systems for the benefit of society;

4. successfully integrate technical knowledge with communication and interpersonal skills to lead and work effectively in teams, and to articulate the role of engineering decisions in the workplace, community and world;

5. responsibly address issues such as health and safety, personal and professional ethics, cultural diversity, as well as the social, environmental and global impacts of their work;

6. continue their personal growth, education, and professional development through various opportunities provided by institutions, professional societies and other venues; and

7. remain involved in the department as active alumni who promote the biological systems engineering program and discipline, and mentor future generations of engineers.
At the 2005 Annual International ASABE (formerly ASAE, now the American Society of Agricultural and Biological Engineers) July meeting held in Tampa, Florida, several Department faculty and staff members as well as Department alumni were honored for their research and service.

G. B. Gunlogson Countryside Engineering Award
Extension engineer Rick Koelsch received this prestigious award that is presented annually honoring outstanding engineering contributions to the development and improvement of the countryside. He was nominated for his educational impact on the agricultural community through his environmental programs and is an acknowledged leader in best management practices for livestock production.

Superior Paper Award
Co-authors Tami M. Brown-Brandl and John A. Nienaber (both adjunct faculty), along with Hongwei Xin (Iowa State University) and Richard S. Gates (University of Kentucky), were recognized for a paper award for their publication A Literature Review of Swine Heat Production, published in the Transactions of the ASAE, Vol. 47, No. 1. The committee selects fewer than 2.5 percent of ASAE-published papers from the previous year for superior recognition.

Presidential Distinguished Service Award
Chris Henry, an Extension engineer and educator, was recognized "for his outstanding efforts and successful execution related to the Study Guide for the Agricultural Engineering PE Exam, which resulted in moving the project from an incomplete draft version to a complete, polished publication."

In the Educational Aids Competition, Darrell Watts, William Kranz, and C. Dean Yonts received a blue ribbon for their project Assuring Efficient Center Pivot Irrigation in the Films, Satellite Conferences, Videotapes, and Electronic Presentations category. Under Publications: Fact Sheets, two blue ribbons were won by authors Amanda Fox (Ph.D. candidate), Tom Franti, Scott Josiah (NFS), and Mike Kucera (NRCS) for Planning Your Riparian Buffer: Design and Plant Selection (NebGuide 1557) and Installing Your Riparian Buffer: Tree and Grass Planting, Postplanting Care and Maintenance (NebGuide 1558). As part of a team of 22 authors from Nebraska, Colorado, and Wyoming, C. Dean Yonts and John Smith share a blue ribbon award for the second edition of Dry Bean Production and Pest Management in the Manuals and Workbooks section of Publication awards. In Publications: Bulletins, Mark Risse, Tommy Bass, Casey Rita, Jill Heemstra, and Rick Koelsch won a blue ribbon for their Poultry EMS project.

Elected as ASAE Fellows in the 2005 class were two department alumni: Adel Shirmohammadi and Terry J. Siebenmorgen. Shirmohammadi (M.S. 1977) is a professor in the Biological Resources Engineering Department at the University of Maryland in College Park. Siebenmorgen (Ph.D. 1984) is a professor in the Department of Food Science and the Director of the Rice Processing Program at the University of Arkansas in Fayetteville.

Dale Heermann (B.S. 1959) received the Hancor Soil and Water Engineering Award. He recently retired as Supervisory Agricultural Engineer and Research Leader with the USDA-ARS in Fort Collins, Colorado.

Carroll Goering (B.S. 1959) received the Cyrus Hall McCormack Jerome Increase Case Gold Medal Award. Also currently an ASABE Fellow, he is Professor Emeritus at the University of Illinois.
**Computer Tool Helps Crop Production under Limited Irrigation**

Sandi Alswager Karstens, IANR News

A new University of Nebraska computer program, “The Water Optimizer,” developed by Derrel Martin, professor BSE, and Raymond Supalla, professor Ag Econ, will help farmers make cropping decisions under limited water supplies.

The computer tool will help farmers decide if they should grow different crops, irrigate fewer acres or apply less water to existing crops,” said Ray Supalla, agricultural economist. The tool was developed in response to several years of drought across the state and to farmers facing water restrictions in the Central Nebraska Public Power and Irrigation District, and in the Republican River Basin.

Republican River Basin water restrictions stem from the 2002 settlement involving Kansas, Nebraska, and Colorado over the 1943 Republican River Compact. This settlement found groundwater pumping was covered by the compact, which will limit future groundwater irrigation development in the basin.

It’s really an aid that will help the irrigators make decisions on how to use the limited water supplies they will have,” said DeLynn Hay, Nebraska Extension program leader and former BSE faculty member. The Upper Republican Natural Resources District has had specific water allocations for a number of years, but this is the first time that they will be applied in a broader area that also includes Middle and Lower Republican NRDs. "This tool will help these farmers make cropping decisions that will use the limited water supply in a way to maximize profits for the given situation," Hay said.

The tool evaluates single fields for several crop options. Irrigated crops include: corn, soybeans, sorghum, wheat, alfalfa, edible beans and sunflowers. Dryland crops include: corn, soybeans, sorghum, sunflowers, alfalfa and wheat in continuous, summer fallow and eco-fallow rotations. The tool allows users to input information into a Microsoft Excel spreadsheet, including soil type and irrigation system options. Irrigation options include center pivot or gravity irrigation systems, well or canal delivery, and systems powered by electricity, diesel or natural gas. After entering this basic information, producers enter their production costs, irrigation costs, crop prices, crop type and available water. After these parameters have been set, the program calculates what crops will be most profitable with the given costs and available water.

It gives you specific costs for your operation, and allows you to try a lot of ‘what if’ scenarios,” research associate Scott Nedved said. "By running the model a couple times, a producer can find out if it would be better to produce one type of crop with so many acres than producing another type of crop."

Other potential uses of the program include comparing management strategies such as profit maximizing deficit irrigation, fixed crop rotations, single-year and multi-year full irrigation strategies, or Environmental Quality Incentives Program or Conservation Reserve Enhancement Program leasing.

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Erkan Istanbulluoghlu is a new Assistant Professor with a joint appointment in the Biological Systems Engineering and Geosciences Departments. Erkan received his Ph.D. from Utah State University in Civil Engineering. Prior to coming to Nebraska, Erkan filled a post-doctoral position at MIT.

Monte Shomaker is the new secretary in the west bay, and though she enjoys the view to the west, she can't see Colorado from here. Monte transferred to our department from the Dean's Office in the College of Fine and Performing Arts, and replaced Daphne Nebel.

Although Melissa Mathews had been a part-time employee in the past, she is now a full-time Secretary III, dividing her support between the Director and staff for the Industrial Agricultural Products Center and three department faculty members. Her outside interests include tennis, the outdoors, and time with her family.

After Sarah Sedlacek returned to Alabama last August, Diann Young was welcomed as the new departmental receptionist. She immediately jumped into the swirling activities around her—learning procedures and student names, creating and maintaining departmental databases, and helping with several special major projects, most notably the CSREES report.

Valdeen Nelsen brings a wealth of experience to the department and is the newest addition to staff in the Partners in Pollution Prevention (P3) program. She assumed her position as part-time Program Technician beginning spring semester 2006. Valdeen assists with recruiting students and business partners, teaching and mentoring interns during their field work, and planning for continued growth and development for P3. She has worked on behalf of the public's health for many years, most recently as Program Coordinator for the Master of Public Health program at the University of Nebraska. She holds a bachelor's degree in Education, a master's degree in Public Administration, and serves as faculty for the Great Plains Public Health Leadership Institute.

Nancy Swarts, former secretary in the Soil and Water Resources bay, is now a full-time reporter/photographer for the Milford Times newspaper. She recently won three Nebraska Press Association awards for her work: personal column, feature series, and lifestyle coverage.

For years of service to the University of Nebraska, faculty and staff were recognized in September at the Lied Center for Performing Arts prior to Chancellor Harvey Perlman's State of the University address.

30 years
Dean Eisenhauer
Milford Hanna

25 years
Leonard Bashford
David Morgan

15 years
Debbie Burns
Michael Kocher

10 years
Richard Koelsch

5 years
Viacheslav Adamchuk
Dr. Curtis Weller recently traveled to South Korea at the invitation of the Center for Healthcare Technology Development at Chonbuk National University in Jeonju. Dr. Keum Taek Hwang, Director of External Cooperation for the Center and Dean of the College of Human Ecology at Chonbuk National University, is an Adjunct Associate Professor in BSE and has been a visiting scholar in our department. Dr. Weller was one of the invited speakers at the 2006 International Symposium on Healthcare Technology Development, January 19-21. His presentation was entitled “Lipid Nutraceuticals from Cereal Grains and Oilseeds.” He also participated as a judge during graduate student oral presentations and as a panelist during an open discussion of all symposium attendees.

While in South Korea, Curt also visited Mokpo National University in Mokpo and Seoul National University in Seoul. At Mokpo National University, he gave a presentation entitled “Biodiesel Production in Nebraska and the Rest of the United States” during a symposium on January 23 in the Food Industrial Technology Research Center. The Center has had connections with our department and the Industrial Agricultural Products Center for several years. At Seoul National University, he gave a presentation entitled “Policosanols in Grain Sorghum Lipids” during a mini-symposium on January 24 for the Department of Food and Nutrition, the Program in Food Science and Biotechnology, and the Center for Agricultural Biomaterials.

Before leaving Seoul, Dr. Weller also had the chance to visit with Mr. Byong Ryol Min, a Director for the U.S. Grains Council in Asia, and product development researchers at Haitai, a major Korean snack food company, to discuss the latest nutritionally beneficial research on grain sorghum lipids underway at UNL.

Dean Eisenhauer was on a faculty-development sabbatical this spring at Kansas State University in Manhattan, Kansas to study the potential application of ecohydrology to the management of water resources. Ecohydrology, an emerging science, is defined as the study of functional interrelationships between hydrology and biota at the watershed scale. The theme of his studies was to better understand the hydrology of prairie ecosystems and dryland agroecosystems in Kansas and Nebraska.

Greg Bashford received the 2005 Dinsdale Family Faculty Award from IANR. The award is given for outstanding teaching, research, and outreach in IANR and is specifically intended for untenured faculty who have demonstrated a commitment to academic excellence. Dr. Bashford received a cash award, a certificate, and recognition at a luncheon on April 17, 2006.

Three department faculty members, Jack Schinstock (11th award), Dennis Schulte (8th award), and Greg Bashford were recognized by The Teaching Council/Parents Association of the University of Nebraska-Lincoln. This recognition is a mechanism for positive feedback to UNL faculty about the work they have done with students to encourage the goal of good student/faculty relationships at UNL.

Extension educator Tom Franti is a Nebraska team member of the Conservation Security Program, a new federal program providing an option for conservation-minded farmers and ranchers nationwide. This program establishes a reward for agricultural landowners who meet high technical standards for protecting their natural resources for all citizens in a designated watershed. A signing ceremony was held at the Lawrence Gronewald farm north of Beatrice, Nebraska, on August 2, 2005, to recognize this innovative program. Representatives Tom Osborne and Jeff Fortenberry, speakers from NRCS, local farmers, and the Lower Big Blue NRD also participated.

Extension Engineer Paul Jasa was recognized by the U.S. Department of Agriculture with a certificate for Continuous No-till Promotion in Nebraska. He also received the Outstanding Presentation Award at the National No-Tillage Conference for his presentation “No-Till versus Soil Structure versus Compaction.”

Darrel Martin was one of nine new members elected to the Nebraska Hall of Agricultural Achievement in April. The organization was formed in 1916 and is dedicated to preserving and improving Nebraska agriculture.
1980
Mark Lamb (1980, B.S., AGEN; 1982, M.S., AGEN) is an Engineering Manager for Kubota Tractor Corporation in Georgia.

1990
Stacia Palser (Norder) (1999, B.S., BSEN) is an attorney with Koley Jessnesn, P.C., in Honey Creek, Iowa.

2000
Ryan Shea (2001, B.S., AGEN) has worked at Caterpillar, Inc., since he graduated and is in Kansas working as a Senior Engineer. He recently transferred from Powertrain R & D in Peoria, Illinois, to Global Work Tools and Services in Wamego, where he works on developing tools for forestry applications.

James Schlaman (2001, B.S., BSEN) is a Water Resources Engineer for Black & Veatch in Kansas City. He and coworker Pam Kenel are receiving the Water Resources Division Best Paper Award from the American Water Works Association (AWWA) at the June 2006 conference and exposition. The article Preserving Sustainable Water Supplies for Future Generations was published in the June 2005 issue of Journal AWWA. In May of 2006, Jim received an M.S. in Civil Engineering from KU. He says he will always be a Husker, even though he's working and living elsewhere.

Lakshmi Koppolu (2002, Ph.D.) is the new Manager, Cell Culture Process Development, for Phyton Biotech, Inc., in East Windsor, New Jersey. Her husband, Ajoy (2002, Ph.D.), is a Senior Process Engineer with Merial, Ltd., a Merck and sanofi-aventis pharmaceutical company for animals in North Brunswick, New Jersey. They welcomed their second child, Aneesh, this past July.

Brad Schmidt (2002, M.S., MSYM) is the Maintenance Manager with Bunge North America, Oilseed Processing Division, Council Bluffs, Iowa.

Adam Pont (2003, B.S., BSEN) is an M.D./Ph.D. Fellow at the NYU School of Medicine. He is finishing his second year and will soon be starting the Ph.D. portion of the program.

Andy Nickel (2003, B.S., BSEN) is employed as a High Throughput Geneticist for GeneSeek in Lincoln, Nebraska.

Philip Christenson (2003, M.S., AGEN) is working for John Deere Agricultural Management Solutions as a Product Test Engineer in Iowa.

Derek Robinson (2004, B.S., BSEN) is a new medical student. He and Beth Erickson (2004, B.S., Interdisciplinary Engineering) started medical school at the University of Iowa in the fall of 2005 with the traditional “white coat ceremony.” This ceremony is a tradition at the University of Iowa where first-year medical students receive a white coat in front of parents, faculty, and administration from the medical school.

Jonathan Morse (2003, B.S., BSEN; 2005, M.S., BSEN) is enjoying life and the challenges of being a Ph.D. student in electrical engineering at the Massachusetts Institute of Technology, Cambridge, MA. His dissertation topic is on ultrafast optical technology.

Junjie Guan (2005, Ph.D.) was awarded the Outstanding Poster in Cereal Chemistry by the American Association of Cereal Chemists. He is a Marvin Byer Scholar of U.S. Military Food and Packaging, working in Connecticut as a Lead Product and Process Development Scientist with Watson, Inc. Junjie continues his affiliation with the department as an adjunct faculty member.

Jennifer Melander (2003 B.S., BSEN; 2005, M.S., BSEN) started in the Ph.D. program at the University of Missouri in Kansas City in May 2006. She will be attending an interdisciplinary program in Oral Biology and Engineering.
Alumni Profile

by Eric A. Scott, Agricultural Engineering

In May of 2004, I reached a milestone in my life by graduating from the University of Nebraska-Lincoln with a bachelor of science degree in Agricultural Engineering, with emphasis in Machine Design and Control. During my undergraduate studies, I was privileged to work at the Nebraska Tractor Testing Laboratory. While testing tractors I worked hand-in-hand with engineers from all makes of the tractor world. I did not know it at the time, but this is where the interview process began for me as well as them. I found it very interesting to be studying theory on paper in the classroom during the morning and to be working on tractors in the lab, physically seeing and experiencing the effects of that theory, in the afternoon. This experience grew as classes were completed one by one. During each step along the way, all the staff, in addition to the faculty, were there to coach and encourage. I received the impression that I was more than a student, which made me feel right at home.

Before graduation I accepted a position with Caterpillar, Inc., located in Peoria, Illinois, as a Machine Development Engineer. During the past two years I have been privileged to travel all around North America for Caterpillar, going places I have never gone before. I find the work to be very challenging and I am in an industry I am passionate about.

There is something to be said about learning how to test and analyze data for tractor performance from the tractor-testing cornerstone of the world. As I begin to make my way in Caterpillar, I continually rediscover how lucky I am to have received a formal education from UNL, along with the hands-on education and training I received from the Nebraska Tractor Test Laboratory.

If you would like to share a perspective of how your career has been shaped by your educational experiences in the Department, send an article to Gail Ogden at gogden1@unl.edu or Department of Biological Systems Engineering, 219 LWC, Lincoln, NE 68583-0726.
Graduation

Chancellor's Scholars
Graduating with Highest Distinction, Chancellor's Scholars earned A's in all graded work. Nick and Tanner were part of a three-way tie for first-place ranking in the College of Engineering.

Nick Anderson
Tanner Augustin

Tate Augustin
Graduated with Highest Distinction, ranked 4th in the College of Engineering.

Jason Stark
Graduated with Distinction, ranked 14th in the College of Engineering.

Kurtis Mann
First-string center for the Husker football team, one of four Academic All-Americans from UNL, graduated with High Distinction in Mechanized Systems Management, CASNR.

Superior Scholars
Academic year 2005-2006
The Superior Scholar designation is for students having attained a standing in the upper 3 percent of their college or having been on the Honors Convocation list since matriculation as freshmen.

Scott Albrecht
Tanner Augustin
Amy Dimick

December 2005

Agricultural Engineering:
Scott Albrecht (Emerson, NE)***
Ranked 2" in his class
Adam Huttenmaier (Beatrice, NE)
Austin Lammers (Hartington, NE)
Jason Podany (Clarkson, NE)
Garrett Pommeranz (Waterville, MN)

Biological Systems Engineering:
Neil Eckstein (Lincoln, NE)
Ann Nadurata (Omaha, NE)
Dan Sova (Sioux Falls, SD)
Joel Stenberg (Lexington, NE)

Mechanized Systems Management:
Quentin Cooksley (Grand Island, NE)
Andrew Ferris (Archer, NE)
Jody Imus (Belgrade, NE)
Mitch Ramsey (Wymore, NE)
Joey Roberson (Bertrand, NE)
Nate Wiese (Lyons, NE)
Nick Wiese (Lyons, NE)

May 2006
Agricultural Engineering:
Chris Junck (Carroll, NE)
Jason Stark (Plainview, NE)***
Kevin Tacke (Green Creek, ID)

Biological Systems Engineering:
Nick Anderson (Papillion, NE)*
Chris Artz (Hastings, NE)
Tanner Augustin (Juniata, NE)*
Tate Augustin (Juniata, NE)*
Jonathan Camp (Lincoln, NE)
Amy Dimick (Sioux Falls, SD)
Melissa Eman (Peoria, IL)
Jessica Graul (Hildreth, NE)
Sarah Hanson (Omaha, NE)
Nick McCreedy (Hastings, NE)
Kathryn Milius (Lincoln, NE)
Corri Synak (Lincoln, NE)

Mechanized Systems Management:
Matt Beckman (Elgin, NE)
Matt Echtenkamp (Cairo, NE)
Ross Havlat (Crete, NE)
Aaron Herz (Lawrence, NE)
Nathan Jacobitz (Holstein, NE)
Todd Kavan (Wahoo, NE)
Kurt Mann (Grand Island, NE)**
Garth Ostergard (Callaway, NE)
Allan Steinkraus (Plainview, NE)
Ryan Windhorst (Syracuse, NE)
Adam Wollenburg (De Witt, NE)

Graduate Students:
Krishan Ginige, M.S.,
Environmental Engineering
Melissa Halverson, M.S.,
Agricultural and Biological Systems Engineering
Ajay Kumar, M.S.,
Agricultural and Biological Systems Engineering
Travis Yonts, M.S.,
Agricultural and Biological Systems Engineering
Balaji Sethuramasamyraj, Ph.D.,
Agricultural and Biological Systems Engineering.

UCare Spring 2006
Undergraduate Research

Josh Dodson completed a UCare Research Project with a "Portable Probe for On-the-spot Measurement of Soil pH." His faculty advisor was Dr. Viacheslav Adamchuk. Qualified students may apply for the Undergraduate Creative Activities and Research (UCARE) program. Funded by the Pepsi Endowment and Program of Excellence Funds, UCARE is a university-wide program that allows students to work directly with faculty members in conducting research, serving as research assistants, or undertaking independent research projects.

* Graduated with Highest Distinction
** Graduated with High Distinction
*** Graduated with Distinction
MSYM Student on Winning Team

Mike Hauger, from Canby, Minnesota, a Mechanized Systems Management student in the John Deere Dealership Management program was a member of the UNL National Agri-Marketing Association (NAMA) team that won the outstanding chapter award in national competition for the second year in a row. The team award for their marketing plan for a non-cross pollinating corn was presented at the 2006 NAMA conference in Kansas City, Missouri, in April. The award is based on all chapter functions including its mentoring program, chapter communications, membership recruitment, and workshops.

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Five Mechanized Systems Management students attended a John Deere Dealership Management conference. Seen outside John Deere’s Waterloo Tractor factory are, from left to right, Michael Hauger, Dane Mosel, Steven Fleer, Kurt Petersen, and Weston Rathje. Photo by Bill Campbell.

Early in the spring of 2006, students in Unit Operations of Biological Processing (BSEN 446/846) and Food Engineering Unit Operations (FDST/MSYM 465/865), both taught by Dr. Curt Weller, toured Nebraska’s largest brewery, Empyrean Ales, in the Haymarket area of downtown Lincoln. For the past several years, both classes have been visiting this business to see actual processing equipment typical of food and beverage industries in operation. Not all students are familiar with equipment (unit operations) used in industry. The tour helps in their understanding of the basic physical-chemical phenomenon that occurs in each piece of equipment. Later in the semester, the students also visited Nebraska’s largest winery, James Arthur Vineyard, to see its unit operations.
Chris Henry, Extension livestock waste specialist, received a prestigious Fulbright Scholarship for nine months of study in Australia focusing on the issue of how odors from livestock waste affect the environment. The University of Southern Queensland, National Centre for Engineering in Agriculture, was the host institution. Though Australian cattle are raised in a manner similar to those in the United States, Australian regulating agencies have been working on odor and environmental impact issues longer and have a highly developed regulation system that affects the planning and permitting process. There is no U.S. federal standard for livestock odor, although there are regulations relating to certain components that comprise livestock odor. Each state or territory in Australia can adopt guidelines if it wishes; there is no federal mandate to do so. Though research on American livestock feedlot and confinement operations focuses mostly on runoff, researchers in our department have been working on odor footprint models for several years.

Chris and his wife Heather found the trip to Australia an arduous one. Flying from Lincoln to Los Angeles took about eight hours, then eleven more from L.A. to Fiji, where a three-day layover awaited them. Chris discovered a swine confinement operation housing about 5,000 head on Fiji. The owner was planning on doubling his operation, though there is only one processing plant. Pork may soon join sugar cane and tourism as a third major business there. From Fiji, they flew to Brisbane, in the state of Queensland, and then drove to Toowoomba, their new home for the next nine months. Once settled and after learning to drive on the left side of the road, Chris met with his new colleagues to begin work. Chris was the first Fulbright recipient to be stationed in Toowoomba and the only Fulbright scholar working in the agricultural industry.

One of the agencies that Chris worked with, The National Centre for Engineering in Agriculture, is a joint venture between the University of Southern Queensland and the State of Southern Queensland through its departments of Primary Industries and Natural Resources (PINR). Chris established connections within FSA Consulting, a firm that handles most of the livestock facility permits from its two offices in Australia. He learned that a two-tier approach is used for emission estimation using dispersion models, a process Galvin pioneered. Within two months, Chris presented his first seminar to a group of colleagues about the U.S. regulatory system, the extension program he

The second tier involves modeling the proposed site, resulting in a more detailed approach than what is practiced in the United States. Chris met with personnel in the Department of Primary Industries and Fisheries (DPI&F), which is the Australian version of our university research effort, university extension, and regulatory agency (Nebraska Department of Environmental Quality) all rolled into one. The agency is responsible for research, enforcement, and extension education. This is a stark contrast to the U.S., where research, extension, and regulators are often separated. He met Geordie Galvin, the leader of the air/odor group, and learned that they are currently using TAPM, Ausplume, and WinTracks as primary models. He also collaborated on a project to evaluate the back-calculation technique for odor emission estimation using dispersion models, a process Galvin pioneered. Within two months, Chris presented his first seminar to a group of colleagues about the U.S. regulatory system, the extension program he
system, the extension program he works on, and the status and progress of odor research at UNL. Chris learned that with a less aggressive approach in presenting his own work, these scientists were more receptive and comfortable presenting the depth of their research. By acknowledging that there are many experts working worldwide on this topic, the opportunity for more communication and cooperation was opened up.

Chris attended the Clean Air Society of Australia and New Zealand (CASANZ) conference where he presented twice: once for the odor workshop, and again for a joint session between the odor and modeling workshops. His presentation essentially contradicted what the previous modeling expert (also American) had presented, who was unaware of the work that has been going on in Nebraska. This illustrated some of the poor communication between scientific groups around the world and in our own country. As with many scientific research projects, there is controversy among Australian experts about whether a flux chamber with an isolation hood or a wind tunnel should be used to measure emissions. This ten-year debate further illustrates the complex problem of how humans and livestock can co-exist in a rural landscape.

One of the consulting trips Chris took included assisting with a feedlot survey and touring a new feedlot under construction. The design of feedlot drains (which move a lot of runoff to sediment basins), side and cross slopes, top and bottom widths, and vegetation are all specified in the permit process. No surface water ris leaves a feedlot; it is all collected by a series of ring tanks and pumping stations. The feedlot was being expanded to accommodate an ethanol plant, a very rare pairing. Ethanol is just gaining visibility as an alternative fuel in Australia, and the producer wanted to make use of the plant-generated by-products as a feed source for the livestock. Organic manure is a valued commodity to non-livestock farmers, so there is little waste in the entire process. The addition of manure to the soil helps soil moisture retention, a very important aspect of farming in a country faced with drought much of the year. Twenty thousand metric tons of manure are applied to 4,000 acres at the approximate rate of five metric tons per acre. Sometimes the rate is 15 tons per acre on a three-year rotation. Chris said that many towns are on the brink of having no water; only two-minute showers are allowed. Many farmers have zero yield from crops.

Lest you think the nine months were all work and no play, Chris and Heather took in plenty of sights. From Tasmania to the Great Barrier Reef, to trips with family members who came to visit, and gatherings with fellow Fulbright scholars, there was plenty to do and see. One of the highlights was an invitation from the U.S. Counsel General, Mr. Stephen T. Smith, and the Seventh Fleet to attend a reception aboard the USS Blue Ridge. Amid all the pomp, Chris learned that the U.S. Counsel General spent the early years of his life in Nebraska, on the family cattle ranch near Paxton in the Sandhills. Chris also met William A. Stanton, the Charge d’Affaires ad interim, and received a certificate and a Fulbright pin from him. Chris and Heather became accomplished scuba divers, took in natural scenic wonders (Cedar Creek Falls, Ayers Rock, salt lakes, the coast), food-processing plants (sugar cane, ginger, beer, chocolate, exotic fruit) and saw lots of wildlife (kangaroos, koala, kookaburra, snakes, camels, whales, and dolphins). They also came home with an undelivered souvenir, who has since arrived: their first child, son Conner.

At the conclusion of his trip, Chris published two reports and has three journal articles on hold due to the sensitive nature of some scientific and proprietary information. His work was used to set new odor policy for the Australian feedlot industry. Chris says that one of his main accomplishments was establishing connections between colleagues in Australia and Nebraska. The Fulbright Scholarship provided the opportunity to grow professionally and the perspective to see how research in America and Australia can fit together for continued progress in livestock issues for both countries. He will continue to use the knowledge he gained as he continues work on his Ph.D.
Visitors to BSE

From Mayo Clinic
Dr. Mike Kocher explains the features of the therapy walker (he is one of its patent holders) to James W. Youdas, a visiting physical therapist from the Mayo Clinic.

Presidential Visit
Otto Loewer, ASABE President and Fellow, visited our department in October 2005. After speaking he joined us for our annual Feed Our Graduate Students lunch.