


December 1999



Season's Greetings!

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Happy Holidays!

As I prepare this season's greetings to all our alumni and special friends, there are about 40 days left in the 1900's. Many are frantically preparing for the expected Y2K glitches. The Department has done due diligence in preparing for Y2K and I do not expect our alumni database to "disappear" on January 1. In fact, I do not foresee any problems with our department computer, instrumentation, and electronic systems.

Personnel changes are occurring rapidly. Prasanta Kalita joined the Soil & Water faculty this fall. Mark Mohr is now handling the Pesticide Applicator Training (PAT) program. Al Hansen will be moving his family from South Africa to join the OREE Section by January 1. We are near the interview stage in identifying a replacement for Bruce Litchfield's move to the College of Engineering Dean's office. Applications are coming in for the Extension position in Precision Agriculture and with Kent Mitchell's pending retirement, we must begin a search to fill his "very large" shoes.

As you can surmise, our Department is quickly taking on a new "youthful" look. With Kent Mitchell's announcement of retirement on March 1, 2000 the Department closes out a major chapter of history and tradition. With me as the only possible exception, our faculty are relatively young and are establishing a new culture and legacy for the 21st century. We will build on the strength and reputation of our former faculty to maintain a Department that is relevant to the times but maintains the standard of quality that have been established by our previous faculty, staff and students.

Students remain our primary focus and we continue to attract quality students at both the undergraduate and graduate level. Our two student clubs remain very active and again placed very high in the ASAE EMI competition. This year we are also serving as the official department home for the SAE Mini Baja design competition. The students are provided an 8 Hp engine and build a vehicle around the engine. Last year's team placed sixth out of about 90 entries in the midwest competition.

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We are spending a significant amount of time thinking about how to better prepare our students to handle issues of the next century. The technology, skills and competencies required of graduates is a lot different than it was for most of us that graduated more than 10 years ago. We are challenged to stay ahead of these rapidly changing times. Information technology is now dominating everything we deal with. Former Heads indicate that mail and phone calls controlled their lives. Now email is the preferred mode of communication and dominates my office time.

We are planning to host an alumni reception during the ASAE International meeting next summer at Milwaukee (July 9-12). Plan to attend and meet our new faculty as well as visit with "old" friends and acquaintances. Details will be in the summer newsletter.

We really enjoy hearing from alums. Please send us information about new happenings (marriages, babies, job changes, etc.) E-mail makes communication very easy. Also stop by for coffee when you are coming through this area. Have a blessed holiday season!

Loren E. Bode
Head of Department

Happy Holidays
and
Best Wishes for 2000!



Awards

University Extension

The evening of October 12 was a good night for the Agricultural Engineering Department! At the 1999 Annual Extension Awards Banquet held in Urbana, Illinois, two of our faculty received well-deserved awards.

Dealing with a major challenge is often eased by having the right person in the right place at the right time. Such was the case with a new state law mandating producer education on livestock waste management and the response led by **Ted L. Funk**, Extension Specialist in Agricultural Engineering. Ted's response and his leadership role in developing the *Certified Livestock Manager Training Program*, along with other achievements during his 19-year career, earned him the **Sustained Excellence in Extension Programming Award**.

The Certified Livestock Manager Training Program is one in a series of successful efforts by Ted over his Extension career to serve agriculture. Each year he responds to about 150 telephone calls and letters from producers on topics related to animal waste. He has accumulated data that helps producers better manage waste lagoons, and he obtained funding for a research project that seeks to develop a new type of variable-rate slurry spreader that will enable farmers to ensure the environmentally correct rate of manure application on land.

Ted's enthusiasm, creativity and dedication make him the right man at the right place at the right time for the Illinois livestock industry.



Ted Funk and Dennis Campion

A Nationally Recognized Program ...

In the mid-1990s, the rapid expansion in the size of livestock operations and vertical integration collided with environmental concerns. Accounts of manure spills in North Carolina, Iowa and Missouri raised public awareness of potential problems and created a need for new programs. The new Illinois Livestock Management Facilities Act put in place a new structure of requirements and accountability, but no programs to meet its provisions.

Extension's Manure Management Team stepped forward with a series of programs that explained new regulations to producers and prepared them to meet the new standards. The approach was multidisciplinary with representatives from the Departments of Agricultural Engineering, Animal Sciences, Crop Sciences and Agricultural and Consumer Economics.

The representatives from Agricultural Engineering – **Ted L. Funk** and **Randy Fonner**, Extension Specialist, CLMP Facilitator, received the **Outstanding or Innovative Program – Group** for the “**Manure Management Team.**”

National

Philip Buriak, Professor Agricultural Engineering and Coordinator of Technical Systems Management is a 1999 recipient of the **National Excellence in College and University Teaching in the Food and Agricultural Sciences Award**. This prestigious award is sponsored by the United States Department of Agriculture (USDA) and the National Association of State Universities and Land-Grant Colleges. The national award, one of two given each year, includes a stipend to be used by the recipient for the improvement of teaching at his college or university.

The Department

The Graduate Fellowship Recognition Program was held on November 4, 1999 and five of our graduate fellows were recognized.



Pictured left to right Dr. Loren Bode, Head of Department, Eric Benson, Ana Maria Garcia, (seated) Jason Kwiatkowski and Keli Christopher (not pictured, Mark Wilkins.)

Teachers Ranked as Excellent ...

The Incomplete list of Teachers Ranked as Excellent by their Students for Fall 1999 has been released. Congratulations to Philip Buriak*, Carroll Goering, Chris Harbourt (TA)*, Michael Hirschi, Kent Rausch and Jeff Zuerher (TA). (TA – Teaching Assistant; * - Instructor ratings were outstanding.)

Association

The American Association of Cereal Chemistry (AACC) held its annual meeting in Seattle, Washington October 31-November 4.

Steve Eckhoff, Professor in the Food and BioProcess Engineering Division, received the *AACC Excellence in Teaching Award*. The award is presented to an AACC member and current teacher who has made significant contributions through teaching in the broad field of cereal science and technology. **Christy Thompson**, graduate student in the Food and BioProcess Engineering Division, won the Corn Refiners Association poster competition. Her poster is based on her current masters work and was entitled, “*Recovery of Solids and Nutrients Contained in Corn Wet Milling Coproduct Streams.*” Posters were judged by a panel for content, appearance and also for the verbal presentation by the presenter.

Department News

New Faces for 1999 ...



Dr. Prasanta Kalita joined the department as Assistant Professor of Agricultural Engineering in the Soil and Water Division on August 1, 1999. Dr. Kalita received his B. Tech in Agricultural Engineering from Punjab Agricultural University in India and his M.S. in Soil and Water Resources Engineering from the Asian Institute of Technology in Thailand. He received his Ph.D. in Soil and Water Agricultural Engineering from Iowa State University. Prior to coming to the University of

Illinois, Dr. Kalita was with the Biological & Agricultural Engineering Department, Kansas State University.

Prasanta's current research areas include watershed-water quality modeling, GIS, non-point source pollution control and animal waste management. Characterization of processes and pathways for pollutant transport (sediment, agricultural chemicals, and microbial organisms) on watershed scale and developing best management practices are of immediate concern.

New PAT Extension Specialist ...

With the departure of Bob Wolf to Kansas State, **Mark Mohr** joined the department on October 21, 1999 as the new Extension Specialist, Pesticide Applicator Training. Mark is an alumnus of the department having received his B.S. in Agricultural Mechanization in May of 1996.

Changes for the Millennium ...



On March 1, 2000, Professor J. Kent Mitchell will retire after 35 years with the department and with his retirement closes out a major portion of the history of our department. Dr. Mitchell has a distinguished academic career in teaching and research. He loves teaching and working with students and has influenced the lives of hundreds of young adults. He has helped develop and maintain high academic standards for both our undergraduate and graduate programs. Kent has advised and taught all the undergraduate students majoring in soil and water resources engineering at the University of Illinois for over twenty years. He has an international reputation for his expertise in the area of soil erosion and sediment transport. Kent is a model individual who has devoted his career to advances in soil and water resource engineering. Please join with everyone in the department in congratulating Kent on his forthcoming and well-deserved retirement!

Ongoing Research

High Efficiency Aerodynamic Deduster for Air Cleaning

Yuanhui Zhang, Associate Professor, Bioenvironmental Engineering

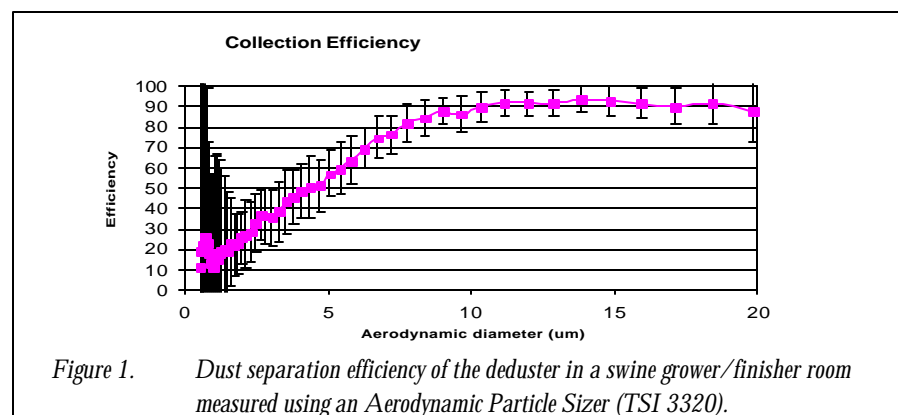
The Issue: Primary health problems associated with indoor environment, especially confinement animal buildings stem from a complex mixture of hazardous airborne dust particles carrying ammonia, bacteria and odors. Dust in animal buildings has three unique characteristics compared with other types of dusts: biologically active, high concentration and odor carrier. Particles smaller than 10 microns, so called respiratory particles, are responsible for the chronic respiratory diseases in farmers and Sick Building Syndrome (SBS) in residence buildings. These respirable particles are very difficult to remove from air streams. The dust concentration in a pig building is typically tens to hundreds times higher than a residential building, thus making the conventional air cleaning technologies, such as filtration and electrostatic precipitation, not practical. Existing cyclone dust separators require at least 500 Pascal (2-inch water) pressure to operate. These high pressures prevent the cyclone from application in indoor environments, as most fans in animal buildings have a cut-off pressure of less than 250 Pascal (1-inch water). Even more impractical, particles smaller than 10 microns can not be separated at that high pressure because of the strong turbulence associated with the high pressure.

The Research: We have developed a unique aerodynamic uniflow deduster to separate particles in air streams. The device, unlike the conventional cyclones, can remove

respirable particles at pressures as low as 50 Pascal. With a better understanding of fluid dynamics and particle physics, the deduster employs a set of turbine-type vane guides, an involute separation chamber and a flow converging section to minimize turbulence and reduce the pressure loss. Figure 1 shows the particle separation efficiency of a 288-cfm prototype in a swine building. The cut-size, which is defined as the smallest particle diameter at which the separation efficiency is 50 percent, is about 4 microns. In terms of particle count concentration measured using particle counters, the particle separation efficiency of the deduster was 90 percent for particles larger than 10 μm and 77 percent for particles larger than 7 μm . In terms of mass concentration measured using mass samplers, the particle separation efficiency was 85 percent. Because most of the dust mass is attributed to the larger particles, the number separation and mass separation efficiency agreed very well. Research in progress includes applying principles of molecular diffusion and particle coagulation to remove

undesirable gaseous molecules such as ammonia and odor in the air stream. Preliminary results shows that it can remove 60 percent of gaseous ammonia (in addition to the ammonia attached to particles) in the air stream.

The Application: The deduster could be an effective technology to reduce the dust and odor emission from animal facilities. A wider application of the deduster may be found as an indoor air cleaner for residential and office buildings. Americans spend 97 percent of their lifetime indoors (including four percent in vehicles), and there is an increasing awareness and concern of indoor air quality and Sick Building Syndrome. There are estimated one million "sick buildings" (buildings with poor air quality) housing 70 million people in the U.S. With an automatic flushing (timer-controlled) system, the deduster requires minimum maintenance and can be easily incorporated into the existing air supply systems in residential and office buildings. You may not need to change furnace filters at home anymore.





News from the ASAE District 3 Director

John Reid, District 3 Director of ASAE, is working to provide local services to ASAE members in two inactive sections in District 3. During the '90's the Central Illinois and Chicago Sessions of ASAE became inactive and ASAE members lost an ability to network with other ASAE professionals. A set of interim officers has been selected for these sections and meetings are being planned for the spring semester. The interim officers for the Central Illinois Section are Qin Zhang (Chair) and Michael Hirschi (Secretary/Treasurer), both from the University of Illinois.

The interim officers for the Chicago Section are Monte Dickson (Chair) and Ross Peebles (Secretary/Treasurer), both from CNH Global. A meeting announcement for the spring is being planned and will be mailed to existing ASAE members. If you are not a member, but would like to receive information on this meeting, please contact John Reid (mail to j-reid1@uiuc.edu or 217.333.2738.)

**“Agricultural Engineering
on the Prairie: Illinois Style”**

If you are interested in purchasing our history book, “*Agricultural Engineering on the Prairie: Illinois Style*,” please send your check in the amount of \$25.00 and payable to the University of Illinois to:
Agricultural Engineering History Book
Attention: Mary Beth Munhall
1304 West Pennsylvania Avenue
Urbana, IL 61801

Toronto Alumni Reception



An alumni reception was held this past summer at the 1999 ASAE Annual International Meeting in Toronto. There were about 75 alumni, faculty and friends in attendance. Everyone had a wonderful time meeting with old friends and acquaintances from the department, renewing old friendships and catching up on the past.

Retirement Parties!

With **John and Jean Siemens** both retiring at the same time, on May 22, 1999 they decided to pitch a tent on their lawn and invite their family, friends, colleagues and neighbors to enjoy “their” retirement! The tone of the evening was set when John explained how he obtained the cast on his arm – by falling out of a tree when demonstrating to a neighbor how to cut a tree limb without it falling into the flower garden.

John explaining his cast



Receiving certificates from Dean David Chicoine and Loren Bode.



A retirement dinner was held on June 5, 1999 to honor and pay tribute to **Carroll E. Goering** for his long and distinguished career. Carroll retired on May 20 after spending 22 years as a faculty member of our department. About 90 family and friends joined and attended the celebration.



Loren Bode presenting Carroll with his certificate



Carol and Carroll Goering

I think Carroll is making a point???



Congratulations to Carroll Goering and J ohn Siemens!

Undergrad News

Illinois Student Engineering Branch Takes Honors in EMI Engineering Awards Competition

The University of Illinois' Student Engineering Branch of ASAE – the Society for Engineering in Agricultural, Food and Biological Systems – took first runner-up honors in the annual Equipment Manufacturers Institute (EMI) Trophies Competition for branches numbering 33 or more members.

Mr. Douglas M. Durlant, Deere & Company, Chairman EMI Farm Equipment Council Engineering Committee, presented a plaque acknowledging the 1999 award to branch representatives at an awards ceremony held during the ASAE Annual Meeting in Toronto, Ontario, Canada last June.

EMI, the major trade association for manufacturers of agricultural, industrial and construction equipment in North America, sponsors the annual competition. EMI presents awards to the student branches which compiled the most outstanding record of activities and achievements in the previous year.

Shop Talk - 1999 UIUC SAE Mini Baja

by Jason Meredith

Dedication and determination. That is what can be said about the 1999 UIUC SAE Mini Baja team. Learning from their mistakes in the 1998 Mini Baja season, the 1999 UIUC SAE Mini Baja team set out with the intention of designing, building, and competing an award winning mini baja car. In the competitions they would enter, the team would settle for no less than top ten in the endurance race and top ten overall.

The 1999 season started with some key organization and planning. It took some determined work from the business team to find sponsors that would help finance the new car. Nothing but dedication and hard work came from the design teams in designing this new car. It was chosen to iterate off the 1998 car due to its superior handling characteristics, but fix and fine-tune the flaws. The 1999 car, named "Digger" would incorporate an independent, front dual a-arm suspension with a solid swing-arm suspension in the rear. The V-Belt CVT was used again for its reliability and performance advantage and 1999 would be the last year that SAE Mini Baja would be using the 8 horsepower engine. Since the power was fixed, weight conservation was of utmost concern. The initial goal was to keep the weight under 300 pounds, something unheard of in Mini Baja competitions. The design concluded in November 1998, and the construction began in December. By bending and TIG welding the

chromoly tubing and reducing weight wherever possible, Digger's race trim weight was 310 pounds.

In addition to building a Mini Baja car, the UIUC SAE Mini Baja team won first place awards for their display in the University of Illinois Engineering Open House. They also took some time to travel to high schools and talk to students about universities and getting involved in SAE activities.



"Digger" & Company

In April, the team traveled to Kansas State University, in Manhattan, Kansas, site of the 1999 SAE Mini Baja West Competition. The team had been to the 1997 West competition, but we were determined to bring some hardware back to the University of Illinois. In the first day, the team displayed Digger in static judging and presentations, where they were awarded a 5th place in design. With some quick thinking and acting, the team passed tech judging and was ready for the dynamic events. The second day consisted of the initial dynamic events – the hill climb, acceleration

runs, and the maneuverability course. After it was all said and done, the University of Illinois ended the day on top of the world with a first place in maneuverability, first place in hill climb, third place in acceleration, and first place overall! The final day of competition was the dreaded endurance event. UIUC started on the outside pole position, and made a few laps before a brake line broke. After a quick fix and change of drivers, Digger made a few more flawless laps before being refueled. About 2/3 through the race, a serious design flaw was found when

Digger destroyed the driveline and ended the day. That driveline failure dropped the team to 21st in the overall rankings (out of 70 teams), but the team was taking home all their first place dynamic awards, something that the UIUC SAE Mini Baja team has never done before.

After a thorough prepping of the car and some testing time, the team headed to Dayton, Ohio, home of the 1999 SAE Midwest Competition. The first day consisted of the static judging, where the UIUC garnished a 3rd place in Serviceability. The second day of dynamic events concluded with mediocre performance in the hill climb and acceleration, and also the problem with the driveline arose again, but in a different place. With some hard work, Digger was fixed, and this time for good. The endurance race started with UIUC about half way back in the field. With some persistent but conservative driving and pit time, the team finished the day in the top ten

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Alumni News

1950s/1960s

Gary Hedge (BS '59) retired after 7 years with International Harvester and 33 years with Birkey Farm Store, Inc.

Owen P. Lee (BS '64) retired January 2, 1999 from USDA's Natural Resource Conservation Service (NRCS) after 36+ years of service. For the last 21 years, Owen worked in the National office reporting information about NRCS projects

Art Muehling, Retired Professor, recently spent some time visiting the **W. Ralph Nave** (MS '63) while traveling in the San Francisco area. Art informs us that Ralph retired from USDA/ARS and that he and his wife, Greer, are living in the Benicia, California area and doing well. Ralph keeps busy with a little consulting work.

Dorland W. Smith (BS '58) retired at the end of 1998 as General Manager of the Menard Electric Cooperative.

Stephen C. Wood (BS '60) was named as Technical Director for Black Brothers Company, Mendota, Illinois on May 1, 1999.

1970s/1980s

Anwar Alam (Ph.D. '72) recently e-mailed us the information that he has held the position of Deputy Director General of the Indian Council of Agricultural Research in New Delhi, India since January 1998.

Alan A. Fairgrievies (BS '86) e-mailed us that business is very good at Cummins! They recently launched the ISX engine, the first dual overhead cam diesel engine for the heavy-duty automotive market (class 8 trucks).

Marcia A. McCutchan (BS '86) is Vice President and part owner of Rezek, Henry, Meisenheimer and Gende, Inc., a civil and environmental engineering consulting firm with offices in Libertyville and Elgin, Illinois. Marcia is the managing owner of the Elgin Office. She specializes in drinking water, wastewater and storm water management projects.

In July we learned that **Carl D. Meinhart** (BS '89) won the National Science Foundation's Career Award, its highest award for young faculty. NSF bases the Career Award on a written career development plan outlining the research and teaching components of the candidate. Carl's proposed research deals with developing Particle Image Velocimetry for making velocity measurements with micron-scale spatial resolution and applying the technique to investigate mixing phenomena at the microscale. Carl is an Assistant Professor in the University of California - Santa Barbara's Mechanical and Environmental Engineering Department.

We heard from **Ronald L. Reichen** (BS '73) in June that he had accepted a promotion to project engineer at the new John Deere Turf Care facility in Fuquay Varina,

North Carolina. Ronald is project engineer of greensmowers, trim mowers, cutting units, and cutting unit attachments.

1990s

Nathan B. Barnes (BS '99) married Victoria Pobanz on May 22 at Orion, Illinois. After a wedding trip to the West Indies, the couple is residing in Morton, Illinois

In April of this year **Thomas I. Burenga** (BS '96) took a promotion to become the John Deere Territory Manager for Western Pennsylvania.

Eric E. Hodel (BS '97) is currently the Ag Challenger and Lexion Combine Instructor for Caterpillar. Eric teaches dealer personnel, technical communicators and field representatives about the Ag Products. In August, Eric traveled to Australia to teach them about the combine as CAT introduces the Lexion combine for the first time overseas.

Symatha C. Newman (MS '99/BS '91) has joined the mechanical engineering staff of Blank, Wesslink, Cook & Associates, Inc., an architectural engineering firm in Decatur, Illinois.

Karl W. Scherer (BS '98) married Colleen Strunk on May 22, 1999 in Champaign, Illinois. Karl is an Industrial Engineer at NACCO Materials Handling Group, manufacturers of Hyster and Yale forklifts in Danville, Illinois. The couple reside in Champaign, Illinois.

Army 2nd Lt. **Benjamin W. Wright** (BS '98) graduated from the Infantry Mortar Leader Course at Fort Benning, Columbus, Georgia.

Congratulations to our August and October 1999 Grads!

B.S. Degrees

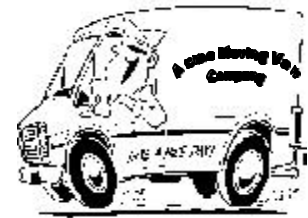
Robert W. Brown
Levi P. Leake
Andrew M. Leone
Armando Najera, Jr.
John E. Tuntland

M.S. Degrees

Christopher M. Harbourt
Paul S. Miller

Ph.D. Degrees

William J. Northcott, Jr.
John-Brian Priest
Brian L. Steward



Moving ??? Don't forget to write!

Condolences!

The department wishes to extend its deepest sympathy to the families of two alumni:

B. Jack Butler (MS '49/BS '48) alumni and former UI Professor of Agricultural Engineering from 1958 to 1983, died June 29 at Mason District Hospital, Havana, Illinois. While at the UI, he was awarded the W.L. Everett Teaching Excellence Award and the Stanley Pierce Award

Richard E. Reeves (BS '47). Mr. Reeves passed away June 1, 1999 of cardiac arrest after having had heart surgery.

Ryan T. McGinn
1978 – 1999

The faculty, staff and students of our department extend our deepest sympathy to the family of Ryan T. McGinn, a senior in our Technical Systems Management Program. Ryan passed away on Saturday, November 27 from injuries sustained during an automobile accident.



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of the endurance race. A good feeling was felt when the team had to take Digger through tech inspection for winning cars. That catapulted UIUC into the top ten (6th place) overall out of 90 teams. Although there were no 1st place trophies to bring back to the University of Illinois, the team accomplished their goals that they strived for and concluded the season on a winning note.

Now that UIUC has established themselves as a team to be reckoned with at SAE Mini Baja Competitions, the 2000 season proves to be a good year. With the help of the returning members and the addition of new, talented people, the team will continue to build on the winning tradition that has been started.

Let Us Know ...

The Agricultural Engineering Newsletter is a publication of the Public Relations Committee. Correspondence may be sent to:

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Urbana, IL 61801
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217.244.0323 – fax
mbm@sugar.age.uiuc.edu

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Alumni Information Sheet

Name: _____ Year Graduated: _____

Home Address: _____

City, State, Zip: _____

Business Title/Profession: _____

Company/Institution: _____

E-mail: _____ Phone (w/area code): _____

News: _____

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