



"We Bring Engineering to Life"

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# ALUMNI and friends

## Suggs 2010 Outstanding Alumnus



Charles Suggs

Dr. Charles (Charlie) Suggs was selected the 2010 Biological and Agricultural Outstanding Alumnus Award recipient. Dr. Suggs is a native of Whiteville, North Carolina and received three degrees (B. S., M.S. and Ph.D.) in Agricultural Engineering from NC State University in 1949, 1955 and 1959, respectively. He was the first to receive a Ph.D. from this department. After graduation with his B.S., he became an Instructor for Dearborn Motors in Detroit, MI (1949-50), a Service Supervisor for International Harvester in Ft. Wayne, IN (1950-51), and a NC Ag. Experiment Station Branch Superintendent at Greenville, NC (1951-53). He returned to the BAE department in 1953 to attend graduate school; he stayed on at BAE from 1954 until retirement in 1993 as Professor Emeritus after 40 years on the faculty.

Dr. Suggs' major research interests were human factors engineering and mechanization of tobacco harvesting and planting. He was a pioneer in the areas of ergonomics and effects of vibration and other environmental factors on human response and performance, and use of vibration in diagnosis and development of dynamic models of the human body. He is also well known for his contribution in developing the world's first tobacco leaf harvester utilizing the patented rubber leaf stripper which is widely employed on current commercial harvesters. To further mechanize the harvesting operation, he developed a process in which the leaves are conveyed into box-like structures to hold them for presentation to the curing environment. By 1976 there were about 2,500 mechanical tobacco harvesters on farms in North Carolina; today they are commonplace and have eliminated many hours of backbreaking work. He was adviser to 14 M.S. and 10 Ph.D. students, having a major influence on development of leaders in agricultural and biological engineering. His students appreciated his wisdom and wit as well as his professional



Dr. Evans presents the department award to Charlie Suggs who was also honored at the CALS Outstanding Alumni event.

### Alumni Gathering and ASABE Meeting: September 16th, 2011

The NC Section of the American Society of Agricultural and Biological Engineers (ASABE) will host a workshop and business meeting on Friday, September 16, 2011. This is the weekend of the NCSU College of Ag & Life Sciences Tailgate. The ASABE event will be a great lead in to a fun-filled weekend, and will include a golf outing held Friday morning at the Lonnie Poole course, a technical program on Engineering Ethics, a short business meeting, and a pig-pickin' dinner at Weaver Labs. The following day, the Wolfpack hosts the University of South Alabama at Carter-Finley Stadium. Please mark your calendars for a great BAE & Wolfpack Weekend!

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## Phil Westerman Retires with 36 years

Dr. Phil Westerman has been a research and extension engineer at BAE for 36 years. He will retire June 30th.



Phil Westerman

Westerman is internationally recognized for his contributions to the understanding of the principal mechanisms important to animal waste management and for meticulous work in determining the basic properties of waste products and their interactions with the environment.

His research publications on land treatment of animal wastes, nutrient availability for crop fertilization, effects of animal waste utilization on quality of runoff and drainage waters, and alternative waste treatment technologies are widely referenced. He has also made significant contributions in the areas of water treatment and waste management for intensive fish production systems.

*Thank you Phil for your service to BAE NCSU programs, and North Carolina Farmers.* ■

## Wilson Huntley Retires with 30 years

Wilson Huntley, BAE Engineering Research Technician retired with 30 years of service February 2011. Hot chili was served to a crowd of about 70 people at Huntley's retirement luncheon. Dr. Evans presented Huntley



Wilson Huntley

with a retirement certificate and Dr. Skaggs then presented a poster with a statement of thanks. ■

## Department Head's Comments



Robert Evans

Greetings from Raleigh! It is a pleasure to present the 2011 edition of the BAE Alumni and Friends Newsletter. It has been a busy and productive year. The department continues to provide excellent educational opportunities at the undergraduate and graduate level with programs that are well recognized as among the finest in the United States. The undergraduate and graduate programs were ranked 9th nationally by US News and World Report in its most recent surveys.

Record enrollment this past year filled many of our classes to capacity, in some cases with waiting lists. Seating will continue to be tight this fall; but the College of Engineering has backed down admissions a little, so we are hopeful our enrollment has peaked, at least for the immediate future. We also tightened our departmental matriculation criteria which is expected to drop our fall enrollment in the Biological Engineering degree program to about 205 students from the high this past fall of 236. We hope this will help relieve some of the overcrowding in core course. AET enrollment is still growing moderately, so overall undergraduate enrollment will be about the same as last year at about 275 students. Graduate enrollment is expected to be 73 students this fall, down slightly from the 2010 record high of 76 students. Over the past year, we completed the initiative begun in 2009 to upgrade all graduate offices with fresh paint and new office furniture. The old desks and chairs from the 1950s have been retired forever. Over the year we graduated 42 BEs, 9 AETs, 2 MBAEs, 9 MS and 3 PhDs – Drs. Robert Brown, Jon Hathaway, and Shiyong Tian. Congratulations graduates.

The faculty attracted 3.9 million dollars of new external support which is down slightly from last year primarily due to less State funding for applied research. Even under the difficult economic conditions, external grant success is a strong testament to the relevance that our programs are viewed by our clientele and supporters. Over the past year, BAE faculty were involved in 96 research and outreach projects with a combined active value of \$15.5 M. The faculty published 147 refereed journals, book chapters or published proceeding articles during the year, almost a 50% increase over last year. In addition, 40 technical papers were developed for national conferences resulting in 84 oral presentations of research results and 182 presentations were delivered to citizen groups across North Carolina.

I am pleased to announce that Dr. Charlie Suggs, class of '49, was named the 2010 Outstanding BAE alumnus. Dr. Ling Wang was promoted to associate professor with tenure and Drs. Francois Birgand and Praveen Kolar were reappointed for second term as Assistant Professor. Please read more about these and other well deserved faculty, staff and student recognitions throughout the newsletter.

I hope you will mark your calendar and plan to attend our Alumni get together and State Section meeting on September 16 which will be held in conjunction with the annual CALS tailgate. Best wishes from the BAE department for the upcoming year! ■

# Suggs Outstanding Alumnus

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guidance. He had 117 refereed journal publications in his career. He has also been active in international work, serving as a consultant in CIGR, and as a member of Volunteers for International Technical Assistance.



*Charlie Suggs receives the gift of a book from a former student.*

Dr. Suggs was active in ASABE, serving as chair of NC Section, Chair of Southeast Region, editor of Power & Machinery for Transactions of ASAE, and served on several committees, such as Bioengineering, Human Factors, and Safety. He was recognized as a Fellow in ASAE in 1978. In 1993 he and his wife established the Charles W. and Jane P. Suggs Scholarship Endowment for the BAE Department. Charlie and Jane married in 1949, and have 3 children (Chip, Susan and Cynthia). His hobbies include gardening and wood-working. ■

## Call for Nominations

Request for Nominations for 2011 Outstanding Alumnus Award are due August 1st. Since 2005, The College of Agriculture and Life Sciences has recognized an Outstanding Alumnus Award for each department in CALS. If you would like to nominate someone for the 2011 award, request a nomination form from Betsy Maness 919-515-2694.

The nominees must have received a degree from the BAE department and should have a record of service to their community, industry, and/or to NC State and the College of Agriculture and Life Sciences. The nomination should explain why the nominee deserves the award. The award recipient will be recognized September 30th with a BAE departmental reception and also at the CALS Alumni Awards reception.

**Department Head** Dr. Robert Evans  
**Writer/Graphics** Carolyn Mitkowski  
**Advisor** Dr. Greg Jennings

**Bio&Ag** Alumni & Friends is an annual publication of the Department of Biological and Agricultural Engineering Department, North Carolina State University, Box 7625, Raleigh, NC 27695-7625.

Alumni contributions to the next issue of **Bio&Ag** Alumni&Friends, are always welcome please send your contributions to Dr. Evans at the address above or email: Robert\_Evans@ncsu.edu or Carolyn\_Mitkowski@ncsu.edu.

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 Visit Bio&Ag on the web at: [www.bae.ncsu.edu](http://www.bae.ncsu.edu)

Fax comments & questions to: Bio&Ag News at 919-515-6772

## Faculty News



*Bill Hunt*

**Bill Hunt** is in the environmental news section of Voice of America electronic news for the development of an easy to use computer water pollution model. Hunt's model helps to predict how landscape impacts water pollution by evaluating how well some of the new and traditional stormwater practices clean water.

This model can help communities choose the best stormwater practice for a particular landscape issue. Implementation of the most advantageous water pollution solution sends cleaner rain water back to waterways. Read the article at [www.voanews.com/english/news/environment/Computer-Model-Helps-Minimize-Water-Pollution--99958364.html](http://www.voanews.com/english/news/environment/Computer-Model-Helps-Minimize-Water-Pollution--99958364.html)

Congratulations Emeritus



*Bynum Driggers*

Professor **Bynum Driggers** who was inducted into Rural Builders Hall of Fame.

Driggers was inducted with three new members on March 3, 2011. There have been 95 inductees since 1982 recognized as outstanding educators, builders and suppliers.

**Rhonda Sherman**, solid waste Cooperative Extension specialist, is a co-editor of the first scientific book on vermicomposting. "Vermiculture Technology: Earth-

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**Graduate Fellowships**

- Ryan Brown**  
College of Engineering Dean's Fellowship
- Natalie Bouchard**  
American Public Works Association Scholarship
- Troy Gilmore**  
University Graduate Fellowship and College of Engineering Dean's Fellowship
- Veronica Mbaneme**  
National Science Foundation NC-LSAMP Bridge to the Doctorate Fellowship, NC SWANA Chapter Ray Church Memorial Scholarship, National Science Foundation Graduate Research Fellowship



*Veronica Mbaneme*

- Tiffany Messer**  
University Graduate Fellowship
- Adrienne Cizek**  
University Graduate Fellowship and F. J. Hassler Fellowship
- Bradley Wardynski**  
College of Engineering Dean's Fellowship and Henry D. Bowen Fellowship



**Undergraduate Scholarship**

- Erin Bennett**  
NC Section of ASABE, Dr. Joseph S. Colson and A. Tab Williams, Jr., Endowed Scholarship



*George Blum awards undergraduate Kaitlyn Cranford the Barbara and George Blum Scholarship.*

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# Student Spring Banquet

The 2011 Student Banquet was held at the JC Raulston Arboretum on April 28<sup>th</sup> 2011. It was a pleasant evening to celebrate the achievements and contributions of our undergraduate and graduate students. The evening began under the grape vine arbor of the Ruby McSwain Education Center where students, faculty, staff, our scholar donors and the advisory board mingled as they nibbled on hors d'oeuvres.

The group moved inside to enjoy an excellent buffet and dessert table. Scholarship donors were seated with their recipients. BAE's donors attending this year were Charles Suggs, Ron Sneed, George Blum, Bynum Driggers, and Jean Bowen.

As dinner concluded, department head Dr. Evans introduced the guest speaker, Dr. Jim Ruff, NCSU, BAE department head (87-90) and retired manager of John Deere Small Engines. He spoke about the challenges of becoming a new engineer and what to expect of a career in engineering. He gave a very lively and engaging address.

Nineteen undergraduate scholarship recipients were named along with nine graduate student fellowships. The undergraduate and graduate achievements were announced and attendees received certificates.

John Long, of the Graduate Student Association, Laura Lord, Student Branch of ASABE and Justin Rothrock, of the Pack-Pullers, recapped club events and highlights of the year. ■



*Ron Sneed awards William Pluer the Ronald E. Sneed NC Irrigation Society Endowed Scholarship. Pluer is also a Caldwell Fellow.*



*Dr. Jim Ruff, NCSU -BAE Department Head (87-90), and Manager (retired) of John Deere Small Engines gives the keynote address.*

**Undergraduate Achievements**

- Erin Bennett**  
COE Senior Award nominee in Scholarly Achievement category
- Emily Darr**  
College of Engineering Ambassador
- Preston Houck**  
Undergraduate Research Symposium Award Winner
- Brian Ingram**  
COE Senior Award nominee in Humanities category
- Laura Lord**  
ASABE Student Honor Award, and College of Engineering Ambassador
- Michael Underwood**  
COE Honor Award nominee Citizenship and Service category

**Graduate Achievements**

- The 6th Annual NC State University Graduate Student Research Symposium 2nd in the Agricultural Sciences Category
- Ziyu Wang**  
Certificate of Accomplishment in Teaching
- Sneha Athalye**  
USGA Outstanding TA Award Nominee
- Julian Cacho**

# A Look at Agricultural Air Quality

Air Quality and its effects on humans and animals is sometimes an invisible and elusive agent in our environment that we know little about. Research in this area has been thin and its impact on the environment often overlooked. We have waded into studies involving soil and water issues without fully addressing the effects of air as an equally powerful agent in the trinity that supports life.



*The unknown plume rise and plume shape have been vital weak points challenging the accuracy of model predictions.*

The late Dr. Robert Botcher began some of the ground breaking work in air quality in the 1990's. He was among the most respected in the nation researching the subject of animal housing and air quality. Today the department's work in air quality is invigorated by three faculty: Lingjuan Wang-Li, Otto Simmons and Sanjay B. Shah. Collaborating with other faculty at NCSU and across the nation, they are addressing air quality issues with funding totaling over 2 million dollars.

**Dr. Lingjuan Wang-Li** received a NFS Career Award in 2010 to study the "Fate and Transport of Aerosols from Animal Feeding Operations (AFOs)." Wang-Li has been the major force in securing the department's air quality grants. She began her studies in China with a BS in cotton engineering and earned her M. S. and Ph.D. from Texas A&M University in Biological and Agricultural Engineering. She specializes in air quality engineering and her research interests include air quality measurement, monitoring, and modeling seeking air pollution mitigation and control for animal housing and human wellbeing.

Dr. Wang-Li's research team has been working on various aspects and problems of air emissions associated with AFOs. The team's research includes monitoring particulate and ammonia emissions from commercial scale AFO facilities and then characterizing and modeling the spatial and temporal variations in the physical, chemical, and biological properties of aerosols emitted from AFO facilities. This research is leading to improved understanding of the mechanisms of generation, fate and transport of those aerosols. For example, air emission plume rise and shape have been vital weak points challenging the accuracy of dispersion model predictions when applied to animal house settings. Dr. Wang-Li's research team is developing mathematical plume models under different atmospheric conditions that can be applied to a variety of animal production facilities.

Determination of the spatial and temporal variations of airborne microorganisms in the vicinity of AFO facilities is also critically im-

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## The BAE Air Quality Research Program is Addressing:

- Fate and Transport of Aerosols from Animal Feeding Operations
- National Air Emissions Monitoring Study-Southeast Layer Site
- Solar Ducts for Reducing Propane and Improving Air Quality in Pig Nursery and Turkey Brooder House
- Characterizations of Particulate Matter Emitted from Egg Production Facilities: Sources versus Public Exposure
- Coordinated Analysis to Facilitate Technology Transfer to Meet Emission Requirements for Next Generation Livestock and Poultry Production Facilities
- Environmentally Sustainable Swine and Poultry Production Systems for the Future
- Litter Amendment and Improved Diet Impacts on Broiler Ammonia Emissions and Productivity

Learn more about Air Quality at:

[www.bae.ncsu.edu/topic/airquality/](http://www.bae.ncsu.edu/topic/airquality/)



*Dr. Wang-Li calibrates instruments for bio-aerosol field sampling.*

## Undergraduate Scholarship

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### Dustin Brann

NC Section of ASABE Scholarship

### Joshua Clemmons

J. C. & Nancy Ferguson Scholarship

### Kaitlyn Cranford

Barbara and George Blum Scholarship

### Emily Darr

Royster M. Tucker Memorial  
Scholarship

### Spencer Davis

AgCarolina Financial Scholarship

### Travis Garrett

Fred G. Bond Tobacco Scholarship

### Miranda Harper

Jane P. & Charles W. Suggs Scholarship

### Allison Harper

Charles L. and Samuel D. Davis  
Scholarship

### Laura Lord

Dorothy P. & Eustace O. Beasley  
Biological & Agricultural Engineering  
Scholarship

### Caitlyn McCombs

Engineering Merit Foundation  
Scholarship

### Robert Moore

Earl B. Garrett, Quentin & Evelyn Pat-  
terson, and Colonel Breeze Agricultural  
Scholarships

### Paul Peedin

Katharine Stinson and Oliver G.  
Haywood Scholarships

### William T. Plier

Ronald E. Sneed NC Irrigation Society  
Scholarship, Caldwell Fellow

### Thomas Smith

Fred G. Bond Tobacco Scholarship

### Daniel Snyder

Park Scholarship

### Kaitlyn Tucker

NC Section ASABE, James M.  
Johnston Golden LEAF, Oliver G.  
Haywood, and Southeast Chapter -  
IECA Academic Scholarship

### Michael Underwood

NC Section ASABE Scholarship

### Cameron Wilson

Progress Energy College of Engineering  
Scholarship ■

# Agricultural Air Quality

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portant to determining sources, fate and transport of pathogenic organisms associated with AFO facilities. **Dr. Otto Simmons**, a research assistant professor, is collaborating with Dr. Wang-Li to provide support and guidance to the bioaerosol modeling effort with expertise in environmental microbiology. Dr. Simmons is focusing on the development and implementation of methods to detect and quantify bacterial, viral, and parasitic pathogens and indicator organisms in different environmental matrices.

Precisely controlled and monitored animal production environments is vital to characterizing the “in-house” air quality as well as air emissions from the house. Dr. Wang-Li is providing leadership for the design and fabrication of a 9 chamber, environmentally controlled, animal production complex that can accurately simulate conditions typical of those observed in commercial broiler production environments.

The facility currently known as the BAE Research and Demonstration Building at Lake Wheeler will provide state-of-the-art facilities for future air quality and emissions research. Once populated, these chambers will allow controlled air quality and animal welfare investigations within production environments and eventually lead to cost saving practices for producers. The chamber complex will also provide educational opportunities for students to acquire fundamental knowledge for developing careers in environmental air quality and animal well-being. Photos of the chambers being built are on page 7.

**Dr. Sanjay Shah** is an extension specialist and researcher working



*Graduate student uses the BAE designed Portable Multi-Gas Unit at a poultry farm.*



*Dr. Simmons is preparing agar plates for bioaerosol*

directly with livestock farmers. His job is to introduce farmers to the latest technologies and BMPs. Dr. Shah received his BS in Agricultural Engineering in India then pursued a M.S. and Ph.D. in Biological and Agricultural engineering from Louisiana State and Virginia Tech respectively. His interest took him from studies in Total Maximum Daily Load plans for fecal coliform in impaired streams to issues with animal waste and confined animal housing.

Dr. Shah’s research concerns “Litter Amendment and Improved Diet Impacts on Broiler Ammonia Emissions and Productivity.” Dr. Shah added an acidic

## Agricultural Air Quality

salt (PLT or sodium bisulfate) to broiler litter inside barns at different application rates to assess their impacts on inside ammonia concentrations, ammonia emissions, bird health, propane use, and litter nitrogen concentration over a 2-year study. While additional data analysis is going on, PLT at application rates of 0.15 to 0.30 lb. per square feet result in lower ammonia concentrations than with lower application rates. Lower ammonia concentrations could improve bird health, reduce ammonia emissions, and increase the fertilizer value of the litter.

It's true that much of what we know about air pollution comes from indoor air quality studies addressing human problems. These studies are helpful to a point in addressing air quality for animals. Right now, what we know about animal air quality can only fill a chapter or two in a textbook.

Much of today's grant driven research in animal air quality is focused on developing the technologies to measure and analyze information under different situations. Until enough basic data is accumulated, design and development of BMPs and technologies that work well at mitigating air pollutants will take time. From these and other studies, definitive information about animal air quality should begin to be put to work and new chapters in our understanding about air quality expanded.

Recent accomplishments and impacts of the BAE Air Quality Research Initiative include:

- The spatial and temporal variations in  $PM_{2.5}/PM_{10}$  mass concentration, chemical composition and biological nature between source and downwind areas has been characterized.
- Key factors influencing air emissions and quality in animal production facilities and surrounding environments have been identified.
- Baseline emissions of particulate matter, ammonia, hydrogen sulfide, carbon dioxide, and volatile organic compounds (VOCs) from high-rise egg production systems have been provided to EPA to produce non-bias assessment of AFO air emissions standards.
- A mechanistic emission model has been developed to estimate ammonia emission fluxes from broiler litter under different growing conditions which led to development of innovative mitigation and management strategies for improvement of air quality, animal performance, and animal well-being to enhance sustainability of animal agriculture. ■



*Dr. Sanjay is guiding a collaborator to take air flow measurements inside a broiler house.*

## New NCSU Animal Waste Building

A long time in construction, the Animal Waste Management building at Lake Wheeler is becoming a reality. This facility will provide state-of-the-art environmental growth chambers for use in many NCSU animal research faculty projects. The BAE Air Quality team is eager to concentrate on air quality studies. Below are photos of BAE engineers assembling the 9 chambers.



## Faculty News

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worms, Organic Wastes and Environmental Management”, was released in December by CRC Press.

**Dr. Garry Grabow** was awarded the NC State Grange Search for Excellence Award from the North Carolina Cooperative Extension Foundation at the State Extension Conference April 14, 2011.



*Garry Grabow*

**Dr. Lingjuan Wang-Li** received a Merit Award from the International Commission of Agriculture & Biosystems. Wang-Li was promoted to Associate Professor with tenure.



*L. Wang-Li*

Appointed to a second term as Assistant Professors were **Dr. Francois Birgand** and **Praveen Kolar**.

**Dr. Jean Spooner** received the 2010 Marvin Collins Outstanding Planning Award from the North Carolina chapter of the American Planning Association

## Staff News

**James (Greg) Lewis** was awarded the 2010 BAE Staff Award.

**Hiroshi Tajiri** received the quarterly award NCSU Office Information Technology.

Earning Pride of the Wolf-pack awards were **Betsy Maness**, **Catherine Smith** and **Christina Shepard**. ■

## In & Around Weaver Labs

**Social Activities...** Activities this year included a Welcome Back Cook Out, Holiday Dinner and Tree Trimming, Chili and Corn Bread Cook Off, Bowling, End-of-the-Year Cook Out, and fall and spring Canoe Trips.



*Dr. Boyette talks with the guys at the fall cookout. Can you smell those burgers sizzling?*



*Taking a break from the winter blues are Alysondria Campos and classmates who enjoy a chili and corn bread cook-off.*



*The traditional Pie a Professor event was moved to the spring this year and combined with a cookout. Below pied (left to right) are Drs. Classen and Burchell, and instructor Seaboch.*

## Let's Play...

*The students always play volleyball on Weavers large lawn area but this year they also played football, bowled a few games, went canoeing twice and introduced a new game called ladderball.*



# In & Around Weaver Labs

## Student Chapter of ASABE Activities

**Recruitment Efforts:** New Student Orientation, Wolfpack Welcome Week, University Organization Fairs, CALS Alumni Tailgate, E-Week, Ag Awareness Week, COE Open House.



*Above, Greg Turner, Erin Bennett, Ryan Owings and Laura Lord introduce students to Bio & Ag at Wolfpack Welcome Week.*

*Right, Laura Lord, ASABE's Club President sits on the 2010 1/4 scale tractor on the brickyard at Ag Days.*

**Student Fund Raisers:** State Fair Antique Farm Machinery Exhibit, Sweet Potato Sale, Cow Chip Bingo, BAE T-shirt and Koozie sale, Year-long Drink Sale, Lawnmower Clinic, and Penny Wars.



*John Long weighs boxes of farm fresh BAE packed sweet potatoes that sold out - every last one of them. This fund raiser is timely for the holidays so call the main office in Nov. to place your order.*



*The ASABE Club T-Shirt and koozie sale did well this year. Everyone liked the student's state map design.*

**Community Service:** Stream Clean-Up, Canned Food Drive, Wake County Angel Tree, Service Raleigh, Relay for Life, Classroom Clean-Up.



*The students participate in Service Raleigh each year. Service Raleigh is an annual city-wide day of public service. This year, the BAE group was put to work assisting at the Sycamore Creek Elementary Spring Carnival. They set-up, took down and manned the games, giving encouragement to kids and a little relief to school administrators and teachers.*

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## Students Attend Southeastern Regional Rally

Eight students and advisors Drs. Burchell and Boyette took the trip to the **Southeastern Regional Rally** held at Mississippi State University. The students took part in a welcome dinner, campus tour of MSE-BAE department, and attended business meetings and seminars.



*Above are first row: Laura Lord, Veronica Mbaneme and Alysondria Campos. Second row: Spencer Davis, Judah Emory, Ricardo Valdes, Greg Turner and Ben Mills.*



*The group viewing a Biomass Harvester.*

## Advisory Board

This year, three board members have concluded their terms on the Advisory Board. They are Mr. John Authur, P.E., John Deere Co. Inc., Michael Creed, P.E., McKim&Creed, Dr. Mike Franklin, Mike Franklin Consulting, NC and Dr. Lawson M. "Mac" Safley, Jr. Founder, Agri-Waste Technology, Inc. Our many thanks to them for taking the time to serve on the board. New members this term are:

**Mr. Charles Blum**, Area Manager, John Deere Landscapes which covers central and eastern North Carolina with services.

**Mr. Larry L. Coats**, Partner Coats and Bennett, PLLC, a Cary, NC-based intellectual property law firm. Coats leads the firm's environmental practice area.

**Mr. Barry Partlo**, President, Agri Supply, Inc. The company has 7 retail store locations in North Carolina, South Carolina, Georgia and Virginia.

**Mr. Paul Sherman, P. E.**, Director, Air and Energy Programs, North Carolina Farm Bureau Federation. He represents NCFB on air quality, energy, renewable energy, global climate change, transportation, and other regulatory and legislative issues.

The board term is 2012-14. ■

If you didn't know... US News and World Report published in April 2010 ranks America's Best Graduate Schools and our Bio & Ag Engineering Program ranked 9th nationally.

## Certification Workshops Receive IECA Award...

Biological and Agricultural Engineering and Soil Science Extension Programs received the Environmental Education Achievement Award from the International Erosion Control Association (IECA) for the E&SC/Stormwater for NCDOT Projects Certification Workshops.

The certification workshops were developed at BAE through the efforts of Dr. Greg Jennings, P. E. Extension Specialist and Jan Patterson, P. E., Extension Associate. They worked with the DOT to create workshops involving varying levels of stormwater and erosion control understanding. The certifications are directed towards DOT contractors from engineers to the roadside BMP installers doing highway construction activities. The workshops educate and re-enforce understanding of the various erosion control methods, rules and regulations used to protect NC Waters from stormwater and sediment problems.

Workshops in stormwater and erosion and sediment control have been

taught by BAE since 2004 and in 2005 when the DOT made it a requirement for private contractors and their workers. Currently, BAE with the addition of Soil Science experts teach the DOT certification workshops. Dr. Richard McLaughlin from Soil Science was on hand to receive the Award. Congratulations to BAE's Dr. Greg Jennings, Jan Patterson and support staff Gretchen Steelman and Bonnie Kurth. ■



*Jan Patterson, P. E., Extension Associate, works with contractor management to qualify & quantify necessary on-the-job DOT environmental requirements workers need to follow.*



*Some information you can only learn if someone shows you the right way to do it.*

## Dept. Thinking Sustainable...

Instead of purchasing the department's standard red geraniums to decorate for spring graduation, potted red rose bushes were bought. After graduation, they were planted around Weaver to add to what was planted last year.

Other improvements included painting and furniture upgrades for graduate student offices. ■



# In & Around Weaver Labs

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**Department Activities...** Fall ice cream social, Department Head Party, Holiday Party, Staff Appreciation Luncheon and Student Banquet.



*Dr. Evans held a Department Head Party in early December for everyone to attend. Several types of hot hors d'oeuvres and lots of tasty pastries were served.*



*This year, we had the largest number of students attending the Fall ice cream social. Maybe that's because this is the largest class BAE has ever had in its 76 Years.*



*At this year's Holiday Party, everyone exchanged small gifts and gags and Dr. Veal assisted as Santa.*

*Left are Drs. Evans and Kolar and Student Services Assistant Heather Austin. Right foreground is Dorothy Lee, Administrative Support Specialist and Betsy Maness, Dept. Business Manager.*



# Crops on NC Highways

USA Today ran an online 2010 article about the FreeWays to Fuel programs in progress on Utah and North Carolina state highways. The North Carolina program was initiated by Dr. Matthew Veal, Extension Specialist. He has been working to assist with the adoption of biofuel use statewide.

The program was supported by the NC Department of Transportation who made available land on the side of highways to grow crops needed to produce biodiesel. Using highway land rather than valuable food producing farmland was the key idea. The 2010 spring dwarf sunflower crop of 10 acres was harvested and processed in the fall fueling some DOT trucks. This crop was a little thin due to the hot summer so this year a fall planting of canola plants will be tried. The hope is to fuel even more DOT trucks with a spring and fall planting if needed.

The research is ongoing to find the best producing oil seed crop with a simple refinement process. Dr. Veal currently has a joint NCSU Kentucky State project to develop the initial processing phases for on-farm ethanol production from switch grass. ■



*Matt Veal*

# Grad Action...

Keeping the graduate students busy this year were a Fall Cookout, Virginia Tech Graduate Student Seminar, Krispy Kreme Challenge, Spring International Dinner, Craft Center Pottery Class, Spring UGSA Cookout, Engineering Open House and Prospective Graduates Recruitment Weekend. ■



*Graduate students, faculty and student services assistant, Heather Austin talk with prospective students during Engineering Open House.*



*A team member introduces a prospective student and his family to BAE's 1/4 scale tractor.*



*Grads take some time to grill up grub.*

## Fall 2010 Grads

Name	Curriculum
Brewington, Rhonda.....	BE
Brodi, Imani.....	BE
Buchanan, Vanessa.....	AET
Doss Matthew.....	AET
Etheridge, James.....	<b>MBAE</b>
Hathaway, Jon.....	<b>PhD</b>
Ingram, Brian.....	BE
Jones, Richard.....	<b>MS</b>
Langley, Ryan.....	AET
Macialek, Justin.....	<b>MS</b>
Martinez III, Jose.....	<b>MBAE</b>
Messer, Tiffany.....	<b>MS</b>
Mayank, Nautiyal.....	<b>MS</b>
Nettles, Michael.....	AET



View more graduation pictures at: [www.bae.ncsu.edu/news/](http://www.bae.ncsu.edu/news/)

## Spring 2011 Grads

Name	Curriculum
Ahrendsen, Tyler.....	BE
Anders, Jonathan.....	BE
Anderson, Cory.....	BE
Bass, Katherine.....	AET
Belk, Robert.....	AET
Bennett, Erin.....	BE
Bennett, Marcus.....	BE
Brown, Robert.....	<b>PhD</b>
Campos, Alysondria.....	BE
Cox, Adam.....	BE
Crouse, James.....	<b>MS</b>
Dobbins, Eric.....	BE
Emory, Judah.....	BE
Fadhil, Shamum.....	BE
Foley, Kenneth.....	BE
Fox, Keri.....	BE
Galloway, Miles.....	BE
Gurkin, Natalie.....	BE
Ghali, Ihab.....	<b>MS</b>
Guthrie, Jonathan.....	BE
Harvey, William.....	BE
Hayes, Richard.....	BE
Hedgecock, Daniel.....	BE
Hill, Prescott.....	BE
Jacobsen, Thomas.....	BE
Jennings, Jacy.....	BE
Jordan, Kevin.....	BE
Lord, Laura.....	BE
Love, Rodney.....	AET
Luell Stacy.....	<b>MS</b>
Marion, Tyler.....	BE
Moore, Robert.....	BE
Owings, Ryan.....	BE
Peterson, Joshua.....	AET
Price William.....	<b>MS</b>
Robol, Reid.....	BE
Rothrock, Justin.....	BE
Smith, Thomas.....	AET
Snyder, Nicholas.....	BE
Stoner, Martin.....	BE
Teeten, Matthew.....	BE
Tian, Shiging.....	<b>PhD</b>
Tillinghast, Erica.....	<b>MS</b>
Tshimanga, Mufuta.....	BE
Turner, Gregory.....	BE
Tuvia, Ori.....	BE
Underwood, Michael.....	BE
Walker, Samantha.....	BE
Whitman, Bradley.....	BE
Williams, Justin.....	BE
Yow, Erin.....	BE