



Volume 10 - Number 1

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## ***FROM THE DEPARTMENT CHAIRMAN***



I write this message with mixed feelings as I step down as Department Chairman July 1, 2005, to become the Director of the Northeastern Regional Aquaculture Center that will be in the College of Agriculture and Natural Resources at College Park. I have enjoyed my time as chair because of the outstanding faculty, staff, and students I have had the privilege to work with over the last eleven years. All of the faculty and staff have always helped out whenever there was a need. They have provided program leadership and have been outstanding advisors and mentors for all of the department students. It has been a pleasure and a privilege to work with all of them.

Dr. Lewis Carr's untimely passing was a blow to all of us. Later in this newsletter is a tribute to Lew and his accomplishments. We will all miss Lew, his warm personality, and the positive outlook he always presented to those around him. The last eleven years has brought many changes to the Department, probably the most visible of these is the

change in enrollment. The Biological Resources Engineering Program (ENBE) has grown from 15 to 140 students while the Natural Resources Management Program (NRMT) has decreased from 160 to about 30 students, primarily because the College of Agriculture and Natural Resources, with three other colleges, started the Environmental Sciences and Policy program (ENSP). The ENSP Program directly competes for students with the NRMT program. The graduate program has also grown to the current enrollment of 50 students, about 40 of whom are ENBE graduate students and the remainder are enrolled in the Marine-Estuarine-Environmental Science Program (MEES) but advised by our faculty.

Departmental outside grant and contract funding has more than doubled over this eleven year period, primarily due to faculty efforts in securing grants and contracts. These funds have enabled the department to do many things that would have been impossible without them. Almost all universities are seeing decreased state and federal funding from traditional sources, and Maryland is not an exception. Thus, faculty have had to be more entrepreneurial in supporting their research, extension and teaching activities. Whether this change proves to be good or bad only the future will tell. Our faculty have been highly successful in developing funding to support their research, extension, and teaching. Developing continued funding from contracts and grants is not easy, and I want to thank the faculty for their continual efforts in this area. Success in attracting grants and contracts from state, federal, and private sources also attests to the respect and stature the faculty have earned in the state, the nation, and even internationally. Our entire senior faculty, and even some of our younger faculty, have served as officers in their respective professional societies. Three of our 11 faculty have been honored by their election to the grade of Fellow in one or more professional societies. The Department has an outstanding faculty that is nationally and internationally recognized for their expertise. I have enjoyed working with the departmental staff. Their work often does not get the recognition it deserves, but I am well aware that the department runs well because the staff sees to it that it does. I want to

thank each and every one of the staff for their contributions to excellence and for making my job so much easier and enjoyable.

The quality of students, both at the undergraduate and graduate levels entering our programs has increased markedly over time. These students are a joy to work with and their enthusiasm, energy, and drive have inspired me and the entire faculty. Thank you for being such a positive challenge.

There are many people in other parts of the university and outside of the university that I have enjoyed working with on various projects, committees, and programs. Our alumni are also growing in numbers and have been helpful to the department. I encourage each and every one of them to come back to the campus when they can and to continue to be a positive force for the department. I have enjoyed working with all of these individuals and groups. You have taught me much and made life much more interesting. Thank you for the opportunity to work with you.

The future is always more fuzziy in my crystal ball than in the past. Many changes will occur in the future as change is the only thing we can be sure will occur. Look forward to these changes as opportunities and they will become such. I wish you all well and hope you will support the new chair as you have me in the past. Thank you again for a most enjoyable eleven years.

Fred Wheaton  
Professor and Chairman

## ***DEPARTMENTAL NEWS***



**Dr. Lewis Earl Carr**, Instructor, Biological Resources Engineering Department, University of Maryland, passed away Friday, January 21, 2005. Lew was born in Isle of Wight, Virginia. Lew received his B.S. degree from VPI and shortly thereafter joined the army as a commissioned officer in the combat engineers. Lew served in Vietnam for three years and as a member of the army reserve,

retiring as a Lieutenant Colonel in 1991. After active service he returned to VPI and received an M.S. degree in Agricultural Engineering. He worked for the Ralston Purina Company in promotion, sales, and distribution of Purina Chows and Health Products. In 1973 he joined the faculty of the Agricultural Engineering Department, University of Maryland in an extension/research position. Lew received his Ph.D. from the University of Maryland and remained on the faculty of the Department of Biological Resources Engineering until his death.

Lew's responsibilities included research and extension in poultry production and processing, waste management, composting, energy conservation, broiler environmental issues, ammonia release and control, food safety and health, and robotics use in the poultry industry. Lew is perhaps best known nationally and internationally for his work in composting poultry, agricultural, and municipal residuals into environmentally-friendly products. He was regularly invited to other countries, including China, Russia, Australia, Mexico, Canada, The Netherlands, England, and others, to share his expertise both in waste management and poultry production. As part of his research and extension efforts, Dr. Carr published or presented over 300 articles, papers, and books. He was an active member of ASAE and served the society in many capacities.

He was a loving, caring husband, father and doting grandfather. In addition to his wife, Meredythe, he is survived by a daughter, Mimi Adam and her husband, George; daughter, Melissa Truitt and her husband, Mike; son, Michael Carr, and grandchildren, John and Krista Adam, and Novie and Sophie Truitt.

**Dr. David Ross** was recognized in October 2004 for completing two years of service as Northeast Vice President, of Epsilon Sigma Phi (The Extension Professionals Organization) and began service as Chair, Development Fund Board of Trustees of Epsilon Sigma Phi.

Mr. Bin Zhu and Ms. Lei Qin and Mr. Fenghua Jin and Ms. Lu Jiang recently had a double wedding ceremony on Saturday, June 4, 2005. The happy couples celebrated their honeymoon in Tennessee. All four are graduate students in the Department.

***Congratulations and Best Wishes from all of us!!***



**Dr. David Ross** was elected Chair of Epsilon Sigma Phi, National Extension Professional's Organization, for 2005-2006.

## ***STAFF RECOGNITIONS***

**Gary Seibel** is the Tree Committee Chairperson for the Center for Young Children here at the University of Maryland. On September 24, 2001 we lost trees during a tornado. Without Gary's efforts the trees now planted on the Center grounds would not have happened. Thank you Gary for bringing back a little beauty to our campus and shade for the children at the Center.

## ***AWARDS***

*Congratulations to the following people:*

### ***FACULTY AWARDS***

**Dr. David Ross** received the Appreciation of Service Award from the National Board of Epsilon Sigma Phi as Northeast Regional Vice President from 2002-2004.

**Ms. Abby Vogel**, a Ph.D. student, wrote her first published article on earthquakes for the Richmond Times Dispatch. Abby is an intern at the Richmond Times for this summer. Congratulations Abby on getting published.

### ***FACULTY RECOGNITIONS***

**Dr. Fred Wheaton**, University of Maryland, was elected an ASAE Fellow.

**Dr. Art Johnson** was appointed as Secretary, Biomedical Engineering Society (BMES) in October 2004.

**Dr. Art Johnson** was appointed President, International Society for Respiratory Protection for 2004-2006.

**Dr. Art Johnson** was elected a BMES Fellow.

**Dr. Art Johnson** was acting Executive Director of AIMBE from June 21, 2004, to January 15, 2005.

**Dr. Art Johnson** was elected a Fellow in the American Industrial Hygiene Association in 2005.

### ***STUDENT AWARDS***

**Christina Pernia**, a B.S. student, received the 2004-2005 Col. J. Logan Schutz Legacy Scholarship. This award was presented to an outstanding junior attending the University of Maryland, College Park, who is also a legacy student.

**Natalie Chin**, a B.S. student, received the Vera Cruz-Kochiyama Award for 2004. This award was presented to the senior class student who has contributed most significantly to the advancement of the Asian Pacific American community at the University of Maryland.

**Abby Vogel**, a doctoral student, received the University of Maryland Graduate Student Distinguished Service Award. This award celebrates graduate students who have made outstanding contributions to the University community in the areas of scholarship, leadership, involvement and service.

**Paul Nevenglosky**, a B.S. 2005 graduate, received the H.C. Byrd Award. This award represents the Citizenship Prize for Men and is given to the male student of the Senior Class, who during his collegiate career, has typified the model citizen and has contributed significantly to the general advancement of the interests of the University. This is presented annually as a memorial to the late President Emeritus H.C. Byrd.

**Ms. Hyo June Lee** received The ASAE, Society for Engineering in Agricultural, Food and Biological Systems, Student Honor Award for 2005. This award is

presented by ASAE on the basis of academic achievement, student branch participation, and other extracurricular activities.

**Kristine Kirk** and **Tay Thieu Hua** received The Washington, D.C.-Maryland Section of ASAE, Society for Engineering in Agricultural, Food and Biological Systems Scholarship for 2005-2006. This award is presented to an outstanding student based on academic achievement and contribution to the department and student branch.

**Duy Nguyen** received The Robert L. and Frances C. Green Scholarship in the Department of Biological Resources Engineering for 2005-2006. This is presented for academic achievement and contribution to the department and student branch.

**Alexander Macleod** received The Delmarva Safety Association Award for 2005-2006. This is presented to students who actively encourage safety activities while in college.

**Daniela Smith** received The Department of Biological Resources Engineering's Outstanding Junior Award for 2005. This is presented by the Chair on the basis of outstanding academic achievement and contributions to the department.

**Paul Nevenglosky** received The Department of Biological Resources Engineering's Outstanding Senior Award for 2005. This is presented by the faculty on the basis of academic achievement and contributions to the profession and the department.

## ***STUDENT RECOGNITIONS***

The following B.S. graduates have passed their EIT exams:

Kevin Aroom  
Emily Devillier  
Paul Nevenglosky  
Brock Parr  
Allison Pope  
Stephen Reiling  
Caroline Serafinas  
Laura Schumann

**Ms. Hyo Lee**, a B.S. student, won first place for her Honors Thesis.

**Mitchell Manchester**, a 1997 B.S. graduate officially received his P.E.

**Gary Seibel**, an M.S. student and employee here in the Department of Biological Resources Engineering was inducted into The University of Maryland Link #137 of the Order of the Engineer. The Order of the Engineer was initiated in the United States to foster a spirit of pride, individual integrity and responsibility in the engineering profession, to bridge the gap between training and practice; and to present to the public a visible symbol identifying the engineer.

The first ceremony was held on June 4, 1970, at Cleveland State University. Others like it have since spread across the United States at which graduate and registered engineers are invited to accept the Obligation of the Engineer and to wear a stainless steel ring. The ceremonies are conducted by Links (local sections) of the Order.

The Obligation is a creed similar to the oath attributed to Hippocrates (460-377 B.C.) that is generally taken by medical graduates and which sets forth an ethical code. The Obligation likewise, contains parts of the Canon of Ethics of major engineering societies. Initiates, as they accept it voluntarily, pledge to uphold the standards and dignity of the engineering profession and to serve humanity by making the best use of Earth's precious wealth.

Only those who have met the high standards of professional engineering training or experience are invited to accept the Obligation, which is voluntarily received for life. This commitment is not a trivial act but is, rather, like the wedding of the engineer with his profession. The ring is worn as a visual symbol to attest to the wearer's calling and symbolizes the unity of the profession in its goal of benefiting mankind.

The following students are the new 2005 BRES officers:

McKenzie Primerano – President  
Peter Machado – VP for Agriculture  
David Hwang – VP for Engineering  
Jessica Spires – Treasurer  
Stephanie Rew – Secretary

Tim Dozier – Social Chair  
Bobby Gill – Special Events Chair  
Kristen Kirk – Historian/advertising  
Duy Nguyen – Ag/ESC rep

New Maryland Psi Chapter of Alpha Epsilon 2005-2006 officers are:

Andrew Marple – President  
Duy Cao Nguyen – Vice President  
Anthony Metzger – Secretary

New 2005 Maryland Psi Undergraduate Student Members are:

Sarah Ahmed  
Holly Griffin  
Jonathan Keung  
Hyo Lee  
Alexander MacLeod  
Bryant McIver  
Paul Nevenglosky  
Duy Nguyen  
Huong Nguyen  
McKenzie Primerano  
Caroline Serafinas

New 2005 Maryland Psi Graduate Student Members are:

Emily Poynter Jenkins  
Amir Pouyan Nejadhashemi  
Ilisa Tawney

Paul Nevenglosky was selected as one of the five finalists for the year 2005 University Medal, which recognizes the most outstanding graduate of the year. Paul was nominated for his superb record of academic distinction, extraordinary character, and significant extracurricular contributions to the University and the larger public.

## **CONGRATULATIONS 2004 GRADUATES!**

*Spring Semester 2004 with a Bachelor of Science degree from the College of Agriculture and Natural Resources in the Natural Resources Management*

### **Program:**

Bryan Campbell  
Colm Gent  
Melissa Kruemmel  
Michael MacKenzie  
Barrie Richards  
Kevin Smith  
Kristen Spoales

***Summer Semester 2004 with a Bachelor of Science degree from the A. James Clark School of Engineering in Biological Resources Engineering:***

Eric Dripps  
Alisyne Fabiszak

***Summer Semester 2004 with a Master of Science degree from the Biological Resources Engineering Department:***

Ying-Hsiang Chiou – “Model of Exercise Performance While Wearing a Respiratory Protective Mask.”

Nischom Silverman – “Design for a Stand-alone, Universal Serial Bus (USB) – Enabled Airflow Perturbation Device.”

***Summer Semester 2004 with a Doctoral of Philosophy degree from the Biological Resources Engineering Department:***

Gholamreza M. Roodsari – “Modeling and Monitoring Pathogen Transport Through Vegetated Filter Strips.”

***Fall Semester 2004 with a Bachelor of Science degree from the A. James Clark School of Engineering in Biological Resources Engineering:***

Andrew Bunin  
Annette Dixon  
Joannah Kim  
Megha Mahadevan  
Chan-Nhu Nguyen  
Michael Ulrich

***Fall Semester 2004 with a Bachelor of Science degree from the College of Agriculture and Natural Resources in the Natural Resources Management Program:***

Heidi McMillen

Jeffrey Mentzer  
Laura Senkowsky  
Katie Struder  
Caitlin Thompson

***Fall Semester 2004 with a Bachelor of Science degree from the Biological Resources Engineering Department:***

Rodney Brockett Parr

***Fall Semester 2004 with a Master of Science degree from the Biological Resources Engineering Department:***

Chong (Frank) Koh – “The Correlation Between Personality Type and Performance Time While Wearing a Respirator.”

***Fall Semester 2004 with a Master of Science degree from Marine, Estuarine, and Environmental Science Program:***

Rachel Herbert – “Vegetation and Nutrient Dynamics of Forested Riparian Wetlands in Agricultural Settings.”

***Spring Semester 2005 with a Bachelor of Science degree from the A. James Clark School of Engineering in Biological Resources Engineering:***

Kevin Aroom  
Sanjay Cattungal  
Natalie Chin  
Jacqueline Crumrine  
Monica Davis  
Malcolm DeCruise, Jr.  
Nicholas Dye  
Shaya Jamshidi  
Ahmed Kurtom  
Hyo Lee  
Sara Lustusky  
Bryant McIver, Jr.  
Kathleen Mujemulta  
Paul Nevenglosky  
Huong Nguyen  
Ernalyn Peralta  
Christina Pernia  
Allison Pope  
La-Neisha Pridgen  
Arthur Redding

Laura Schumann  
Caroline Serafinas  
Jasveer Singh  
Rupinder Singh  
Lopa Sisodia  
Valentyna Zartdinova

Note: To see our graduating seniors, please go to [www.bre.umd.edu](http://www.bre.umd.edu) and click on more pictures on the right side.

***Spring Semester 2005 with a Bachelor of Science degree from the College of Agriculture and Natural Resources in the Natural Resources Management Program:***

Timothy Allen  
Alan Arico  
Michelle Pridmore  
Corey Vezina  
Kyle Wagner

***Spring Semester 2005 with a Master of Science degree from the Biological Resources Engineering Department:***

Priti Ganeshan – “Performance and Environmental Accounting of Air Biofiltration for Carbon Monoxide Removal.”

***Spring Semester 2005 with a Doctoral of Philosophy degree from the Biological Resources Engineering Department:***

Xuemei Cheng – “Hyperspectral Imaging and Pattern Recognition Technologies for Real-Time Fruit Safety and Quality Inspection.”

***PUBLISHED REFEREED  
PAPERS AND BOOKS BY  
DEPARTMENTAL FACULTY***

**Adams, L.W.** 2004. “In memoriam: Daniel Loney Leedy, 1912-2003.” *The Auk* 121:972.

**Adams, L.W.** 2004. “Summary. Pages 54-56 in M.C.

- Perry, ed. Mute Swans and Their Chesapeake Bay Habitats: Proceedings of a Symposium." Report USGS/BRD/ITR. U.S. Geological Survey, Biological Resources Division, Reston, Virginia.
- Neff, K.P., and **A.H. Baldwin**. 2005. "Seed Dispersal into Wetlands: Techniques and Results for a Restored Tidal Freshwater Marsh." *Wetlands*. (Accepted).
- Baldwin, A.H.** 2004. "Restoring Complex Vegetation in Urban Settings: the Case of Tidal Freshwater Marshes." *Urban Ecosystems* 7:125-137.
- Peterson, J.E., and **A.H. Baldwin**. 2004. "Variations in Seed and Spore Banks Across a Tidal Freshwater Landscape." *American Journal of Botany* 91:1251-1259.
- Peterson, J.E., and **A.H. Baldwin**. 2004. "Seedling Emergence from Seed Banks of Tidal Freshwater Wetlands: Response to Inundation and Sedimentation." *Aquatic Botany* 78:243-254.
- Silverman, N.K., and **A.T. Johnson**. 2005. "Exercise-Induced Respiratory Resistance Changes as Measured with the Airflow Perturbation Device." *Physiological Measurement* 26:29-38.
- Wong, L.S., and **A.T. Johnson**. 2004. "Decrease of Resistance to Airflow with Nasal Strips as Measured with the Airflow Perturbation Device." *Biomedical Engineering Online* [www.biomedical-engineering-online.com/content/3/1/38](http://www.biomedical-engineering-online.com/content/3/1/38).
- Johnson, A.T.**, and M. S. Sahota. 2004. "Validation of Airflow Perturbation Device Resistance Measurements in Excised Sheep Lungs." *Physiological Measurement* 25:679-690.
- Rebar, J.E., **A.T. Johnson**, E. Russek-Cohen, D. M. Caretti, and W. H. Scott. 2004. "Effect of Differing Facial Characteristics on Breathing Resistance Inside a Respirator Mask." *Journal of Occupational and Environmental Hygiene* 1:343-348.
- Johnson, A.T.** 2004. "What is AIMBE All About?" *AIMBE News* 2004:1.
- Johnson, A.T.** 2004. "The Care and Nurturing of Biological Engineering." *IBE Newsletter*, 8.1:1-2.
- Johnson, A.T.** 2004. "Expectations for Biological Engineers." *IBE Newsletter* 8.1:2,4.
- Johnson, A.T.** 2004. "IBE Has Been Heard." *IBE Newsletter* 8.1:11.
- Stack, R.C., **P.C. Kangas** and A.P. Davis. 2004. "Rain Gardens/Bioretenion: Building a University Campus Research and Teaching Site." *Land and Water* 48(4):22-26.
- Ayers, E.M. and **P.C. Kangas**. 2004. "A Hydro-ecological Model of Infiltration in Bioretention Soils." Published electronically in the Proceedings of the Low Impact Development Conference, Session 30. College Park, MD.
- Kangas, P.C.** 2004. "The Role of Invasive Species in a Complex Ecosystem: Mute Swans in the Chesapeake Bay." In: M.C. Perry (ed.). *Mute Swans in their Chesapeake Bay Habitats*. USGS/BRD/ITR-2004-2005. Information and Technology Report. U.S. Geological Survey, Washington, DC. pp. 6-11.
- Blersch, D.M., W. Mulbry and **P.C. Kangas**. "Emergy of Algal Systems Revisited." In: M.T. Brown (ed.). *Emergy Synthesis 3*. The Center for Environmental Policy. University of Florida, Gainesville, FL. (In press).
- Serour, R.K. and **P.C. Kangas**. "An Emergy-based Model for Diver Carrying Capacity on Coral Reefs." In: M.T. Brown (ed.). *Emergy Synthesis 3*. The Center for Environmental Policy. University of Florida, Gainesville, FL. (In press).
- Kangas, P.C.** 2004. "Ecological Engineering: Principles and Practices." CRC Press. Boca Raton, FL.
- Chu, T.W., **A. Shirmohammadi**, **H. Montas** and A. Sadeghi. 2004. Evaluation of the SWAT Model's Sediment and Nutrient Components in the Piedmont Physiographic Region of Maryland. *Transactions of ASAE*, 47(5):1523-1538.
- Shirmohammadi, A.**, L. Bergstrom, and F. Djodjic. 2005. "Scaling Issues in Sustainable Management of Nutrient Losses." *AMBIO-European Journals*. (In press).
- Chu, T.W. and **A. Shirmohammadi**. 2004. "Evaluation of SWAT Model's Hydrology Component in the Piedmont Physiographic Region of Maryland." *Transactions of ASAE*, Vol. 47(4):1057-1073.
- Chu, T.W., **A. Shirmohammadi**, **H. Montas**, and A. Sadeghi. 2004. "Evaluation of the SWAT Model's Sediment and Nutrient Components in the Piedmont Physiographic Region of Maryland." *Transactions of ASAE*, Vol. 47(5):1523-1538.
- Neurath, S.K., A.M. Sadeghi, **A. Shirmohammadi**, A.

Isensee and A. Torrents. 2004. "Atrazine Distribution Measured in Soil and Leachate Following Simulated Flow Conditions." *Chemosphere* 54:489-496.

**A. Shirmohammadi, H.J. Montas**, L. Bergstrom, A. Sadeghi and D. Bosch. 2005. "Preferential Flow: Identification and Quantification." Chapter 8. In: Alvarez-Benedi, J. and R. Munoz-Carpena (eds). *Soil-Water Solute Process Characterization, an Integrated Approach*. CRC Press, New York, NY. pp. 289-308.

**Tao, Y.**, Z. Chen, and C. Griffis. 2004. "Chick feather pattern recognition." *IEE Proc-Vision, Image and Signal Processing*, Vol. 151(5):337-344.

Cheng, X., Y.R., Chen, **Y. Tao**, C.Y. Wang, M.S. Kim, and A.M. Lefcourt. 2004. "A Novel Integrated PCA and FLD Method on Hyperspectral Image Feature Extraction for Cucumber Chilling Damage Inspection." *Transactions of ASAE*, Vol. 47(4):1313-1320.

Ma, L. and **Y. Tao**. 2004. "An Infrared and Laser Range Imaging System for Non-invasive Estimation of Internal Temperatures in Cooked Chicken Breasts." *Transactions of ASAE*, Vol. 48(2):681-690.

Kim, J.G., Y. Luo, **Y. Tao**, R.A. Saftner, and K.C. Gross. 2004. "Effect of Initial Oxygen Concentration and Film Oxygen Transmission Rate on the Quality of Fresh-cut Romaine Lettuce." *Journal of the Science of Food and Agriculture*, Vol. 85:1622-1630.

Kim, M.S., A.M. Lefcourt, Y.R. Chen, and **Y. Tao**. 2004. "Automated Detection of Fecal Contamination of Apples Based on Multispectral Fluorescence Image Fusion." *Journal of Food Engineering*.

**Tilley, D.R.**, J. Mentzer. 2005. "Soil Uptake of Carbon Monoxide Emitted in the Exhaust of Gasoline Powered Engine." *J. Air and Waste Management Association*. (In press).

**Tilley, D.R.**, M.T. Brown. 2004. "Dynamic Energy Simulation for Assessing the Environmental Benefits of a Subtropical Wetland Stormwater Management System." *Ecological Modelling*. (In press).

**Tilley, D.R.** 2004. "Clear the Air! Thoughts on Ecological Engineering for Air Quality Improvement." *American Ecological Engineering Society Technical Notes* 1(1):14-17.

**Tilley, D.R.** 2004. "Howard T. Odum's Contribution to the Laws of Energy." *Ecological Modelling* 178(1-2):121-125.

Ramesh, N., S.W. Joseph, **L.E. Carr**, L.W. Douglass, and **F.W. Wheaton**. 2004. "A Prototype Poultry Transport Container Decontamination System: I. Design and Construction of the Systems." *ASAE Transactions* 47(2):541-547.

Ramesh, N., **L.E. Carr**, S.W. Joseph, L.W. Douglass, and **F.W. Wheaton**. 2004. "A Prototype Poultry Transport Container Decontamination System: II. Evaluating of Cleaning and Disinfection Efficiency." *ASAE Transactions* 47(2):549-556.

## ***P**RESENTED PAPERS*

**Baldwin, A.H.** 2005. "Seed-Vegetation Dynamics in Restored Urban Wetlands." Department of Ecology, Evolution, and Natural Resources, Cook College, Rutgers University, New Brunswick, NJ.

**Baldwin, A.H.** 2004. "Ecology, Engineering, and Infrastructure: Seed-Vegetation Dynamics in Restored Urban Wetlands." University of Maryland Center for Environmental Sciences, Appalachian Environmental Laboratory, Frostburg, MD.

**Johnson, A.T.** 2005. "How is Respirator Comfort Affected by Individual Respiratory Resistance?" Paper #21, International Society for Respiratory Protection, Yokohama, Japan.

**Johnson, A.T.** 2004. "Why Physiological Studies Are Important." Keynote address #2, International Society for Respiratory Protection, Yokohama, Japan.

Chiou, K.Y.H., **A.T. Johnson**, and K.M. Coyne. 2004. "Model of Exercise Performance Wearing a Respiratory Mask." Paper #047028, American Society of Agricultural Engineers, Ottawa, Canada

**A.T. Johnson**, K. Mackey, W. Scott, and F. Koh. 2004. "Peak Flow Rates While Wearing Respirators." American Industrial Hygiene Conference and Exposition, Atlanta, GA.

**A.T. Johnson**, K. Mackey, W. Scott, and F. Koh. 2004. "Overbreathing a Loose-Fitting PAPR." Paper #120-2, American Industrial Hygiene Conference and Exposition, Atlanta, GA.

**A.T. Johnson**, K. Mackey, W. Scott, and F. Koh. 2004.

“Overbreathing a Tight-Fitting PAPR.” Paper #120-1, American Industrial Hygiene Conference and Exposition, Atlanta, GA.

**A.T. Johnson.** “Fighting the Elements on SweetAire Farm.” 2004. Paper #04-0046, Northeast Agricultural/Biological Engineering Conference, State College, PA .

**A.T. Johnson,** “Engineering in Biology, Update.” 2004. Paper # 04-0002 Northeast Agricultural/Biological Engineering Conference, State College, PA.

F. Koh, **A.T. Johnson,** and W. Scott, Jr. 2004. “The Correlation Between Psychological Type and Performance Time While Wearing a Respirator.” Paper # 04-0061, Northeast Agricultural/Biological Engineering Conference, State College, PA.

W.H. Scott, Jr., K. Mackey, F. Koh, K. Chiou, and **A.T. Johnson.** 2004. “The Effect of Flow Rates on Performance Time.” Paper #04-0063, Northeast Agricultural/Biological Engineering Conference, State College, PA.

Phelps, S., W. H. Scott, Jr., and **A.T. Johnson.** 2004. “The Effect of Resistance on Breathing Apparatus Comfort.” Paper # 04-0064, Northeast Agricultural/Biological Engineering Conference, State College, PA.

**Johnson, A.T., H.J. Montas, A. Shirmohammadi** and **F.W. Wheaton.** 2005. “A Biological Engineering Curriculum that Works.” Presented at the Annual Conference of the Institute of Biological Engineering. University of Georgia, Athens, Georgia, USA. Institute of Biological Engineering Minneapolis, MN.

**Montas, H.J. and A. Shirmohammadi.** 2004. “Modeling of Soil Remediation by Nanoscale Particles.” Paper Number 043053 presented at the ASAE/CSAE Annual International Meeting, Sponsored by ASAE/CSAE, Fairmont Chateau Laurier, The Westin, Government Centre, Ottawa, Ontario, Canada. ASAE, St. Joseph, MI.

**Montas, H.J. and A. Shirmohammadi.** 2004. “Fractional Dispersive Transport of Nanoparticles in Heterogeneous Bioenvironments.” Presented at the Greater Washington Nanotechnology Alliance Symposium. JHU/Applied Physics Laboratory, Laurel, MD.

Gudla, P.R., **H.J. Montas** and **A. Shirmohammadi.** 2004. “Stochastic-Wavelet Preprocessing of Heterogeneous Data for Finite Element Analysis.” Paper Number 043051 presented at the 2004 ASAE/CSAE Annual International Meeting, Sponsored by ASAE/CSAE, Fairmont Chateau Laurier, The Westin, Government Centre, Ottawa, Ontario. ASAE, St. Joseph, MI.

Hebou, L., Y.-P. Tsang, I. Iheanyi-Igwe and **H.J. Montas,** 2004. “A DSS For Resident Canada Geese Management in Maryland.” Paper Number 043017 presented at the ASAE/CSAE Annual International Meeting, Sponsored by ASAE/CSAE, Fairmont Chateau Laurier, The Westin, Government Centre, Ottawa, Ontario, Canada, 1-4 August 2004. ASAE, St. Joseph, MI.

Carleton, J.N., P. Pathak, M. Lipscomb, **H.J. Montas, D.R. Tilley** and **A. Shirmohammadi.** 2004. “Combining GIS, AI and Modeling to Analyze Wetland Functions in Maryland Watersheds.” Paper Number 042012 presented at the ASAE/CSAE Annual International Meeting, sponsored by ASAE/CSAE, Fairmont Chateau Laurier, The Westin, Government Centre, Ottawa, Ontario, Canada. ASAE, St. Joseph, MI.

**Montas, H.J.** and A.J. Tipton, 2004. “Dimensionality Effects in Cellular Automaton Modeling of Cardiac Dynamics.” Paper Number 047029 presented at the ASAE/CSAE Annual International Meeting, sponsored by ASAE/CSAE, Fairmont Chateau Laurier, The Westin, Government Centre, Ottawa, Ontario, Canada. ASAE, St. Joseph, MI.

**Shirmohammadi, A.** and **H. Montas.** 2004. “Monitoring and Modeling NPS in Maryland.” Presented at the National Nonpoint Source Monitoring Workshop: Managing Nutrient Inputs and Exports in the Rural Landscape. Ocean City, Maryland.

Nejadhashemi, A.P., **A. Shirmohammadi,** J.M. Sheridan, and **H. Montas.** 2004. “Evaluation of Analytical Methods for Streamflow Partitioning.” Paper Number 042151. Presented at the ASAE/CSAE Annual International Meeting. Ontario, Canada.

Vargas, A.M., M.S. Kim, **Y. Tao,** A. Lefcourt, and Y.R. Chen. 2004. “Safety Inspection of Cantaloupes and Strawberries Using Multispectral Fluorescence Imaging Techniques.” ASAE Paper 04-3056. Ottawa, Canada.

**Tao, Y.,** A. Vargas, M. Kim, A.M. Lefcourt, Y.R. Chen,

Y. Luo, R.L. Buchanan, Y. Song. 2004. "Safety Inspection of Fruit and Vegetables Using Optical Sensing and Imaging Techniques-Hyperspectral Fluorescence Imaging System for Food Safety." JIFSAN Annual Conference, College Park, Maryland.

Ganeshan, P. and **D.R. Tilley**. 2004. "Biofilter Removal of Carbon Monoxide from Air-Mixed and Engine-generated Sources Under Various Operating Conditions." Bioscience Research and Technology Review Day. University of Maryland, College Park.

**Tilley, D.R.**, H. Badrinarayanan, J.H. Son. 2004. "Development of an Ecosystem Model (MARSHDO) for Assessing Oxygen Demand in a Recirculating Shrimp Aquaculture Treatment Wetland." ASAE/CSAE Annual International Meeting. Ottawa, Ontario, Canada.

**Tilley, D.R.** and P. Ganeshan. 2004. "Control of Lethal Poisons with Soil Ecosystem Machinery." Annual Meeting of the American Ecological Engineering Society. Fayetteville, Arizona. [www.aeesociety.org](http://www.aeesociety.org).

**Tilley, D.R.** 2004. "Solar Transformities of Modern Technologies Estimated from Historical Energy Use in the United States." Biennial Energy Research Conference. Center for Environmental Policy, Department of Environmental Engineering Sciences. University of Florida, Gainesville.

Ganeshan, P. and **D.R. Tilley**. 2004. "Energy Evaluation of Air Biofilters for Carbon Monoxide." Biennial Energy Research Conference. Center for Environmental Policy, Department of Environmental Engineering Sciences. University of Florida, Gainesville.

Izursa, J.L. and **D.R. Tilley**. 2004. "Energy Analysis of Bolivian Natural Gas." Biennial Energy Research Conference. Center for Environmental Policy, Department of Environmental Engineering Sciences. University of Florida, Gainesville.

**Wheaton, F.W.** 2004. "Evolution of Agricultural Engineering to Biological Engineering." Paper presented at the CIGR International Meeting. Beijing, China.

**Wheaton, F.W.** 2004. "Sloan Pre-Tenure Fellowship."

Work-Life Seminar. University of Maryland, College Park, Maryland.

**Wheaton, F.W.** 2004. "Aquacultural Facilities for the Department of Animal and Avian Sciences." Maryland System Aquaculture Symposium. Annapolis, Maryland.

**Wheaton, F.W.**, A. Lazur, K. Hanna, and S. VanKeuren. 2004. "Recirculating Systems Technology." Maryland System Aquaculture Symposium. Annapolis, Maryland.

**Wheaton, F.W.** and C. Woods. 2004. "Striped Bass Genetics Research at the New Crane Facilities." Maryland System Aquaculture Symposium. Annapolis, Maryland.

**Wheaton, F.W.** 2004. "Biosystems Engineering: An Evolution from Agricultural Engineering." Presentation at Zhejiang University, College of Biosystems Engineering and Food Science. Hangzhou, China.

## ***INVITED PRESENTATIONS***

**Baldwin, A.H.** 2005. "Variation in Vegetation Structure of Tidal Freshwater Swamps Across an Estuarine Gradient." Invited symposium talk. Society of Wetland Scientists annual meeting, Charleston, SC.

**Baldwin, A.H.**, Leck, M.A., and Whigham, D.F. 2004. "Seed Bank and Vegetation Dynamics of Tidal Freshwater Wetlands of the U.S. Atlantic Coast." Invited talk in symposium on tidal freshwater wetlands. Seventh INTECOL International Wetlands Conference, Utrecht, The Netherlands.

**Johnson, A.T.** 2004. "How is Respirator Comfort Affected by Individual Respiratory Resistance?" Paper #21, International Society for Respiratory Protection, Yokohama, Japan.

**Johnson, A.T.** 2004. "Why Physiological Studies Are Important." Keynote address #2, International Society for Respiratory Protection, Yokohama, Japan.

Chiou, K.Y. H., and **A.T. Johnson**, and K.M. Coyne. 2004. "Model of Exercise Performance Wearing a Respiratory Mask," Paper #047028, American Society of Agricultural Engineers, Ottawa, Canada.

# *PROPOSALS FUNDED*

**Tao, Y.** 2004. "Imaging Modalities for Quality and Safety Inspections." CIGR International Annual Conference. Beijing, China.

**Tao, Y.** 2004. "Bio-Imaging and Machine Vision." Zhejiang University.

**Tao, Y.** 2004. "Advanced Detection Technology for Food Processing Lines." National Food Processor Association Annual Conference. Washington, D.C.

**Tao, Y.** 2004. "Machine Vision and Imaging for Automated Detection of Hazardous Materials." National Food Processor Association Annual Conference. Washington, D.C.

**Tao, Y.** 2004. "Machine Vision Intelligence, Process Automation, and Productivity." Chinese Governmental Official Training Class. The Institute of Global Chinese Affairs of UMD.

**Tilley, D.R.** 2004. "Created and Restored Wetlands." University of Maryland Honors Course, Water and Power: Case Studies in Social Control (HONR 278L). College Park, MD.

**Tilley, D.R.** 2004. "Ecological Engineering and Industrial Ecology: Designing and Evaluating Sustainable Systems." University of Maryland, Biological Resources Engineering Department Seminar (ENBE 698). College Park, MD.

**Tilley, D.R., E. Felix, P. Ganeshan, J.L. Izursa, J. Mentzer and E. Poynter.** 2004. "Emergy, Ecology, Economy and Industry: A Systems Perspective for Their Integration." University of Maryland, Marine-Estuarine-Environmental Sciences program. Development, Ecology, Economics, Ethics Seminar (MEES 608N). College Park, MD.

**Tilley, D.R.** 2004. "Ecological Engineering: An Energy Basis for the Design of Sustainable Systems of Environment and Humanity." The Center for Science Exploration, Hampshire College, Five College, Inc. Amherst, Massachusetts.

"Genetic Variation and Mortality of Central Maryland Box Turtles." 2004-2006.

**Principal Investigator:** Lowell Adams (co-authored with Susan Hagood).

Sponsor: The Federal Highway Administration

"Constructed Wetlands for Shoreline Erosion Control: Field Assessment and Data Management." 2004-2005.

**Principal Investigator:** Andy Baldwin

Sponsor: Maryland Department of the Environment and U.S. Environmental Protection Agency.

"Theoretical and Experimental Evaluation of Acetate Thresholds as a Monitoring Tool for In Situ Bioremediation." 2005-2006.

**Principal Investigator:** Jennifer Becker

Sponsor: Maryland Water Resources Research Center

"Development of Engineering Strategies for Remediation of Chlorinated Solvent Contamination in Wetland Ecosystems." 2004.

**Principal Investigator:** Jennifer Becker

Sponsor: University of Maryland RISE Program, NSF, Clark School of Engineering and the Office of the Provost.

"Mid-Atlantic Regional Water Quality Coordination Project." 2004-2008.

**Co-Principal Investigator:** Gary Felton

Sponsor: USDA-CSREES

"Quantifying Nitrogen Fate from Hybrid Poplar Production on Biosolids Incorporated into Deep Rows." 2004-2006.

**Principal Investigator:** Gary Felton

Sponsor: USDA (McIntire-Stennis Funds)

"Development and Evaluation of Biological Treatment Systems for Animal Manure." 2004-2006.

**Principal Investigator:** Pat Kangas

Sponsor: USDA Agricultural Research Service.

"Production of a Park Management Recruiting Brochure." 2004.

**Principal Investigator:** Pat Kangas

Sponsor: Park and Resource Conservation Foundation/Maryland Recreation and Park Association.

“Theoretical and Experimental Evaluation of Acetate Thresholds.” 2005-2006.

**Co-Principal Investigator:** Hubert Montas

Sponsor: UMCP Water Resources Research Center, DOI-Water. Sci./USGS.

“Developing an E-Learning Resource for Water and Nutrient Management and Conservation, for the Nursery and Greenhouse Industries.” 2004-2007.

**Co-Principal Investigator:** David Ross

Sponsor: USDA-CSREES Integrated Research, Education and Extension.

“Water and Nutrient Management Education for Nursery and Greenhouse Growers in the State of Maryland.” 2004-2005.

**Co-Principal Investigator:** David Ross

Sponsor: Maryland Department of Agriculture

“Reducing Pesticide Inputs in Nurseries Using a Portable Hot Water Immersion.” 2004-2005.

**Co-Principal Investigator:** David Ross

Sponsor: USDA-CSREES-IPM

“Reducing Pesticide Inputs in Nurseries Using a Portable Hot Water Immersion System.” 2004.

**Co-Principal Investigator:** David Ross

Sponsor: Maryland Nursery and Landscape Association.

“Improving Quality and Safety of Intact and Fresh-Cut Produce.” 2005-2007.

**Principal Investigator:** Yang Tao

Sponsor: USDA/ARS

“Algorithms and Sensor for Characterizing Fruits and Vegetables and Meat.” 2004-2005.

**Principal Investigator:** Yang Tao

Sponsor: USDA/Agricultural Research Service

“Sloan Pre-tenure Fellowship for Dr. Jennifer Becker.” 2004-2005.

**Principal Investigator:** Fred W. Wheaton

Sponsor: Sloan Foundation

“University of Maryland to Host the Northeast Regional Aquaculture Center.” 2005.

**Principal Investigator:** Fred W. Wheaton

Sponsor: USDA

## ***EXTENSION PUBLICATIONS***

**Becker, J. G.**, G. Berardesco, B. E. Rittmann, and D. A. Stahl. 2005. “The Role of Syntrophic Associations in Sustaining Anaerobic Mineralization of Chlorinated Organic Compounds.” *Environmental Health Perspectives (NIEHS)* 13(3):310-316.

**Becker, J. G.** and Robert E. Graves. 2004. “Ammonia Emissions and Animal Agriculture.” USDA Cooperative State Research, Education and Extension System (CSREES) Mid-Atlantic Water Quality Program. Available at:

<http://www.agnr.umd.edu/users/waterqual/>.

Seagren, E.A., and **J.G. Becker**. 2004. “Petroleum Hydrocarbons and MITBE.” In *Natural Attenuation of Hazardous Waste* (R. Surampalli, S-K. Ong, E.A. Seagren, J. Nuno, and S. Banerji, eds.). American Society of Civil Engineers, Reston, VA. Chapter 5.1, pp. 120-167.

Barker, L.S., **G.K. Felton**. 2004. “Characterization of Agricultural Riparian Buffer Landscapes in the Coastal Plain and Piedmont Physiographic Regions of Maryland.” *J. Environmental Management*. (In press).

**G.K. Felton, L.E. Carr**, M.J. Habersack. 2004. “Nutrient Fate and Transport Associated with Poultry Litter Stockpiles.” *Transactions American Society Agricultural Engineers*. (In press).

Barker, L.S., **Gary K. Felton**, E. Russek-Cohen. 2004. “Use of Maryland Biological Stream Survey Data to Determine Effects of Agricultural Riparian Buffers on Measures of Biological Stream Health.” *Environ. Monitoring and Assessment*. (In press).

**G.K. Felton**, Hughes, K.J., E. Russek-Cohen. 2004. “Water-Extractable Phosphorus Reduction in Poultry Litter with Calcium- and Iron-rich By Product Amendments.” *Transactions American Society Agricultural Engineers*, 47(6): 2069-2077.

Barfield, B.J., **G.K. Felton**, E.W. Stevens, and M. McCann. 2004. “A Simple Model of Karst Spring Flow Using Modified NRCS Procedures.” *J. Hydrology*, 287(1-4):34-48.

**Felton, G.K. L.E. Carr**, C.E. Prigge, J.C. Bouwkamp. 2004. “Nitrogen and Phosphorus Dynamics in Co-composted Yard Debris and Broiler Litter.” *Compost*

Science and Utilization. 12(4):349-355.

**Ross, D.S.** 2004. "Drip Irrigation and Water Management." Chapter 3. pp. 15-35. In: Lamont, W. (ed) Using Plasticulture for Vegetables, Strawberries and Cut Flowers. Natural Resource, Agriculture and Engineering Services (NRAES). NRAES-133. pp.147.

**Ross, D.S.** 2004. "Screening Out Insects." Chapter 3. pp. 53-56. In: S. Gill, Ed. Total Crop Management for Greenhouse Production. EB 363. 2<sup>nd</sup> Ed. Maryland Cooperative Extension, University of Maryland. pp.269.

**Ross, D.S.** 2004. "Pesticide Application Equipment-Selection and Calibration." Chapter 4, pp. 57-61. In: S. Gill, Ed. Total Crop Management for Greenhouse Production. EB 363. 2<sup>nd</sup> Ed. Maryland Cooperative Extension, University of Maryland. pp.269.

**Ross, D.S.** 2004. "Greenhouse Systems-Selection and Placement." Chapter 13, pp. 149-152. In: S. Gill, Ed. Total Crop Management for Greenhouse Production. EB 362. 2<sup>nd</sup> Ed. Maryland Cooperative Extension, University of Maryland. pp. 269.

**Ross, D.S.** 2004. "Provide a Good Growing Environment-Temperature and Humidity." Chapter 14, pp.153-164. In: S. Gill, Ed. Total Crop Management for Greenhouse Production. EB 363. 2<sup>nd</sup> Ed. Maryland Cooperative Extension, University of Maryland. pp. 269.

**Ross, D.S.** 2004. "Water Supply, Irrigation, and Management." Chapter 17, pp. 175-182. In: S. Gill, Ed. Total Crop Management for Greenhouse Production. EB 363. 2<sup>nd</sup> Ed. Maryland Cooperative Extension, University of Maryland. pp. 269.

**Ross, D.S.** 2004. "Fertilizer Injection or Fertigation." Chapter 21, pp. 191-195. In: S. Gill, Ed. Total Crop Management for Greenhouse Production. EB 363. 2<sup>nd</sup> Ed. Maryland Cooperative Extension, University of Maryland. pp. 269.

**Ross, D.S.** 2004. "Inventor of Air-inflated Double-layer Polyethylene Greenhouse Honored." Mid Atlantic Grower (American Farm Publications, Inc., Easton, MD), 6(10):6-7.

Lea-Cox, J.D., **D.S. Ross**, and K.M. Tefteau. 2004. "Training Manual-Writing Nutrient Management Plans for Out-of-Ground Nursery and Greenhouse Operations." (4<sup>th</sup> Ed.). Maryland Cooperative Extension

and Maryland Department of Agriculture. 40pp.

## ***INVITED EXTENSION PRESENTATIONS***

**Ross, D.S.** "Keeping the Heat In and Out." 2005. The Mid-Atlantic Horticulture Short Course. Virginia Beach, VA.

## ***PRESENTED EXTENSION PAPERS***

Lea-Cox, J.D., **D.S. Ross** and K.M. Tefteau. 2004. "Developing Water and Nutrient Management Plans for Container Nursery and Greenhouse Production Systems." Proc. Symp. 16 XXVI<sup>th</sup> Int. Hort. Congress. Acta Hort. 633-373-379.

**Ross, D.S.** and J.D. Lea-Cox. 2004. "Engineering Review of Container Nursery Facilities to Implement Water and Nutrient Management." Paper 04-4021.

**Ross, D.S.** and J.D. Lea-Cox. 2004. "Audit of Container Nursery Facilities to Implement Water and Nutrient Management." Paper 04-0033.

**Ross, D.S.** 2005. "Water--It Can Make or Break a Nursery." Southern Maryland Introduction to Nursery Management: Part II. Maryland Cooperative Extension. Hughesville, MD.

**Ross, D.S.**, J.D. Lea-Cox, and M. Ristvey. 2005. "Professional Web-based Learning Modules for Water and Nutrient Management." Sustainable Nursery Crop Production Conference. Maryland Cooperative Extension and Maryland Department of Agriculture. Patuxent Wildlife Visitor Center, Beltsville, MD.

Lea-Cox, J.D., A.G. Ristvey and **D.S. Ross**. 2005. "Reduction in Nitrogen and Phosphorus Leaching with Changed Fertigation and Irrigation Management in Nurseries." Sustainable Nursery Crop Production Conference. Maryland Cooperative Extension and Maryland Department of Agriculture. Patuxent Wildlife Visitor Center, Beltsville, MD.

Lea-Cox, J.D. and **D.S. Ross**. 2005. "Developing a Web-based Learning Center for Water and Nutrient Management for the Nursery and Greenhouse Industries in the Eastern U.S." Sustainable Nursery Crop Production Conference. Maryland Cooperative Extension and Maryland Department of Agriculture. Patuxent Wildlife Visitor Center, Beltsville, MD.

**Ross, D.S.** 2005. "Layout and Design of Pasture Watering Systems." Central Maryland Pasture Conference. Carroll County Agricultural Center, Westminster, MD.

## ***ALUMNI NEWS***

**Steve Schmoll**, BS 2003 graduate, entered his senior season with the Terrapin baseball team. Steve drew the attention of Major League scouts and has joined the Dodgers minor league baseball team. After spending only one year in the minors, Steve is pitching in the big leagues. Since his debut, Steve has pitched in six of the Dodgers' 14 games and has picked up a win and a save.  
***Way to go Steve!***

Sam Walter, a 2003 B.S. graduate, was married to Stephanie on April 30, 2005.



Dr. John W. Hummel, an M.S. graduate student from 1966, retired after 28 years as an Agricultural Engineer with USDA-ARS this past December 31, 2004. Since

2000, John has been with the Cropping Systems and Water Quality Research Unit in Columbia, Missouri. From 1976 to 2000 he was employed by ARS in Urbana, Illinois. John has a B.S. and an M.S. degrees in Agricultural Engineering from the University of Maryland and a Ph.D. in Agricultural Engineering from the University of Illinois. Prior to joining ARS, he was on the faculty of the University of Maryland for seven years.

James Adkins, a 1999 B.S. graduate student, was married to Michelle on January 1, 2005.  
***Congratulations James and Michelle!***



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