# Appendix A - Example Curriculum by Semester

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**Total Credits**

**Total number of semesters**

**Total number of years**
Appendix B

NCSU Distance Education and Learning Technologies Applications (DELTA)

Survey Results

**Topic description** - This survey was designed to assess interest level in a non-degree graduate soil science program for place bound students. The survey was sent electronically to nearly 500 practicing professionals in soil and related sciences.

1 - Does your employer provide incentives (salary, promotion, etc.) for enhanced education and or advanced degrees?

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<tr>
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<td>No</td>
<td>60</td>
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*Group Avg: 0.51 - Voters: 122 - Standard Deviation: 0.5*

2 - Have you participated in field or classroom based professional development programs offered through a higher education institution?

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<td>No</td>
<td>8</td>
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</table>

*Group Avg: 0.93 - Voters: 122 - Standard Deviation: 0.25*

3 - Do you prefer classroom or field based professional development opportunities

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<td>Field</td>
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*Group Avg: 2.52 - Voters: 122 - Standard Deviation: 0.55*

4 - Would you benefit professionally by completion of courses, workshops, etc that would not lead to an advanced degree?

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<th>Response</th>
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</thead>
<tbody>
<tr>
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<tr>
<td>No</td>
<td>18</td>
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*Group Avg: 0.88 - Voters: 122 - Standard Deviation: 0.33*
5 - If so, would distance learning be a viable alternative (courses offered on the Internet, or delivered by CD ROM or DVD)?

<table>
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<tr>
<th>Response</th>
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</tr>
</thead>
<tbody>
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</tbody>
</table>

*Group Avg: 0.97 - Voters: 122 - Standard Deviation: 0.18*

6 - Would you benefit professionally by completion of an advanced degree?

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</thead>
<tbody>
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</table>

*Group Avg: 0.87 - Voters: 122 - Standard Deviation: 0.34*

7 - Would you prefer to complete an advanced degree through traditional on-campus programs?

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</thead>
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*Group Avg: 0.18 - Voters: 122 - Standard Deviation: 0.39*

8 - Would a distance-learning alternative be a viable alternative to traditional on-campus degree programs for you?

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*Group Avg: 0.97 - Voters: 122 - Standard Deviation: 0.18*

9 - Which method of delivery do you prefer for Distance Education courses?

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<td>DVD</td>
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<td>Other</td>
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*Group Avg: 1.4 - Voters: 112 - Standard Deviation: 0.75*
10 - Would you like us to contact you with further information?

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<tbody>
<tr>
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<td>No</td>
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</table>

Group Avg: 0.63 - Voters: 122 - Standard Deviation: 0.48

11 - Please use the space below for any other comments.

Voting Comments:
Web-based education would be a great thing, but the time frame would need to be pretty flexible for those with full time jobs to complete sections. Something self-paced (within reason) would be nice if possible. In other words, you simply do not advance until you complete a section, but that section can be completed today or 3 weeks from now. Thanks for the opportunity, MM

In reference to number 9. I think a combination of methods could be used. I would prefer the DVD and Cd-Rom approach so that I can take it with me and work on it wherever I go. I would be open to using the internet if the scheduling worked out.

PLEASE E-MAIL ANY INFORMATION AVAILABLE ABOUT THE PROGRAM. I WOULD BE INTERESTED IN DISTANCE LEARNING AT NCSU.
blowry@scotlandcounty.org.

Courses in soil science that could lead to the ability to be licensed as a soil scientist and/or obtain a degree in soil science would be of the most benefit to me.

More concentration should be placed on undergraduate enrollment and programs. It seems that every year we have less and less undergraduates but at the same time need more people to do the work. People with Masters degrees compete with Batchelor degreed people for the same "blue collar" jobs in todays work place. The University needs to take every step possible to elevate the status of soil scientists in general. Positions need to be created for these advanced degreed people that you propose. Until this is accomplished, creation of more MS's will only serve to water down the already meager earnings of BS soil scientists.

Would your program transfer credits to NCA&T and visa-versa. I currently take graduate level soil science classes on campus at NCA&T (one per semester) with the intention of receiving a masters in soil science. It would be benefical if your proposed online courses (or DVDs etc) would satisfy MSS course requirements for NCA&T. I might also consider transferring to your online program if it accepted my course work from A&T. My work schedule does not allow me to attend more than one on-campus course per semester. However, I could manage an online course in the evening or during the summer semester in addition to the on-campus classes at NCA&T.

Due to work load and schedule, cannot deal with fixed time tables for classes or provide committment to team study projects. Would need a flexible schedule and individual work projects.

Already have my Bachelor of Science from NCSU in Biological Sciences. Would be interested in the possibility of pursuing an Masters in Soils online

I am an Environmental Health Specialist with Transylvania County, NC Health Dept. I mostly perform soils work for septic systems. I have an M.S. in Biology from ASU but have had no real soils courses. I am interested in obtaining some type of soils certification/degreee and have inquired as to the extent of this path. Since I have no soils classes, most people have said it would not be worth pursuing. Any thoughts or suggestions?

I feel a distance learning program of this type would be a great benefit to myself and others in the environmental health field. The opportunity for viable advanced degrees through distance learning is, to my knowledge, limited at this point and would be greatly welcome. I also feel it would benefit NCSU in being ahead of the trend with regards to this type of program.
I have taken some classes on line and they work out pretty good

Using technology is a great way to provide additional opportunities to those that want to further their professional development. However, it should be combined with the traditional classroom setting to capture the benefits that can only be gleaned from the communication that goes there.

I am 62 years old and probably will only work 3 or 4 more years. I currently hold a Masters Degree (M.A.) and work as an Environmental Health Specialist primarily in On-Site wastewater (soil evaluations).

I am currently completing an on-line MS in Environmental Management through the University of Maryland University College and have been successful and enjoyed the experience.

I think there is a great demand for this type of program. There are many health department employees with science backgrounds but have no way of getting the 15 contact hours of soil science to become licensed in NC.

I already have my masters, but might be interested in taking some classes for personnel growth

I would be interested in distance learning by online, CD, or DVD. Sounds like a lot of work and a lot of fun.

I am currently in the application process for a master's degree in Soil Science at NCSU. This program would fit perfectly into my educational and career goals

A combination of both distance ed classes and summer field labs would be better. I feel that a field of study such as soil science would require both to be successful.

Would love to have an online program other than education.

Very interested in obtaining my graduate degree.

Although I have an MS degree, I may be interested in taking an individual course in soil science if offered over the internet or by other means if it would help me in my job. Some areas of interest (in which I have not taken a graduate level course) include soil physics, morphology, etc. I had an excellent soil fertility course under Dr. Kamprath!

I am not in an ag related field so this degree would not benefit me personally. I think the opportunity is terrific for those who would benefit.

A great opportunity for those who could not obtain an advanced degree through traditional means because of work circumstances. I hope it becomes a reality.

The costs for the Distance Education Courses must be much less than Continuing Ed courses and seminars in order to be affordable to me unless NRCS is willing to pay for part of the costs. At this point in my career (Elderly) the advantage of a Masters degree is less about future earnings and more about self satisfaction and a desire to learn.

Please send info on other natural resource programs or courses as well. Thanks

I work for Buncombe County Soil and Water Conservation District in Asheville. Unfortunately there are no local institutions that provide a natural resources based master's program. I need to work but would like to further my education. This option is very enticing to me and I look forward to future developments. Is there a timeframe that this program might be established with enough interest?

I both need and want soil science training, however going to class is just not an option at this point in my life. This would be an excellent personal and professional opportunity.
Appendix D

Program Resource Requirements - CVs (24 Total)

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CURRICULUM VITAE

Yuji Arai, Ph.D.
Environmental Soil Chemistry
School of Agricultural, Forest, and Environmental Sciences, 270 Poole Agricultural Center, Clemson University, Clemson, SC 29634-0315 Phone: 864-656-2607 E-mail: yarai@clemson.edu

EDUCATION:

B.S. 1996 Soil and Water Science (Major) and Environmental Toxicology (Minor). University of California, Davis.

PROFESSIONAL EXPERIENCE:
Jan, 2007 – present Assistant Professor in Environmental Soil Chemistry Institute of Environmental Toxicology Department of Entomology, Soils and Plant Sciences Clemson University, Clemson, SC

2009-2012 A Member of Graduate Faculty of The University of Alabama Tuscaloosa, AL

• Have investigated the temporal and spatial distribution of As, Zn, Ni and U in sediments and geomedia.

Feb, 1997 – March, 2002 Graduate Research Assistant at University of Delaware Advisor: Dr. D.L. Sparks
• Investigated the reaction dynamics and surface speciation of arsenic and phosphorus at the mineral-water interface and in soils.

• Investigated adsorption of volatile organic compounds (VOC, TCE, and Toluene) in California loamy soils.
• Assisted with research on volatile nitrogen compound (nitrous oxides) release from California loamy soils.
Statement of Research Interests:

My major research interest in environmental chemistry is to understand the predominant and fundamental chemical reactions and mechanisms of nutrients (e.g., Mo and P), metal(loid)s (e.g., As, Cr, Cu, and Hg) and radionuclides (e.g., U and Np) at the mineral-water interface, in soils/sediments, and in biological tissues (e.g., aquatic invertebrates and phytoplankton). Such knowledge greatly enhances one’s ability to understand the contaminant speciation and to predict the fate, transport and bioavailability in terrestrial-water environments. I am especially interested in the kinetics of partitioning (i.e., adsorption, desorption, precipitation, and dissolution) and redox reactions that take place at the soil/sediment-water interface. My current molecular environmental science research is to investigate the reaction dynamic and surface speciation of metal(loid)s (i.e., As, Ni, and Zn) and radionuclides (i.e., U and Np) in sediments and at the mineral-water interfaces in the presence of common groundwater ions (e.g., carbonate, silicate, and calcium). I use in situ spectroscopic techniques (e.g., X-ray absorption spectroscopy, synchrotron based X-ray fluorescence spectroscopy, and vibrational spectroscopies) to better understand the important solid-state speciation of contaminants responsible for the macroscopic reactions (adsorption/desorption reactions). As with my previous research, I am employing a cadre of macroscopic and molecular scale approaches and tools over a range of temporal scales. In my view, to thoroughly understand important physical, chemical, and biological processes and mechanisms in soils and waters, one must study the processes over a range of spatial and temporal scales. Such approaches greatly enhance one’s ability to assist in the sustainability of agriculture, industry and government by providing sound knowledge concerning the environmental fate and cycling of contaminants and nutrients in the environment.

PROFESSIONAL ACTIVITIES

PROFESSIONAL AFFILIATIONS:
American Chemical Society (2000-present)
Soil Science Society of America (1997-present)
Association of Women in Soil Science (2009-present)

REFEREE:

- Proposal review panel member, National Science Foundation-Division of Earth Science
- Proposal review pane member, Stanford Linear Accelerator, Menlo park, CA
- Proposal review panel member, Research Corporation, Tucson AZ.
- Proposal review pane member, Canadian Light Source, Canada

Manuscript review panel member for following peer-reviewed international journals.

- Applied Geochemistry
- Applied Spectroscopy
- Chemical Geology
- Environmental Chemistry
- Environmental Science and Technology
- Environmental Research
- Geochimica et Cosmochimica Acta
- Geoderma
- Journal of Colloid and Interface Sciences
• *Journal of Environmental Quality*
• *Soil Science*
• *Vadose Zone Journal*

**TEACHING EXPERIENCE:**

**Spring Semester 2011**
Crop and Soil Environmental Sciences (CSENV) 202: Soils  
Clemson University, School of Agriculture, Forest and Environmental Sciences, Clemson, South Carolina.

**Fall Semester 2011**
Crop and Soil Environmental Sciences (CSENV) 202: Soils  
Clemson University, School of Agriculture, Forest and Environmental Sciences, Clemson, South Carolina.

**Fall Semester 2010**
Crop and Soil Environmental Sciences (CSENV) 202: Soils  
Sustainable Crop systems (SSCS) 401: Academic and Professional Development  
Clemson University, Department of Entomology, Soils, and Plant Sciences, Clemson, South Carolina.  
Agriculture (AGRIC) H 491: Senior Honors Research

**Spring Semester 2010**
Crop and Soil Environmental Sciences (CSENV) 202: Soils  
Clemson University, Department of Entomology, Soils, and Plant Sciences, Clemson, South Carolina.

**Spring Semester 2009**
Crop and Soil Environmental Sciences (CSENV) 202: Soils  
Soils and Sustainable Crop Systems (SSCS) 496: Creative Inquiry.

**Fall Semester 2008**
Crop and Soil Environmental Sciences (CSENV) 475/675: Environmental Soil Chemistry  
Clemson University, Department of Entomology, Soils, and Plant Sciences, Clemson, South Carolina.  
Soils and Sustainable Crop Systems (SSCS) 496: Creative Inquiry.

**Spring Semester 2008**
Crop and Soil Environmental Sciences (CSENV) 202: Soils  
Soils and Sustainable Crop Systems (SSCS) 496: Creative Inquiry.

**Fall Semester 2007**
Crop and Soil Environmental Sciences (CSENV) 202: Soils  
Clemson University, Department of Entomology, Soils, and Plant Sciences, Clemson, South Carolina.
Spring Semester 2007
Crop and Soil Environmental Sciences (CSENV) 475/675: Soil Physics and Chemistry
Co-taught with V. Quisenberry
Clemson University, Department of Entomology, Soils, and Plant Sciences, Clemson, South Carolina

Spring Semester 2001
Teaching assistant for PLCS 810 (Kinetics and Surface Chemistry of Soils) at University of Delaware, Plant and Soil Sciences Department, Newark, Delaware.

Spring Semester 2000
Teaching assistant for PLSC 608 (Environmental Soil Chemistry) at University of Delaware, Plant and Soil Sciences Department, Newark, Delaware.

April 2000
Interdisciplinary teaching program, Cherry Hill high school, NJ
Soil chemistry demonstration “Do soils change toxicity of contaminants?” (Cr(III) oxidation by birnessite, MnO₂(s)).

May 2000
Interdisciplinary teaching program, South Dover Elementary School (3rd/4th graders)
Introduction to soil science “Associations between texture of soils and rainfall leaching”.

HONORS/AWARDS:
1. University of California, Davis. Dean’s Honors List, Fall 1995
2. University of California, Davis. Outstanding Senior Recognition Award, 1996
3. University of California, Davis. Alumni Senior Recognition Award, 1996
4. Graduate Research Fellowship, College of Agricultural Sciences, University of Delaware, 1996-2002
5. 2004 Science Highlight Award by National Synchrotron Light Source, NY.
7. 2007 Scientific highlight award by Stanford Synchrotron Radiation Laboratory, CA
8. Clemson University, 2007 Board of Trustees Faculty Awards

ADVISING EXPERIENCE:
1999-2002
Trained and mentored undergraduate honored students, M.S. and Ph.D. students concerning analytical equipment, methodology, and their research development. Research by an undergraduate student (K. E. Statts) was presented at 2001 annual meeting of the Soil Science Society of America, Charlotte, North Carolina), and was published in Journal of Environmental Quality. See the publication section below (Statts et al, 2004).

2002-2003
An advisory committee member of a Master student (Laura Kirk) from University of Delaware. Thesis title: Metal sorption effects on arsenite oxidation kinetics at the birnessite-water interface. The M.S. thesis research was published in Environmental Science and Technology. See the publication section below (Power et al., 2005).

2008-present
Major advisor of doctoral students (A. Rick) from Clemson University.
**2008-2010**

Co-major advisor of a doctoral student (D. Wallace,) from Clemson University.

**Examination and Dissertation Committee Membership**

**M.S. Examination/thesis committee (2000-2002)**

M.S. qualifying examination. Laura Power, Department of Plant and Soil Sciences, University of Delaware, USA.

Thesis title: Metal sorption effects on arsenite oxidation kinetics at the birnessite-water interface. A part of M.S. thesis research was published in *Environmental Science and Technology*.

**M.S. Examination/thesis committee (2007-2009)**

M.S. qualifying examination. Jonathan Cammack, Department of Entomology, Soils, and Plant Sciences, 270 Poole Agricultural Center, Clemson University


**M.S. Examination/thesis committee (2008-2010)**

Master degree, Kimberly Douglas. Department of Entomology, Soils, and Plant Sciences, 270 Poole Agricultural Center, Clemson University

Thesis title: Organic Waste Diversion: Composting Clemson University's Dining Hall Waste

**M.S. Examination/thesis committee (2008-2009)**

Master degree, Sarah Robinson. Institute of Environmental Toxicology, Clemson University

Title: The effects of pulse exposures of suspended clay on the survival, growth, and reproduction of *Daphnia Magna*.

**Ph.D. Examination/thesis committee (2007-2010)**

Doctoral degree, Masayuki Shimizu. University of Delaware.

Title: Methylarsenic sorption and speciation mechanisms in natural systems

Masayuki Shimizu

**Ph.D. Examination/thesis committee (2011-present)**

Doctoral degree. Dalton Belchior Abdala.

University of Delaware

- An advisory committee member of a doctoral student (Kusumica Mitra) from Clemson University (2008-2009), transferred to Mississippi State University in 2009).
- An advisory committee member of a doctoral student (A. Hixon) from Clemson University (2009-present).
- An advisory committee member of a doctoral student (Ghanashyam Neupane) from University of Alabama (2008-present).
- An advisory committee member of a Master student (Stephen Wood Taylor) from Clemson University (2010-present).
- An advisory committee member of a Master student (Todd Driesse) from Clemson University (2011-present).

**Undergraduate student supervised/advised:**

Undergraduate students at University of Delaware (2000-2002): 1
Undergraduate senior thesis title: Alum amendment effects on phosphorus release and
distribution in poultry manure amended sandy soils.
The senior thesis research was published in *Journal of Environmental Quality*.

Undergraduate students at Clemson University (2007-2009): Tessa Wallace, Emily Fredrick
Undergraduate students at Clemson University (2007-present): Bethany Avera, Eric Young, Jasua
Van Abel

**PUBLICATIONS IN INTERNATIONAL PEER-REVIEWED JOURNALS (EXCLUDING MEETING ABSTRACTS):**


27. VandeVoort, Allison Rick and *Y. Arai*. 2011, Environmental Soil Chemistry of Silver:


   Macroscopic and Molecular-scale Assessment of Soil Lead Contamination Impacted by

   reactivity in soil: 1. Sorption and desorption on soils. *Environmental Science and
   Technology*. 45 (10), 4293–4299

   reactivity in soil: 2. Distribution and speciation in soil. *Environmental Science and
   Technology*. 45 (10), 4300–4306.

   Mineralogic investigation into occurrence of high uranium well waters in upstate South


   Sorption Mechanism at the Goethite-Water Interface. *Environmental Science and
   Technology*. 44, 8491-8496.

   parasitism and soil compaction on pupation of the green bottle fly Lucilia sericata (Meigen)


**REPORTS:**


**INVITED PRESENTATIONS:**


Invited talk in the student symposium: CSI Puerto Rico: Adventures in forensic entomology.


Arai, Y. Applications of Synchrotron Based X-ray Microbeam Techniques in Environmental Geochemistry. Stanford Environmental Molecular Science Institute, Stanford University, Stanford, California. July, 2006


Arai, Y. Reaction dynamics and surface chemical speciation of arsenic at the metal oxide-water


VOLUNTEER PRESENTATIONS, ABSTRACT AND POSTERS:


Arai, Y. and D. L. Sparks. 2001. Residence time effect on As(V) adsorption/desorption mechanisms at the aluminum oxide – water interface. 75th American Chemical Society Colloid and Surface Science meeting, Pittsburgh, Pennsylvania


Abbreviated Resume
David I. Bransby PhD
Department of Agronomy and Soils,
202 Funchess Hall, Auburn University, AL 36849
Phone: (334) 844-3935 E-mail address: bransdi@auburn.edu.

A. SUMMARY
As a Professor of Energy Crops and Bioenergy in the Department of Agronomy and Soils at Auburn University, he has 35 years of experience in agricultural research, education and extension, and has spent 23 years specializing in the production and processing of energy crops, a subject in which he has an international reputation. Dr. Bransby attends and presents at numerous bioenergy conferences every year, and is therefore, very well connected to the private sector. He has published 337 technical publications, and delivered over 100 invited presentations at regional, national and international conferences. He serves on the editorial boards of two prominent international bioenergy journals (Biomass and Bioenergy, published by Elsivier, and Biofuels, Bioproducts and Biorefining, or BioFPR, published by John Wiley and Sons) and is currently contracted to John Wiley & Sons to edit a text book on cellulosic biomass crops. Dr Bransby is a member of the Biomass R&D Initiative Technical Advisory Committee that is mandated by Congress to advise the Secretaries of Energy and Agriculture on national research priorities in the field of bioenergy, and was invited twice by the White House to brief President Bush on the emerging cellulosic biofuels industry.

B. EDUCATION

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<th>Institution</th>
<th>Date</th>
<th>Degree</th>
<th>Major</th>
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<td>Univ. of Natal, South Africa</td>
<td>1984</td>
<td>Ph.D.</td>
<td>Grassland Science</td>
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<tr>
<td>Univ. of South Africa</td>
<td>1978</td>
<td>Graduate Diploma*</td>
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<td>Univ. of Missouri-Columbia</td>
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<tr>
<td>Univ. of Natal, South Africa</td>
<td>1973</td>
<td>B.S.</td>
<td>Grassland Science</td>
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* Equivalent to a non-thesis masters degree

C. EMPLOYMENT
1990-present Full Professor, Agronomy & Soils, Auburn University.
1987-1990 Associate Professor, Agronomy & Soils, Auburn University.
1985 Acting Head, Grassland Science, University of Natal, South Africa.
1983-1987 Associate Professor, Grassland Science, University of Natal, South Africa.
1984 Visiting Scientist, Texas Tech University, Lubbock, Texas.
1975-1983 Assistant Professor, Grassland Science, University of Natal, South Africa.

D. HONORS AND AWARDS
1992 Alabama Agricultural Experiment Station Director’s Senior Research Award.
1995-2000 Alumni Professor, Auburn University.
1998 Appointed Fellow of the American Society of Agronomy.
2006 Award for Faculty Excellence in Outreach.
2008 Grantsmanship Award, College of Agriculture, Auburn University.
E. GRANTS / EXTRAMURAL FUNDING SUMMARY

PI or Co-PI on 86 grants:

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Total 86 $11,298,320

Key grants include US DOE projects involving co-firing switchgrass with coal in a commercial power plant ($2.6 million) and co-firing biomass in a Lafarge cement kiln ($4.5 million).

F. PROFESSIONAL RESPONSIBILITIES

Research involves field experiments on energy crops, especially switchgrass, including over 20 years of work with variety testing and response of biomass yield and composition to timing of harvest, harvest frequency, cutting height, and fertilization, as well as harvesting, storage and transport logistics and economic analysis. This work included greenhouse and small plot experiments, as well as commercial scale operations involving production of switchgrass on several hundred acres, and co-firing this biomass in a commercial scale power plant and a commercial cement kiln.

Teaching involves the following courses:

1. AGRN 5400/6400; Bioenergy and the Environment. A combined undergraduate/graduate class taught every Spring Semester.

2. AGRN 4010; Forage Production and Utilization: An undergraduate course for juniors and seniors every Spring Semester

G. PUBLICATION SUMMARY

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<td>f) Popular and Expt. Sta. articles</td>
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Total 337
STANLEY W. BUOL
Abbreviated CV

EDUCATION
B.S.  1956  Soil Science  University of Wisconsin
M.S.  1958  Soil Science  University of Wisconsin
Ph.D.  1960  Soil Science  University of Wisconsin

EXPERIENCE
1956 - 1957  USDA SCS Soil Scientist
1960 - 1966  Assistant and Associate Professor, Agricultural Chemical and Soils Department; Adj. Watershed Management Department, University of Arizona
1966 - 1969  Associate Professor, Soil Science Department, North Carolina State University
1969 - 1992  Professor, Soil Science Department, North Carolina State University
1992 - 2003  William Neal Reynolds Distinguished Professor of Soil Science, North Carolina State University
2003–Present  Distinguished Professor Emeritus, North Carolina State University

HONORS AND AWARDS
Fellow, Soil Science Society of America, 1978
Fellow, American Society of Agronomy, 1978
Achievement Award, North Carolina Soil Science Society, 1981
International Soil Science Award, Soil Science Society of America, 1989
Alumni Distinguished Graduate Professor, North Carolina State University, 1990
Soil Science Distinguished Service Award, Soil Science Society of America, 2005
Significant Contribution Recognition, National Cooperative Soil Survey. 2011

TEACHING EXPERIENCE
1960, 1962, 1964:  Soil Genesis, Morphology, and Classification (Senior-Graduate level)  3 credits. Univ. of Arizona.
1966-2003:  One semester per year:  Soil Genesis and Classification: Graduate level. 3 credits. North Carolina State University.
2003-Present:  Soil Genesis and Classification: Graduate level. 3 credits. North Carolina State University.

1975: Soil Classification and Mapping (Junior-Senior) 3 credits. North Carolina State University.


1988: Short course teaching Soil Genesis and Classification in Egypt. (Assuit University sponsored)


**BOOKS AND BOOK CHAPTERS**


Name - Michael R. Burchell II  
Rank - Assistant Professor  

Present Appointment:  ____% Research  30% Teaching  70 % Extension  

Years at current rank  4  
Years at NC State University  8  

Education  
Ph.D. 2003 – North Carolina State University Biological and Agricultural Engineering  
M.S. 1996 - University of Mississippi Civil Engineering  
B.S. 1992 - North Carolina State University Biological Sciences  

Professional Experience/Employment  
2007-present  Assistant Professor, Biological and Agricultural Engineering  
2003-2007  Extension Assistant Professor, Department of Biological and Agricultural Engineering, North Carolina State University  
1996-2003  Research Assistant, Department of Biological and Agricultural Engineering, North Carolina State University  

Professional Registration/Licensure  
Engineering Intern  

Scholarly and Professional Honors/Awards  
• 2003 NCSU Nancy G. Pollock Dissertation Award (Awarded for university-wide outstanding dissertation)  
• USDA National Needs Fellowship Recipient, 1997-2000  

Professional Society Memberships  
• American Society of Agricultural and Biological Engineers (ASABE)  
• Soil Science Society of America (SSSA)  
• Society of Wetland Scientists (SWS)  

Honorary Society Memberships  
• Phi Kappa Phi  
• Alpha Epsilon  
• Gamma Sigma Delta  
• Sigma Xi  

Consulting Activities (since 1/1/1996) - None  

Institutional and Professional Service (since 1/1/1996)  
• President - Graduate Student Association of the NCSU Biological and Agricultural Engineering Department, 1999-2000  
• NCSU - BAE Research Committee, Recruitment and Placement, and Social Committees  
• NCSU - Graduate School Representative for PhD preliminary and final exams (2005)  
• Tour Leader, Session Moderator, and Awards Committee member for ASABE  

Professional Development Activities (since 1/1/1996)  
• Graduate Student Professional Development Workshop - 1999  

Program Description
Narrative

As NC's population continues to swell, there is increasing pressure placed on our natural resources. Research in the field of Environmental/Ecological Engineering will produce efficient, cost-effective, and sustainable solutions to restore degraded natural systems and to protect against further degradation in rural and urban settings. Restoring and protecting our natural resources is vitally important to the health and economic well-being of the citizens of NC.

Restoring wetlands and stream corridors that have been lost through agriculture or development and mitigating against increasing stormwater volumes entering our water bodies from urban areas are two ways to protect our environment. Restoration of wetland and stream corridors improve water quality of our streams, lakes, and estuarine areas that are important to tourism, fisheries, and drinking water supplies. In addition, these systems provide habitat and flood control functions that are becoming increasingly scarce due to development. Improvement of existing and the development of innovative stormwater best management practices (BMPs) may be our best defense against the detrimental water quality effects of urban development. Existing BMPs such as bioretention areas and stormwater wetlands are being implemented at an increasing rate, but additional research into these practices will make them more efficient, cost effective, and aesthetically pleasing. New BMPs may offer more promise in unique and more critical coastal areas with limited land areas near sensitive water bodies.

Goals (next five years)

- Establish and lead a nationally recognized NCSU wetlands working group to establish an important multidisciplinary network of researchers studying wetland restoration.
- Provide more precise coastal wetlands restoration guidance documents for state agencies through research.
- Add to the knowledge-base to enhance implementation of riparian buffer conservation practices supported by state and federal agencies.
- Conduct research on existing stormwater wetlands in NC, at the field and laboratory scale, to examine additional factors influencing nutrient, sediment, bacterial, and other related pollutant removal efficiency in hopes of developing design improvements.
- Move from pilot scale to full-scale implementation of innovative stormwater infiltration systems to reduce the number of actively discharging stormwater outfalls in coastal NC towns.
- Collaborate to expand the current research in coastal golf course stormwater BMPs to other physiographic locations.

Accomplishments (since 1/1/1996)

Research

- Under the guidance of R.W. Skaggs, designed and installed a 2.5 ha agricultural drainage research site at the NCDA –Tidewater research site in 1999 that has operated through 2007. Research has focused on reducing nitrate losses.
- Recommendations for organic matter enhancement to soils to be used in constructed wetlands for nitrate treatment.
- Hydrology assessment of a 100 ha wetland restoration project with various construction techniques.
- Lead a team of researchers in studying water quality and habitat implications of riparian buffers enrolled in the NC Conservation Reserve Enhancement Program (CREP).
- Designed, installed, and studied Kure Beach Dune Infiltration System that reduced stormwater runoff into the ocean.

Teaching

- Developed and taught 1/3 BAE495 K – Introduction to Ecological Engineering, 1 hr credit beginning, Fall 2006. Course has been expanded to 3 credits and become a required core course for environmental engineering concentration.
- Taught BAE 200 – Computer Methods in Biological Engineering 3 hr credit beginning fall 2008.

Extension

- Assisted in the design/monitoring of over 140 ha of restored wetlands at North River Farms near Beaufort, NC.
• Designed and provided construction oversight to 2 stormwater BMPs in New Hanover County, NC.
• Provided guidance in the construction of 6 stormwater BMPs in Wilmington, NC.
• Designed, provided construction oversight, and monitored a stormwater Dune Infiltration System in Kure Beach, NC – a first of its kind in NC.
• Provided tours, lectures, briefings, and informational sessions for students, local and state officials, and concerned citizens on results of multiple research and demonstration projects and to raise awareness of current environmental issues.

## Graduate Students

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## Publication Summary

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## Grants Summary

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<td>9</td>
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<td>$2,419,128</td>
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## Five Most Important/Significant Publications


Name: Jay J. Cheng
Rank: Professor

Present Appointment: 80% Research 20% Teaching ___% Extension

Years at current rank 3
Years at NC State University 14

Education
Ph.D. (1996) Environmental Engineering University of Cincinnati, Cincinnati, Ohio, USA
M.S. (1987) Biological Engineering St. Cyril & Methodius University, Skopje, Macedonia
B.S. (1982) Chemical Engineering Jiangxi Institute of Technology, Nanchang, China

Professional Experience/Employment
2008-present, Professor, Biological & Agricultural Engineering, N.C. State University
2005-2006 Fulbright Scholar, Univ. of Architecture, Civil Engineering and Geodesy, Sofia, Bulgaria
2003-2008 Associate Professor, Biological & Agricultural Engineering, N.C. State University
1997-2003 Assistant Professor, Biological & Agricultural Engineering, N.C. State University
1996-1997 Research Associate, Civil & Environmental Engineering, University of Cincinnati
1991-1996 Research Assistant, Civil & Environmental Engineering, University of Cincinnati
1987-1991 Lecturer and Fermentation Division Director, Food Eng., Jiangxi Polytechnic Univ. (China)
1985-1987 Research Assistant, Biological Engineering, St. Cyril & Methodius University (Macedonia)
1982-1985 Teaching and Research Assistant, Chemical Eng., Jiangxi Institute of Technology (China)

Professional Registration/Licensure: Engineer Intern (Ohio)

Scholarly and Professional Honors/Awards
2005 Fulbright Scholar, Council for International Exchange of Scholars, US Department of State
2000 First Place Poster Presentation Award, Water Environment Federation 73rd Annual Meeting, Anaheim, CA
1995 First Place in Ph.D. Category, Water Environment Federation Student Paper Competition.
1991-1994 University Graduate Scholarship, University of Cincinnati.
1988 Top Honors Award for Visual Aids in Teaching, Jiangxi Polytechnic University.
1985-1987 Study-Abroad Scholarship, Jiangxi Department of Education, Jiangxi, China

Professional Society Memberships
ASABE (American Society of Agricultural and Biological Engineers) (1997-present)
IWA (International Water Association) (1995-present)
WEF (Water Environment Federation) (1995-present)
Founding Member and President (1995) of WEF-University of Cincinnati Student Chapter
AOCABFE (Association of Overseas Chinese Agricultural, Biological, and Food Engineers)
CAST-USA (Chinese Association for Science and Technology in USA)

Honorary Society Memberships
2004-present Gamma Sigma Delta
2004-present Sigma Iota Rho-International Studies

Consulting Activities (since 1/1/1996)
2001 Environmental Engineering Consultant NCH Corporation, Irving, Texas
2002-2003 Environmental Engineering Consultant Research Triangle Institute, RTP, NC

Institutional and Professional Service (since 1/1/1996)
Associate Editor: Journal of Environmental Engineering (2000-2005)
Guest Professor: Beijing University of Chemical Technology (2002-present)
Reviewer: Bioresource Technology; Chemosphere; International Biodeterioration & Biodegradation; Journal of Chemical Technology & Biotechnology; Journal of Environmental Engineering;

National and International Professional Committee:
- ASABE BE-28 Bioconversion and Bioprocess Committee (2002-present)
- Consortium of US Universities and Agencies for China’s Agricultural Science and Technology Development (2001-present)
- North Carolina Energy Technical Advisory Group (ETAG) (2001-present)
- Session Chair, CIGR (International Commission of Agricultural Engineering) 2004 International Conference, 11-14 October, Beijing, China (2004)
- USDA S-1000 (formerly S-275) Animal Waste Management Committee (1999-present)
- USDA S-1007 Biotechnology and Bioconversion Committee (2003-present)
- USDA SRDC 00-03 Biotechnology and Bioconversion Committee (2001-2003)
- Water Environment Federation-Literature Review Committee (2003-present)
- Water Environment Federation-Residuals and Biosolids Committee (2003-present)

Professional Development Activities (since 1/1/1996)

Research:
- Built a research program on the development and evaluation of alternative technologies for animal waste treatment and resource recovery, and investigation of bioconversion of biomass into biofuels.
- Established a research team including principal investigators, research associates, post-docs, doctoral and master’s graduate students, and undergraduate students to investigate and test ideas in the laboratory-, pilot-, and full-scale research projects.
- Secured funds of over $3 million from federal agencies, public organizations, state agencies, and industries, both individually and collaboratively with colleagues, for research projects.
- Established collaborative relationship with colleagues from the BAE Department and seven other departments of NCSU.
- Established international research collaborations with colleagues in Bulgaria and China, and initiated the collaborative relationship between NCSU and two Chinese institutions.

Program Description

Narrative: Animal waste management has become a priority environmental issue for North Carolina in the last decade. There is a great interest in developing alternative animal waste management technologies in the state. Renewable energy production is an emerging issue in the state and the nation. To improve our independence from foreign oil, we must explore alternative renewable energy sources. My research program has been focused on innovative technologies for animal waste treatment and conversion of biomass into biofuel. Research areas include anaerobic digestion of animal manure for biogas production, intermittent aeration for nitrogen removal from animal wastewater, nutrient recovery from animal wastewater by aquatic plant, bioconversion of herbaceous biomass such as switchgrass, coastal Bermuda grass (CBG), and rye straw to ethanol, and exploration of aquatic plant for inexpensive starch and sugars generation. Innovative technologies for animal waste management have been developed and are ready for farm applications. Protocol for pretreatment and enzymatic hydrolysis of CBG has been established in laboratory. Bioconversion of genetically engineered switchgrass into ethanol is under investigation. Investigation on growing aquatic plant for inexpensive starch production for ethanol has shown a great potential.

Goals (next five years)
- Teach a graduate-level course in renewable energy production or biological wastewater treatment every year
- Develop a nationally recognized research program in agricultural waste management and renewable energy
• Continue and strengthen international research collaboration

Accomplishments (since 1/1/1996)

Research
• Systems approach on swine manure management with biogas production and nutrient recovery for value-added products has attracted great interest of domestic and international researchers, government agencies, engineers, and animal growers.
• Nitrogen removal from high-ammonia wastewaters has a great potential for animal wastewater and anaerobic digester liquors.
• Conversion of switchgrass and Bermudagrass into ethanol has attracted industrial interest in collaboration for scale-up.
• Initiation of international collaboration between NCSU and Chinese and Bulgarian institutions produced fruitful results.

Teaching
• Advanced biological wastewater treatment 3 hours 13 students (Spring 2000)
  3 students (Spring 2005)
  14 students (Fall 2005)
• Biomass-to-Renewable Energy Processes 3 hours 24 students (Fall 2006)

Extension
• A full-scale alternative swine waste management system at Barham Farm, Zebulon, NC has been demonstrated to animal growers, state, national and international agricultural and environmental researchers, law makers, government agencies, public organizations, and media.

Graduate Students

<table>
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<tr>
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Publication Summary

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Grants Summary

<table>
<thead>
<tr>
<th></th>
<th>Since 1/1/1996</th>
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<tbody>
<tr>
<td>Number</td>
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<td>23</td>
</tr>
<tr>
<td>Amount ($)</td>
<td>$3,207,950</td>
<td>$3,217,950</td>
</tr>
</tbody>
</table>

Five Most Important/Significant Publications


Name: John J. Classen  
Rank: Associate Professor  

Present Appointment:  
80% Research  
20% Teaching  
0% Extension  

Years at current rank: 10  
Years at NC State University: 16  

Education:  
Ph.D. Agricultural Engineering, Texas A&M University, May, 1995  
M.S. Agricultural Engineering, University of Arkansas, May, 1990  
B.S. Agricultural Engineering, University of Arkansas, May, 1987  

Professional Experience/Employment:  
January 1995 - present:  
Associate professor (Assistant professor from January 1, 1995 to June 30, 2000), agricultural waste management and bioresource recovery, North Carolina State University.  

Professional Registration/Licensure:  
Registered Engineer Intern, State of Arkansas  

Scholarly and Professional Honors/Awards:  
Arkansas Academy of Biological and Agricultural Engineers, 2007  

Professional Society Memberships:  
American Society of Agricultural and Biological Engineers, 1989-present  

Honorary Society Memberships:  
Tau Beta Pi National Engineering Honor Society, 1987  
Golden Key National Honor Society, 1987  
Alph Epsilon National Agricultural Engineering Honor Society, 1988  

Consulting Activities (since 1/1/1996):  

Institutional and Professional Service (since 1/1/1996):  
Odor Control Technologies Task Force, 1998  
College of Agriculture and Life Sciences Research Committee, 1997-present, Chair: FY 2000/2001  
Faculty search committee, Biological and Agricultural Engineering, (1) Waste Management position, 1996  
Faculty search committee, Biological and Agricultural Engineering, (1) Biomechanics position, 1998-1999  
Faculty search committee, Biological and Agricultural Engineering, (2) Bioprocessing positions, 2001-03  
Faculty search committee, Biological and Agricultural Engineering, chair (1) Air quality position, 2004  
Department Research Committee, chair 1997-2004  
Department Courses and Curriculum Committee, 1997 - 1999  
Department Graduate Studies Committee, 2001 – present  
Department Executive Committee, 2000 – 2004  
Department Distance Learning Committee, 2003 – present  
Chair, Ad hoc committee to recommend the best use of departmental research technician positions, 2004-2005  
ASAE Soil and Water Division, land application of waste technical committee, 1995 – present  
ASAE Structures and Environment Division, Animal Waste Management technical committee, 1995 – present  
ASAE Structures and Environment Division, Air Quality technical committee, 2000 – present  
ASAE chair of the Air Quality sub committee to revise Engineering Practice on Control of Manure Odors, 2003 - 2005  
One of three evaluators of procedures and labs for the National Pork Producers Council Odor Solutions Initiative,
Chapter 10. Faculty Vitae

1999
CSREES SBIR Air, Water and Soil panel member 2001, 2002; panel manager 2003
CSREES SBIR Animal Waste Management panel manager 2005 (inaugural panel) and 2006
USDA ARS Project Plan review panel, 2004
Multi-state research project participant, waste management, 2001- present, sec. FY 2005, will rotate to vice chair and chair

Professional Development Activities (since 1/1/1996)
ESCOP / ACOP (Part of the National Association of State Universities and Land Grant Colleges) Leadership
Development Class 12, 2002 – 2003
College and university sponsored teaching workshops, most recently in May 2005
Learning Technology Service workshops covering technical and pedagogical aspects of on-line tools for education.

Program Description
Narrative
Federal and state governments in the food animal production regions of the country have invested significant resources over the last 10 to 15 years in the development, implementation and evaluation of practices and advanced technologies designed to protect the air, water and soil from environmental impacts of concentrated animal production systems. Many of these technologies have been evaluated in laboratory and field scale experiments that have shown statistical significance but the true ecological impact is not clear, even though these technologies and practices are being recommended and implemented.

The goal of this program is to develop tools that will help the food animal production industry reduce adverse ecological impacts and improve sustainability through improved understanding and implementation of on-farm utilization technologies as well as development of computer models with a comprehensive view of our food animal production systems. Both the site-specific work – individual treatment and utilization investigations – and comprehensive modeling are needed to guide future work to maximize the benefit of our food animal production system while minimizing its environmental and ecological impact. The only way any comprehensive model of the food animal production system can reasonably portray realities of the system and help in understanding the impacts of policies and technologies is if the operation and function of the technologies described in the models are known with reasonable accuracy.

Goals (next five years)
- Develop and evaluate systems and unit operations to manage manure from confined animal feeding operations to reduce environmental pollution.
- Define significant gaps in knowledge that limit our ability to identify economically, environmentally, and socially optimal food animal production and waste management systems.
- Develop preliminary models of the swine and poultry industries that describe the cumulative ecological impacts as a dynamic, nonlinear function of the transformations of matter and energy.

Accomplishments (since 1/1/1996)

Research
- Developed equipment for and expertise in gas collection from waste treatment lagoons. This work demonstrated that nitrogen is lost from anaerobic lagoons via denitrification as well as ammonia volatilization.
- Developed rigorous evaluation protocol for solid separation devices at the university’s field laboratory through the EPA’s Environmental Technology Program. This work provided independent verification of performance claims and gave potential customers valuable information on which to base decisions.
- In conjunction with a large multi-disciplinary team, developed and tested a new manure removal system that will replace water as a removal system, eliminate the need to separate solids, and improve opportunities for resource recovery. The concave under-floor belt allows separate collection of feces and urine which facilitates the optimum use of both materials.
• Demonstrated the effectiveness of several swine waste treatment systems through state and industry funded programs. Although several systems demonstrated potential, operational and cost constraints have so far prevented wide spread application.

**Teaching** (since 1/1/1996)

BAE 578, Agricultural Waste Management, 3 hours, total of approximately 60 students. This course has been offered 11 times as a face to face course and 4 times as a distance education course. I was one of the first in the department to use the web for teaching and continue to improve the use of technology.

BAE 790A, Advanced Waste Treatment, 3 hours, 12 students in one offering

**Extension**

No extension activities

**Graduate Students**

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<tr>
<th>Since 1/1/1996</th>
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<tbody>
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<td>Chair (MS &amp; MBAE))</td>
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<td>(PhD)</td>
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<td>(PhD)</td>
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**Publication Summary**

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**Grants Summary**

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<td>$4.85 M</td>
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</table>

**Five Most Important/Significant Publications**


**YUCHENG FENG**

Department of Agronomy and Soils  
Auburn University  
Auburn, AL 36849

**Contact Information**

Phone: (334) 844-3967  
Fax: (334) 844-3945  
E-mail: fengyuc@.auburn.edu

**EDUCATION**

Beijing Agricultural University, Soil and Agricultural Chemistry,  
B.S., 1987  
The Pennsylvania State University, Soil Science (Soil microbiology&biochemistry),  
M.S., 1991  
The Pennsylvania State University, Soil Science (Soil microbiology&biochemistry),  
Ph.D., 1995

**APPOINTMENTS**

2010-present  
**Professor**, Department of Agronomy and Soils, Auburn University, Auburn, Alabama

2004-present  
**Associate Professor**, Department of Agronomy and Soils, Auburn University, Auburn, Alabama

1998-2004  
**Assistant Professor**, Department of Agronomy and Soils, Auburn University, Auburn, Alabama

1995-1998  
**Postdoctoral Research Associate**, Department of Crop and Soil Sciences, Michigan State University, East Lansing, Michigan

1987-1989  
**Research Assistant**, Agricultural Ecology Group, Institute of Agricultural Environmental Protection, Tianjin, P. R. China

**RESEARCH INTERESTS**

- Microbial degradation of synthetic organic chemicals in soil and water environments  
- Impacts of soil microbial community on productivity and sustainability of soil  
- Bacterial source tracking of fecal contamination in surface waters

**COURSES TAUGHT**

- Soil Microbiology (on-campus and distance learning)  
- Basic Soil Science (on-campus)

**SELECTED PUBLICATIONS**


PROFESSIONAL ACTIVITIES AND SOCIETIES

- Proposal Review for USDA, NSF, USGS, BARD
- Grant Review Panelist: USDA NRI/AFRI Soil and Soil Biology, Soil Processes, Water & Watershed, and Small Business Innovation Research Programs
- Manuscript review for 18 peer-reviewed journals
- Member of USDA Multistate Research Project W-1082 (Evaluating the Physical and Biological Availability of Pesticides and Pharmaceuticals in Agricultural Contexts)
- Member of American Society for Microbiology, International Society for Microbial Ecology, Soil Science Society of America, American Society of Agronomy, American Chemical Society, Gamma Sigma Delta Honor Society, Sigma Xi Honor Society

GRADUATE STUDENTS ADVISED

- 4 Ph.D. students, 5 M.S. students, and 29 graduate committees
Name  Garry Grabow
Rank   Associate Professor

Present Appointment:  ___% Research  20 % Teaching  80% Extension

Years at current rank  3
Years at NC State University  12

Education
Ph.D., 1993, University of Tennessee, Knoxville, TN Agricultural Engineering,
M.S. 1984, Utah State University, Logan, UT  Irrigation Science,
B.S. 1979, University of California, Davis, CA Soil and Water Science

Professional Experience/Employment
2008-present. Associate Professor, NC State University, Dept. Of Bio. and Ag. Engineering
May  2003-2008. Assistant Professor, NC State University, Dept. Of Bio. and Ag. Engineering
January 1990-Oct. 1993. Research Assistant, University of Tennessee, Dept. of Ag. Engineering,
June 1984-December 1989. Associate Engineer, , Stetson Engineers, San Rafael, CA
May 1982 - June 1984. Research Assistant, Utah State University,
April 1979-March 1982 Managerial Trainee, Yolo Country Flood Control and Water Conservation District, CA

Professional Registration/Licensure
California Professional Engineer. Reg. no. AG 497 (Agricultural)
North Carolina Professional Engineer Reg. no. 29632

Scholarly and Professional Honors/Awards
Pride of the Wolfpack Award, 2005, 2006

Professional Society Memberships
Member American Society of Agricultural and Biological Engineers
Member Environmental Water Resources Institute, ASCE
Technical Advisor and Member, North Carolina Irrigation Society

Honorary Society Memberships
Tau Beta Pi  (engr. honor society) 1993

Consulting Activities (since 1/1/1996)
Eritrea and Ethiopia - Water Supply and Irrigation projects, NRCE, Fort Collins, CO.

Institutional and Professional Service (since 1/1/1996)
Reviewer, Journal of the American Water Resources Association  2000-present
Reviewer, Transactions of the American Society of Agricultural Engineers, 2000-present
Reviewer, Journal of Irrigation and Drainage, ASCE, 2006-present
Reviewer, Irrigation Science, 2000
Secretary Water Quality and Drainage Technical Committee, Irrigation and Drainage Council, Environmental and
Water Resources Institute, American Society of Civil Engineers.
Committee member, SW-245 Microirrigation, American Society of Agricultural Engineers
Technical Advisor, North Carolina Irrigation Society
Co-Chair, Recruitment and Placement Committee, BAE, 2003 to present
Team Leader, AREERA Report, NC Cooperative Extension 2003-present
Graduate Faculty Member, 1999 to present
Public Relations and Development Committee, BAE, 2003  
Distance Education Committee, BAE, 2005-present  
Ag. Engr. exam writing session at ASABE meeting, Portland Oregon. ASABE Committee ED-414.  
Moderator, American Society of Agricultural Engineers 2005 International Meeting  
ASCE EWRI On-Farm Irrigation Technical Committee, sub-committee on “Subsurface Drip Applications in Humid Regions”  

**Professional Development Activities (since 1/1/1996)**  
Teaching and learning with technology summer institute, 2003.  
NCSU CALS Effective teaching workshop, May 2003.  
NCSU COE/PAMS New faculty workshop Aug. 2003

**Program Description**

**Narrative**

There is a need to train operators of animal waste systems and operators of wastewater systems due to permit requirements and as a means to protect environmental quality. As co-director of the land application demonstration and training unit, Dr. Grabow helps to directly train or administer training to these operators, both at the training facility and in the counties. Additionally he

- Trains and supports county agents in animal waste and irrigation related issues  
- Conducts applied research in land application  
- Conducts applied research in irrigation and water management  
- Interacts with state and municipal agency personnel to provide technical support in policy issues.

**Goals** (next five years)

- Publish 4 extension bulletins related to waste management and/or water management  
- Develop distance education material for Open Channel Hydraulics for Natural Systems  
- Organize annual irrigation tour in addition to organizing annual Irrigation Conference  
- Publish 2-3 journal articles

**Accomplishments (since 1/1/1996)**

**Research**

- Completed 4 commodity grants related to subsurface drip irrigation  
- Secured new funding from Center for turfgrass environmental research and education  
- Conducted research (co-pi) to quantify ammonia losses of new type of application equipment

**Teaching**

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<th>Credit hours</th>
<th>No. Students</th>
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<td>BAE 576 “Watershed Monitoring and Assessment”</td>
<td>3</td>
<td>50</td>
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<td>Fall 2005</td>
<td>BAE 590I Open Channel Hydraulics for Natural Systems</td>
<td>3</td>
<td>15</td>
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**Extension**

**Waste Management**

- Trained over 750 operators of animal wastewater and wastewater systems  
- Developed 3 new training modules for operators of animal waste systems  
- Assisted agents with land application system calibrations and technical guidance on new and emerging land application equipment.
Irrigation

- Organized past 4 North Carolina Irrigation Society Meetings and 2 workshops and tours for the Society
- Provided guidance on technical feasibility and economics of subsurface drip irrigation to commodity groups

<table>
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<th>Graduate Students</th>
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<td>Popular Press</td>
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<td>1537019</td>
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</table>

¹ listed either first or second on grant, 9 listed as PI.

Five Most Important/Significant Publications
ALEXANDRIA K. GRAVES  
Assistant Professor of Soil and Environmental Microbiology  
College of Agriculture and Life Sciences  
Department of Soil Science  
NC State University  
Office: 919.513.0635  
alexandria_graves@ncsu.edu

PROFESSIONAL PREPARATION:
Undergraduate and Graduate Institutions:
Winston-Salem State University  Biology  B.S.  1998
Virginia Tech  Crop and Soil Environmental Sciences  M.S.  2000
Virginia Tech  Crop and Soil Environmental Sciences  Ph.D.  2003

Postdoctoral Institution:
Texas A&M University  Crop and Soil Science  2003-2005

APPOINTMENTS:
Assistant Professor, Dept. Soil Science, NC State University  2005-Present

DISTANCE EDUCATION TEACHING:

SSC 532 601 Soil Microbiology

Summary of Student Evaluations for SSC 532 601 Soil Microbiology:

<table>
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<tr>
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<th>Question 14</th>
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<td>Spring Semester</td>
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<td>SSC 532 Mean</td>
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<td>Dept. Mean</td>
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<td>Dept. Mean</td>
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<tr>
<td>Number of Evaluations</td>
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<td>2</td>
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<td>(%) Return</td>
<td>60</td>
<td>33</td>
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Question 9: overall instructor effectiveness and Question 14: overall this course is excellent are used by the Department and the College as key measurements to indicate teaching success. Mean based on a 5.0 scale.

Summary of Comments from Graduate Student Evaluations: SSC 532-601 Soil Microbiology
- Very fair and knowledgeable of subject matter.
- The instructor gave helpful feedback that enabled me to understand parts of the course that were confusing to me. This helped me learn more and increased my understanding of the more difficult parts of soil microbiology.

PUBLICATIONS:
The following publications were based on work that was conducted while at NC State University.


Book Chapters, Invited:


The following publications were authored and submitted while at NC State University based on previously collected data.


The following publications were completed prior to arrival at NC State University.


CURRICULUM VITAE

MUSSIE Y. HABTESELASSIE

The University of Georgia, Griffin Campus  
Department of Crop and Soil Sciences  
1109 Experiment Street  
Griffin, GA 30223

770. 229. 3336 (Office)  
435. 881. 7627 (Cell)  
770. 229. 7271 (fax)  
mussieh@uga.edu (email)

I. EDUCATION

2001 – 2005 Ph.D. Soil Science (Soil Microbiology)  
Utah State University, Logan, Utah
University of Aberdeen, Aberdeen, Scotland, UK
1993 – 1998 B.Sc. Soil and Water Conservation, graduated with Great Distinction  
University of Asmara, Asmara, Eritrea

II. AWARDS and FELLOWSHIPS

- UGA Provost Travel Funds Award (2010)
- UGA Venture Fund Travel Award (2009)
- Graduate School’s Dissertation Completion Fellowship (2005).
- Center for Development and Environment (CDE) Scholarship from the University of Bern, Switzerland (1999-2000).

III. PROFESSIONAL EXPERIENCE

2008 – Current Assistant Professor of Soil Microbiology, UGA Griffin Campus  
(70% research/30% teaching)
2007 – 2008 Postdoctoral Research Associate, University of NC at Chapel Hill
2006 – 2007 Postdoctoral Research Associate, Purdue University, West Lafayette, IN
2001 – 2005 Research/Teaching Graduate Assistant, Utah State Univ., Logan, UT
2000 – 2001 Assistant Lecturer in Soil Science, University of Asmara, Asmara, Eritrea
1998 – 1999 Graduate Assistant, Soil and Water Conservation, University of Asmara, Asmara, Eritrea
## IV. TEACHING

### COURSES TAUGHT

<table>
<thead>
<tr>
<th>Year</th>
<th>Semester</th>
<th>Course</th>
<th>Description</th>
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</table>
| 2011 | Fall     | CRSS/MIBO4610/6610; CRSS/MIBO4610/6610 L: Soil Microbiology (3 cr hrs) | - Taught the course from Griffin to Athens via video-conferencing (Tandberg)  
  - 19 students (7 in Griffin; 12 in Athens) |
|      | Fall     | CRSS 3060 CRSS 3060 L: Soils and Hydrology (4 cr hrs) | - Team taught via video-conferencing (Tandberg) with Drs. Bill Miller and Jackson  
  - 6 students |
|      | Spring   | AESC 3920: Agricultural and Environmental Science Internship (3 cr hrs) | - Supervising an undergraduate student doing internship in the private sector |
|      | Fall     | AESC 3920: Agricultural and Environmental Science Internship (3 cr hrs) | - Supervised an undergraduate student doing internship with a private company |
|      | Fall     | CRSS/MIBO4610/6610; CRSS/MIBO4610/6610 L: Soil Microbiology (3 cr hrs) | - Taught the course from Griffin to Athens via video-conferencing (Tandberg) for the first time;  
  - 19 students (6 from Griffin, 13 from Athens) |
|      | Fall     | CRSS 3060 L: Soils and Hydrology Lab | - Team taught via video-conferencing (Tandberg) with Dr. Bill Miller and others.  
  - 2 students |
|      | Spring   | CRSS 4580; CRSS 4580L: Soil Erosion and Conservation (3 cr hrs) | - Undergraduate level course with an integral lab component  
  - 4 students |
|      | Spring   | AESC 4960: Undergraduate Research (3 cr hrs) | - Research based undergraduate independent study course |
|      | Fall     | CRSS 3060; CRSS 3060L: Soils and Hydrology (4 cr hrs) | - Undergraduate level course that has an integral lab component  
  - 9 students |
|      | Fall     | AESC 4960: Undergraduate Research (3 cr hrs) | - Research based undergraduate independent study course |
|      | Spring   | CRSS/MIBO4610/6610; CRSS/MIBO4610/6610 L: Soil Microbiology (3 cr hrs) | - A split level course that has an integral lab component  
  - 13 students |
GRADUATE STUDENT ADVISING

Advisory Committee Chair
Hao Zhang (M.Sc.)

Advisory Committee Member
Sudeep Sidhu (PhD)
Rashmi Sing (PhD)
Sara Doydora (PhD)
Ken Bradshaw (PhD)
Kate Cassity (PhD)
Lisa Luo (PhD)

V. RESEARCH

PEER REVIEWED RESEARCH PUBLICATIONS


BOOK CHAPTER(S)


PAPERS IN PREP/REVISION FOR SUBMISSION

Habteselassie, M.Y., Xu, L. and Norton, J.M. Ammonia-Oxidizer communities in an agricultural soil treated with distinct nitrogen sources. (To be submitted to Applied and Environmental Microbiology)

Habteselassie, M.Y. and Pennisi, S. Volatile organic compounds metabolizing bacteria from the rhizospheres of indoor plants. (To be submitted to Water, Air and Soil Pollution)

Habteselassie, M. and Turco, R. Influence of inorganic contaminants on E. coli and its predators: Implications to the long-term survival of E. coli in water. (To be submitted to Water, Air and Soil Pollution)

INVITED PRESENTATIONS


CONFERENCE ABSTRACTS/PROCEEDINGS


# GRANTS

**FUNDED:**

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<tr>
<th>Year</th>
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<th>Total Budget</th>
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<tr>
<td>2011</td>
<td>The Impacts of Onsite Wastewater Treatment Systems on Water Quality and Quantity of Urbanizing Watersheds, USDA/NIFA/NIWQP. <strong>Habteselassie, M.Y. (PI),</strong> Bauske, E., Clarke, J., Huang, Q., Mullen, J., Radcliffe, D., Rissee, M. And Wells, S.</td>
<td>$567,000</td>
<td>Jan 2012 – Dec 2014</td>
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<tr>
<td>2010</td>
<td>The likelihood of cross-contamination of head lettuce by <em>E. coli</em> O157:H7, salmonella and Norovirus during hand harvest and recommendations for glove sanitizing and use, University Of California/Davis. <strong>Cannon, J.L. (PI), Erickson, M.C. (Co-PI), Habteselassie, M.Y. (Co-PI)</strong></td>
<td>$338,414</td>
<td>Feb 2011 - Dec 2012</td>
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<td>2010</td>
<td>Empowering faculty to deliver graduate distance education courses. USDA Higher Education Challenge Grant via Dr. Jean Bertrand. <strong>Habteselassie, M.Y.</strong></td>
<td>Dec 2010 - Dec 2012</td>
<td>$3,000</td>
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**PENDING**

None

**NOT-FUNDED:**

2011: Biological And Environmental Determinants Influencing Internalization and Persistence Of *Escherichia coli* O157:H7 And Salmonella Spp. In Leafy Green Roots and Leaves, USDA-NIFA. Erickson, M. (PI), Habteselassie, M.Y. (Co-PI), Ortega, Y., Alali, W., Huang, Q and Flitcroft, I. $494,972 (2 years)


2010: Microbial degradation of multi-walled carbon nanotubes, National Science Foundation, Huang, Q. (PI), Habteselassie, M.Y. (Co-PI). $499,462 (3 years)


2009: Preventing an outbreak: characterizing contamination load, threshold and specificity through out the production and distribution of produce, Purdue University, Habteselassie, M.Y. (PI). $151,636

2009: Elucidating the impact of onsite wastewater treatment systems on Georgia’s coastal waters, Georgia Sea Grant. Habteselassie, M.Y. (PI), Huang, Q. (Co-PI), Bauske, E. (Co-PI). $120,486.


2009: The fate and transport of microbial contaminants and hormones introduced to soil via surface and subsurface injection of liquid swine manure or municipal waste, National Pork Board. Habteselassie, M.Y. (PI), Huang, Q. (Co-PI). $54,000.


2009: Converting sorghum biomass into bioethanol by new biotechnology, United Sorghum Check-off Program, Huang, Q. (PI), Habteselassie, M.Y. (Co-PI). $40,000

2009: The impact of rainfall splash and crop rotation in the transmission and control of foodborne pathogens in the field. Habteselassie, M.Y. (PI). Office of the Vice President for Research. $9,200

VI. SERVICE TO THE SCIENTIFIC COMMUNITY

- 2010 Proposal Reviewing Panel Member for Indiana Water Resources Research Center (IWRRC)
- 2010 Presiding Officer of the session Assessing Soil Microbial Faunal Communities: I during the Annual Soil Science Society of America Meeting in Long Beach, CA.

VII. INSTITUTIONAL SERVICES

- Undergraduate Curriculum Committee (Crop and Soil Sciences)
- UGA Griffin Campus Library Committee
- UGA Young Scholars Faculty Mentor, 2009, 2010, 2011
- Advisor for the Classified Staff Committee of the Griffin Campus, 2011

VIII. PROFESSIONAL AFFILIATIONS

- Soil Science Society of America (SSSA)
- American Society for Microbiology (ASM)
- International Association for Food Protection (IAFP)
- Soil Science Society of Georgia (SSSG)
- UGA Center for Urban Agriculture

IX. FACULTY DEVELOPMENT ACTIVITY

- Write Winning Grants, Grant Writers’ Seminars and Workshops at UGA, 2009
- New Faculty Guided Tour of UGA Research Office, Office of the Vice President for Research, 2009
Curriculum Vitae
JOHN L. HAVLIN

BUSINESS ADDRESS
College of Agric. & Life Sci. (Academic Programs)
Department of Soil Science
North Carolina State University
Raleigh, NC 27695
(919) 515-9721
john_havlin@ncsu.edu

HOME ADDRESS
2512 Wheeler Bluff Dr.
Raleigh, NC 27606
(919) 740-9743

EDUCATION
Ph.D. Soil Fertility/Soil Chemistry   1983  Colorado State University
M.S. Soil Chemistry 1980  Colorado State University
B.S. Chemistry 1973  Illinois State University

EMPLOYMENT
Coordinator of Distance Education, College of Agric. & Life Sciences 2005-present
   NC State University, Raleigh, NC (60% appointment)
Professor, Soil Science Dept., NC State University, Raleigh, NC (40%) 2004-Present
Head, Soil Science Dept., NC State University, Raleigh, NC. 1996-04
Professor and Director Kansas Center for Agriculture and Natural Resources,
   Dept. of Agronomy, Kansas State Univ., Manhattan, KS. 1995-96
Associate Professor, Dept. of Agronomy, Kansas State Univ., Manhattan, KS. 1990-95
Assistant Professor, Dept. of Agronomy, Kansas State Univ., Manhattan, KS. 1985-90
Assistant Professor, Dept. of Agronomy, Univ. of Nebraska, Scottsbluff, NE. 1983-85
Farmer, Chatham IL (400 ac. grain/animal farm) 1973-77

AREA OF PROFESSIONAL INTEREST
Viticulture, Soil Fertility/Chemistry, Soil/Crop Management, Precision Farming, Remote Sensing,
Leadership and scholarly program focused on nutrient and water-use efficiency, nutrient cycling and
OM dynamics, soil productivity, soil and environmental quality, and academic and extension
education. Since 2004, research and education program is dedicated to viticulture.

HONORS AND AWARDS
American Society of Agronomy Resident Education Award 2009
NC State University Agronomy Club Outstanding Faculty Member 2009
Soil Science Society of America, Presidents Citation for Outstanding Service 2008
NC State University Outstanding Teacher Award 2008
NC State University Academy of Outstanding Teachers 2008
Soil Science Society of America - President 2005
USDA Honor Award-Phosphorus Loss Assessment Team 2004
Potash & Phosphate Institute Robert Wagner Award (Senior Scientist) 2003
Soil Science Society of America - Education Award 2002
American Society of Agronomy - Fellow 1999
KSU College of Agriculture Faculty of the Semester Award 1996, 1988
Soil Science Society of America - Fellow 1995
Epsilon Sigma Phi Team Teaching Award 1995
Kansas State University Faculty Senate President 1995
National Association of Colleges and Teachers of Agriculture - Fellow 1994
Great Plains Soil Fertility Leadership Award 1994
Gamma Sigma Delta Teaching Award of Merit 1992
National Fertilizer Association - Werner L. Nelson Award 1991
Epsilon Sigma Phi Extension Award 1985
Colorado State University Alumni Association Student Service Award 1983
Colorado Graduate Fellowship (Leadership Award) 1982
Colorado State University Graduate Student Council President 1981
Potash & Phosphate Institute Fellowship 1981

PROFESSIONAL AFFILIATIONS
America Society for Enology and Viticulture
NC Wine Growers Association
Soil Science Society of America
American Society of Agronomy
National Association of College Teachers in Agriculture
North Carolina Licensed Soil Scientist (#1158)

TEACHING (since 2000)
Undergraduate
Soil Fertility, SSC341, 45 students/yr (1998-present)
Soil Fertility, SSC341 (DE), 60 students/yr (2000-present)
Soil Fertility Laboratory, SSC342, 40 students/yr (2000-present)
Land and Life, SSC185, 500 students/yr (2003-present)

Graduate
Soil and Crop Management (senior capstone), SSC462, 30 students/yr (2007-present)
Soil Fertility, SSC541 (DE), 25 students/yr (2006-present)

LEADERSHIP (selected, since 2000)
International
USDA-AID Soil Management CRSP Board of Directors (1997-08; Chair 2001-08)
Scientific Committee on Problems in the Environment (SCOPE)-Nitrogen Fertilizer Rapid Assessment Project (2003-05)
International Union of Soil Sciences, Vice-Chair Division 3 (Soil Use and Management; 2003-06)
World Congress of Soil Science Planning Committee (2004-06)

National
Agronomic Science Foundation Board of Directors (2010-13)
Council for Agricultural Science & Technology Board of Directors (2006-09)
USDA-CSREES Long-Term Agricultural Research Program Development Committee (2006)
Soil Science Society of America, President Elect (2004); President (2005); Past President (2006)
American Geological Institute Government Affairs Advisory Committee (2003-06)
American Geological Institute Outreach Working Group (2004-06)
USDA-CSREES IFAFS Panel Manager – Precision Agric. (2002)
Soil Sci. Soc. Amer. Soils Exhibit Development Committee – Chair (2002-present)
Soil Sci. Soc. Amer. Soils Exhibit Steering Committee – Co-Chair (2002-present)
Soil Sci. Soc. Amer. Fellows Award Comm. (2000-02; Chair 2006)
American Soc. Agron. Investment Advisory Committee (Chair, 2003-10)
American Soc. Agron Fellows Award Comm. (2000-02)
Agronomy Journal - Associate Editor (1991-96; 1998-05)

Regional
Southern Regional Administrators Council SRAC-1 (1996-03; Chair 2001-02)

North Carolina
NC Interagency Nutrient Management Committee (2002-present)
NC Interagency Committee on Waste Management regulations (1998-05)
NC Interagency Comm. on developing Phosphorus Loss Assessment Tool-Chair (1999-05)
NC Governors Task Force on Nutrient Management (1997-01)
NC Plant Food Assoc. Advisory Board (1996-05)
NC Soil and Water Commission Comm. to develop NC Nutrient Plan (2000-02)

North Carolina
NC State College of Agric./Life Sci. Undergraduate Honors Program Committee (2011-present)
NC State College of Agric./Life Sci. Distance Education Committee (2006-present)
NC State Univ. Distance Ed. and Learning Tech. Appl. (DElTA) Advisory Board (2006-present)
NC State Univ. Learning in a Technology-Rich Environment (LITRE) Advisory Board (2006-present)
NC State College of Agric./Life Sci. Waste Mgmt. Strategic Planning Comm.- Chair (1999-02)
NC State College of Agric./Life Sci. Field Laboratory Long-Range Planning Comm. (1999-01)

PUBLICATIONS (selected- Peer Reviewed, since 2000)


Refereed Publications: 68
Technical papers (non-refereed): 65
Non-technical, popular articles: 114
Invited lectures, seminars, symposia and extension presentations: 428

**List of Grants and Contracts (> $10,000 since 2000)**


USDA Higher Education Challenge Grant. $464,000. J. Bertrand, J. Havlin, W. Hardy. 2007-10. Development of a Distance Education Consortium among Southern Universities.


USDA-NRCS, $45,000, Developing and Disseminating the NC Phosphorus Assessment Tool, J. Havlin, D. Osmond. 2003-06.
JULIE A HOWE

Department of Agronomy and Soils  Phone: (334) 844-3972
Auburn University  Fax: (334) 844-3945
Auburn, AL 36849  E-mail: jhowe@auburn.edu

Education and Training:
MS, 1999. Texas A&M University (Soil Chemistry)
BS, 1995. Texas A&M University (Bioenvironmental Sciences)

Professional Employment:
2007-present:  Assistant Professor, Agronomy and Soils Dept., Auburn University
Appointment: 50% Research 50% Teaching
2004-2007:  Research Associate (postdoctoral position), Nutritional Sciences Dept. University of Wisconsin-Madison
1999-2000:  Research Assistant, Soil and Crop Sciences Dept. Texas A&M University
1995-1999:  Graduate Research Assistant, Soil and Crop Sciences Dept. Texas A&M University

Research Interests
- Soil chemistry
- Environmental fate of contaminants (trace elements and organic)
- Peanut fertility
- Carbon sequestration and degradation
- Land management affects on soil quality

Courses taught
- Soil Chemistry (AGRN 5300/6300)
- Plant Nutrition (AGRN 7540)
- Physical Soil Chemistry (AGRN 8570)
- Basic Soil Science (AGRN 3420)

Professional Memberships
- American Society of Agronomy
- Soil Science Society of America
- Crop Science Society of America
- American Chemical Society

Student Advisement:
Major Advisor – 2
Co-Advisor – 2
Committee member – 3
Undergraduate – 6
Publications (Career Total):
Refereed Journals – 11
Non-Refereed Publications – 4
Abstracts – 28
Book Chapters – 1

Publications (last 4 years):


Abstracts (last 4 years):


Keeler, L., J.A. Howe, B. Heck, and K. Cain. Developing virtual labs for science courses in higher education. 25th Annual Conference on Distance Teaching & Learning August 4-7, 2009 Madison, WI. oral.

Name  Rodney L. Huffman
Rank  Associate Professor

Present Appointment:  65% Research  35% Teaching

Years at current rank  15
Years at NC State University  21

Education
Ph.D.  1989  Purdue University   Agricultural Engineering
B.S.  1983  The Ohio State University   Agricultural Engineering

Professional Experience/Employment
1995-present  Assoc. Professor Agr. Eng.  NCSU

Professional Registration/Licensure
Professional Engineer, North Carolina

Scholarly and Professional Honors/Awards
Certificate of Appreciation, American Society of Agricultural Engineers

Professional Society Memberships
American Society of Agricultural and Biological Engineers
American Geophysical Union
National Groundwater Association
North Carolina Irrigation Society

Honorary Society Memberships
Alpha Epsilon
Gamma Sigma Delta
Tau Beta Pi
Phi Kappa Phi

Consulting Activities (since 1/1/1996)
1998  MetLife

Institutional and Professional Service (since 1/1/1996)

BAE
Course & Curriculum Committee, member/chair
Computer Committee, member/chair

ASABE
SW-21 Hydrology Group, member
SW-245 Microirrigation Committee, member
SW-07 Nomenclature, member/vice-chair/chair
ED-414 Professional Licensure, member/vice-chair/chair
SW-03 Standards, member/vice-chair/chair
SW-02 Steering Committee, member
ED-01 Steering Committee, member
Standards Council, member

Professional Development Activities (since 1/1/1996)
Teaching and Learning with Technology Summer Institute 2004 & 2005
Campus Writing and Speaking Workshop 2006
Groundwater and groundwater quality are important to the general health and well-being of rural residents. Expanded swine production in the last twenty years has raised concerns about the condition of the shallow groundwater near production and waste-handling facilities. Over 50 sites have been studied to ascertain the impacts of lagoons on groundwater quality. Re-use of wastewater is becoming critical as demands for fresh water increase. One method of application is through subsurface drip (SDI) systems. A study has been initiated to compare traditional overhead sprinkler applications to SDI with swine lagoon effluent. Turf irrigation is another major user of water. Alternative methods for irrigation control are being studied to determine which is most efficient while maintaining healthy turf.

**Goals (next five years)**

Determine relative impacts on shallow groundwater quality of SDI vs. sprinkler application of wastewater.

**Research**

- A study of 34 swine waste lagoons, mostly in the coastal plain, found that only one third of the sites would meet the EPA drinking water standard at a distance of 38 meters (125 feet). A followup study examined the persistence of the higher-strength seepage plumes to 76 meters (250 feet) and found that mineral nitrogen concentrations dropped an average 65 percent.
- The contribution of groundwater to the overall water budget of a wetland restoration project was estimated to be 10-20 percent of the amount received through rainfall. Model studies indicated that the perimeter ditch should be maintained to intercept some of that inflow as well as to prevent hydraulic trepass (along approximately one-fourth of the perimeter) as the water table rises within the project area.

**Teaching**

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<th>Course Title</th>
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<td>Water Management</td>
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<tr>
<td>BAE 324</td>
<td>Elementary Surveying</td>
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<td>207</td>
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<tr>
<td>BAE 495I</td>
<td>Introductory Geomatics</td>
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<td>Senior Seminar</td>
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<td>30</td>
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<tr>
<td>BAE 472</td>
<td>Irrigation &amp; Drainage</td>
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<td>142</td>
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<td>BAE 572</td>
<td>Irrigation &amp; Drainage</td>
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<td>15</td>
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<tr>
<td>BAE 502</td>
<td>Instr. Hydrologic Appl.</td>
<td>3</td>
<td>15</td>
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<tr>
<td>BAE 570</td>
<td>Soil Water Movement.</td>
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<td>3</td>
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</table>

- Development of two online courses in support of the graduate certificate, 502 and 570.
- Updating of Elementary Surveying to use of total stations and GPS equipment. Expanded to 3 CR as Introductory Geomatics.
- Topics in Irrigation & Drainage were expanded to include wetlands and sediment control structures.

**Extension**

N/A
Graduate Students

<table>
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<th>Role</th>
<th>Since 1/1/1996</th>
<th>Career</th>
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<tr>
<td>Chair (MS &amp; MBAE)</td>
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Publication Summary

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<td>Book Chapters (peer reviewed)</td>
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<tr>
<td>Extension Pubs (peer reviewed)</td>
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<td>7</td>
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<tr>
<td>Patents</td>
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<td>0</td>
</tr>
<tr>
<td>Conference Proceedings, Papers, Abstracts</td>
<td>14</td>
<td>37</td>
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<tr>
<td>Popular Press</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Software</td>
<td>0</td>
<td>2</td>
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<tr>
<td>Technical Reports</td>
<td>3</td>
<td>7</td>
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Grants Summary

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<td>Number</td>
<td>19 (4)</td>
<td>31 (6)</td>
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<td>Amount ($)</td>
<td>1,575,455</td>
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<td></td>
<td>(540,534)</td>
<td>(576,034)</td>
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*Numbers in parentheses are for grants as lead PI*

Five Most Important/Significant Publications


Name William F. Hunt, III

Rank Associate Professor and Extension Specialist

Present Appointment: 0% Research 20% Teaching 80% Extension

Years at current rank 3
Years at NC State University 14

Education
Ph.D., 2003. Pennsylvania State University, Agricultural and Biological Engineering
M.S., 1997. North Carolina State University, Biological and Agricultural Engineering
B.S., 1995, North Carolina State University, Economics
B.S., 1994, North Carolina State University, Civil Engineering

Professional Experience/Employment
2003 –present. Associate Professor and Extension Specialist, Biological and Agricultural Engineering, N.C. State University
2003 – 2008. Assistant Professor and Extension Specialist, Biological and Agricultural Engineering, N.C. State University

Professional Registration/Licensure
Professional Engineer (NC). # 023036

Scholarly and Professional Honors/Awards
2007. Water Conservationist of the Year. NC Wildlife Foundation
2005. The Grange Award for Outstanding Extension Program in ANR/CRD (CALS), 2005 (for establishment of demonstration and educational stormwater wetland at Smithfield-Selma High School in Johnston County.
2003. Outstanding Specialist Award – NCACES, 2003 (Annually given to specialist at NCSU or NCA&T for a specialist who best supports county programs. Nomination team was 4 WNC agents)
2003. Outstanding Specialist Team Award – NCACES, 2003 (Annually given to specialist team)
1999. USDA National Service Award, 1999 (work conducted as part of the Neuse River Team for Water Quality Education)
1999.National CREES Award (for work conducted as part of the Neuse River Team for Water Quality Education)

Professional Society Memberships
Member, ASABE
   NC Section – Chair (2004-2006), Vice-Chair (2003-2004)
   ED-208 Extension Committee (National ASABE) – Chair (2005-2006), Vice-Chair (2004-2005), Secretary (2003-2004)
   BE -22 (Ecological Engineering) and SW – 22 (Hydrology) – Member
   Moderator – 2004, 2006, and 2007 ASABE International Meetings

Member, ASCE-EWRI
   Urban Water Resources Research Council – Member
   Low Impact Development Committee – Member
   Bioretention Committee – Co-Chair (2005-present)
   Moderator – 2004 and 2005 ASCE-EWRI Conference

Member, North Carolina Association of Cooperative Extension Specialists (1998-present)

Honorary Society Memberships
Tau Beti Pi, 1993
Phi Beta Kappa, 1995
Consulting Activities (since 1/1/1996)
Auburn University, University of Georgia, Clemson University, Louisiana State University, Cleveland State University, American Society of Civil Engineers, Stantec, W.K. Dickson – Primarily Assisting with Educational Programs. Occasionally responsible for design assistance of stormwater practices.

Institutional and Professional Service (since 1/1/1996)
Committees NCSU
Co-chair – Recruiting and Placement Committee, BAE (2003- present)
Conducted ASAE Recruitment & Placement Symposium in Asheville (co-hosted by UT-Knoxville)
Started Environmental Engineering Camp in 2005 with Heather Gordon
Co-chair – Social Committee, BAE (1999-2001)
Co-chair – Long Range Planning team for Community & Rural Development, College of Agriculture and Life Sciences
Served on Search/Hiring Committee for 5 County Agent Positions and 2 BAE faculty positions (including department head)
Advisory Board Member – Service to other Universities
• Bioenvironmental Engineering, North Carolina A&T State University
• Villanova University Urban Stormwater Partnership

Professional Development Activities (since 1/1/1996)
Handling Hot-Button Issues – 2 day Short Course Taught by NCSU Agricultural & Resource Economics (Greensboro, NC - 1999)

Program Description
Narrative
Stormwater management continues to be an important issue faced by communities across North Carolina. Almost 85% of North Carolina’s population lives in an area under some stormwater regulation promulgated by the state. To comply with these rules, communities need to use innovative technologies and the state needs to supply appropriate design guidance and assign research-based removal efficiencies to these technologies. My mission and that of my stormwater engineering group is to provide extension, academic, and research leadership to the citizens of North Carolina.

Stormwater team focus areas include investigating the function and impacts of stormwater management practices (such as bioretention areas, green roofs, stormwater wetlands, permeable pavements, level spreaders and water harvesting systems), examining watershed and economic impacts of stormwater treatment, considering temperature impacts, and observing mosquito control.

Goals (next five years)
1. Continue to refine design standards for bioretention, permeable pavement, stormwater wetlands, and level spreader/riparian buffer systems. Have these standards reflected in the state of NC Stormwater BMP Design Guidance.
2. Develop design guidance for green roofs and water harvesting/cistern systems and have these new standards incorporated in the NC Stormwater BMP Manual.
3. Continue to regularly graduate 2-3 masters of science and/or Ph.D. candidates per year.
4. Publish 2-3 peer-reviewed journal articles or book chapters per year and 2-3 refereed extension bulletins per year.
5. Develop strong relationships with granting organizations (including NC DOT), with an average yearly grant received exceeding $500,000 per year. Attract at least 1 NSF or CICEET grant
6. Continue to form inter-state partnerships such as the recently established Low Impact Development Mid-Atlantic Research Consortium (LID-MARC), formed among NCSU BAE, Villanova University Civil Engineering, and the University of Maryland Civil and Environmental Engineering departments.
Accomplishments (since 1/1/1996)

Research

- Permeable Pavement – Worked with NC DENR to establish runoff reduction standard for permeable pavement. The practice was once given no credit & therefore no incentive for use among developers.
- Level Spreaders. Establishment of State of NC Guidelines in close coordination with NC DENR and NC DOT
- Watershed Model. Basin-wide model developed for DENR to determine how many and which stormwater practices are needed for new developments in the Tar-Pamlico watershed.
- NC Stormwater BMP Design Manual. A principal reviewer for several chapters in manual. Manual to be used by design community within NC.

Teaching

- Sole Instructor for 2 and Team Instructor for 2 NCSU Courses. Instructor reviews have been 4.90 and 4.95 out of 5.00 for classes as sole instructor. Among highest evaluations at NC State University.
- Developed a Distance Learning Class for Agents, Design Professionals, and “traditional” students on Stormwater Management. Class has been taught from Raleigh and broadcast to 6 remote locations in NC or delivered as DVD’s for distance learning students.

<table>
<thead>
<tr>
<th>Semester/Year</th>
<th>Course (Credit Hours)</th>
<th>Number of Students</th>
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<tr>
<td></td>
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<td>Face-to-Face</td>
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<tr>
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<td>BAE 590U - Stormwater BMP Design (3 credits)</td>
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<td>Summer 2003</td>
<td>BAE 590U (1 credit)</td>
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<tr>
<td>Fall 2004</td>
<td>E101 – Introduction to Engineering and Problem Solving (1 credit)</td>
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<td>Spring 2005</td>
<td>BAE 575 – Stormwater BMP Design (3 credits)</td>
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<td>Fall 2006</td>
<td>E101 - Introduction to Engineering and Problem Solving (1 credit)</td>
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<td>Fall 2006</td>
<td>BAE 495K – Introduction to Ecological Engineering (1 credit – co-instructor)</td>
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<tr>
<td>Spring 2007</td>
<td>BAE 575 – Stormwater BMP Design (3 credits)</td>
<td>18</td>
</tr>
</tbody>
</table>

- Chair or Co-chair of 10 Graduate Student committees (3 have graduated)
- Developer of Environmental Engineering Camp for Advanced High School Students

Extension

- Since 2002, I have led a total of 70 workshops/field days/training events in 22 counties across North Carolina, providing training to an estimated 2500 people. These workshops are in high demand, often filled to capacity. These programs have transcended the traditional boundaries of agricultural extension and attracted a new group of clients namely water resource professional engineers. Through cooperation among the Southern Land-Grant Colleges and Universities and the American Society of Civil Engineers, I have also delivered a total of 18 workshops in the following states: Alabama, Florida, Georgia, Louisiana, New Jersey, New Mexico, Ohio, South Carolina, and Vermont.
- Developed and co-deliver a Stormwater Practice Inspection and Maintenance Certification Program. It is the first certification program of its kind in the United States and has attracted interest from many outside North Carolina. Many municipalities in this state will require that maintenance professionals take the class and pass the end-of-course test
- As head of the BAE stormwater engineering group, we have established 52 field study practices in 18 counties across North Carolina since 2002, serving as local demonstration sites for extension agents.
## Graduate Students

<table>
<thead>
<tr>
<th>Role</th>
<th>Since 1/1/1996</th>
<th>Career</th>
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<tbody>
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<td>(PhD)</td>
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## Publication Summary

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<td>Refereed journals</td>
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<td>Book Chapters (peer reviewed)</td>
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<td>Extension Pubs (peer reviewed)</td>
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<td>Patents</td>
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## Grants Summary

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<tr>
<td>Amount ($) (as lead PI)</td>
<td>$1.79 Million</td>
<td>$1.79 Million</td>
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## Five Most Important/Significant Publications


Name: Gregory D. Jennings
Rank: Professor

Present Appointment: 20% Research 0% Teaching 80% Extension

Years at current rank: 10
Years at NC State University: 21

Education
B.S., 1984, Pennsylvania State University, Agricultural Engineering
M.S., 1986, Pennsylvania State University, Agricultural Engineering
Ph.D., 1990, University of Nebraska, Agricultural Engineering

Professional Experience/Employment
1990 – 1996 Assistant Professor and Extension Specialist, Biological & Agricultural Engineering, North Carolina State University
1996 – 2001 Associate Professor and Extension Specialist, Biological & Agricultural Engineering, North Carolina State University
1997 – Water Quality Coordinator, College of Agriculture and Life Sciences, North Carolina State University
1999 – 2000 Associate Program Leader for Agriculture & Natural Resources, North Carolina Cooperative Extension Service, North Carolina State University
2001 – Professor and Extension Specialist, Biological & Agricultural Engineering, North Carolina State University
2002 – 2005 Associate Director & Interim Director, UNC Water Resources Research Institute
2002 – Adjunct Professor, Forestry & Natural Resources, Clemson University

Professional Registration/Licensure
Professional Engineer, North Carolina

Scholarly and Professional Honors/Awards
• ASABE G. B. Gunlogson Countryside Engineering Award: 2007
• NC Crop Protection Assoc Environmental Steward Award for Neuse Education Team: 2001
• NCSU Academy of Outstanding Faculty Engaged in Extension, Charter Member: 2000
• USDA Secretary’s Honor Award for Neuse Education Team: 2000
• NCSU Alumni Outstanding Extension Service Award: 1998
• NCSU College of Agriculture and Life Sciences Outstanding Extension Service Award: 1998
• ASAE Nolan Mitchell Young Extension Worker Award: 1997

Professional Society Memberships
• American Society of Agricultural and Biological Engineers
• American Society of Civil Engineers, Environment and Water Resources Institute
• American Water Resources Association
• American Ecological Engineering Society

Honorary Society Memberships
• Sigma Xi, Scientific Research Society
• Tau Beta Pi, Engineering Honor Society
• Alpha Epsilon, Agricultural Engineering Honor Society

Consulting Activities (since 1/1/1996)
• Workshop instruction for state and federal agencies, watershed groups, and consulting firms
• Technical guidance for stream restoration design for agencies and private sector projects

**Institutional and Professional Service (since 1/1/1996)**

- USDA CSREES Committee for Shared Leadership – Water Quality (2000-present), representing the eight Southeastern states, responsible for coordinating national funding and policies for water quality, and coordinating the annual CSREES National Water Conference with 500+ participants
- USDA CSREES Southern Region Water Program Coordinating Committee (1997-present), responsible for multi-state education and information exchange, including biennial regional Water Quality conferences and regular topical workshops
- NC Environmental Management Commission, Governor’s Appointee (2002-2003), responsible for policy-making and enforcement of comprehensive environmental regulations
- NC Sedimentation Control Commission, Governor’s Appointee (2002-2004), responsible for policy-making and enforcement of sedimentation control regulations, including service on the SCC Technical Advisory Committee (2000-present), responsible for recommending best management practice requirements for sedimentation control
- NC DENR Nonpoint Source Workgroup (1995-present), responsible for funding allocations to implement local watershed projects using EPA Section 319 funding
- NC DENR Science Advisory Committee (1998-2001), responsible for funding allocations to implement interagency research projects to meet NC DENR needs
- NC DENR Albemarle-Pamlico National Estuary Program Science Advisory Committee (2003-2006), responsible for recommending science-based management policies for meeting NEP goals
- NC DENR Ag Cost-Share Technical Review Committee (1998-2003), responsible for recommending best management practice requirements for agricultural nonpoint source pollution control
- NC Multi-Agency Conservation Team (1998-2000), responsible for designing a plan of work for coordinating conservation efforts among NC CES, NRCS, and Soil and Water Conservation Districts
- NC Sea Grant Extension Advisory Committee (1999-2001), responsible for determining priorities for educational programs in coastal regions
- UNC Water Resources Research Institute, Associate Director (2002-2004) and Interim Director (2004-2005), responsible for managing federal and state water resources research funding for the UNC system
- NCSU CALS Water Quality Coordinator (1997-present), responsible for coordinating interdisciplinary education and research initiatives among campus and county-based faculty and representing CALS on state, regional, and national committees
- NCSU NCCES Blue Ribbon Commission for Staff Development (1998-1999), responsible for developing the NCCES Personal and Organization Development System
- NCSU Graduate School Natural Resources Graduate Program Review Committee Chair (2005-2006), responsible for recommending enhancements to the multi-disciplinary MNR graduate program
- NCCES Long Range Plan Steering Committee (1999-2000), responsible for revising and implementing elements of the Extension Plan of Work
- BAE Department Committees: Graduate Studies, Curriculum, Recruiting and Placement, Public Relations and Development, Awards, and Social Committees

**Professional Development Activities (since 1/1/1996)**

- Institute for Systems Leadership (18 days), North Carolina State University, 1997
- Workshops on River Morphology and Restoration (28 days), Wildland Hydrology Inc.
- Conferences by ASABE, ASCE, AEES, SWCS, AWRA, US F&WS, and others

**Program Description**

I work in water resources and ecological engineering with focus on stream restoration and watershed nonpoint source pollution control. As Extension Specialist in Watershed Management, I provide technical and programmatic leadership for county-based and workshop-based education programs directed to landowners, agencies, non-profit organizations, and natural resource professionals. I work with County Extension Agents through the Neuse Education Team and the Extension Watershed Education Network to design education programs to meet specific needs for increasing understanding and changing behavior of target audiences addressing local water quality issues.

In the area of stream restoration, I collaborate with faculty, students, agencies, and landowners on applied research,
demonstration, and training on innovative approaches for restoring stream hydrological and ecological functions. Stream channel and floodplain degradation are major causes of watershed impairment in North Carolina, contributing to habitat loss, sedimentation, and nutrient loading. Annual funding for stream restoration from the NC Ecosystem Enhancement Program, NC Clean Water Management Trust Fund, local governments, and other agencies approaches $100 million. In order for this funding to be used effectively, many questions related to the planning, design, construction, and evaluation of natural stream restoration projects must be answered. My applied research and education programs are important for developing, demonstrating, and evaluating restoration technologies and teaching students and professionals how to accomplish stream restoration objectives effectively.

Goals (next five years)
- Advise 10+ graduate students working in water resources and ecological engineering
- Publish 10+ papers describing graduate student research results
- Teach courses in stream restoration and ecological engineering
- Manage 10+ grant-funded applied research and extension projects totaling over $2 million
- Coordinate and teach 100+ professional development workshops and conferences with 5000+ attendees
- Expand the Extension Watershed Education Network to include 50+ active County Agents working on local education projects and programs
- Enhance coordination and effectiveness of Land Grant University water quality education, extension, and research through the CSREES Committee for Shared Leadership – Water Quality, serving as chair in 2007-2008
- Support more effective water quality regulations, policies, plans, and funding allocations through technical and programmatic advising to various agencies and organizations

Accomplishments (since 1/1/1996)

Research
- Established a grant-funded, multi-disciplinary, applied research program in stream restoration that is attractive to undergraduate and graduate students, funding agencies, and partner institutions
- Provided research-based technical support to state and federal agencies on water quality and stream restoration guidelines, regulations, and funding allocations
- Supported 13 former and 8 current graduate students working in water resources and ecological engineering as University faculty, research assistants, consulting engineers, or government officials

Teaching (courses taught, credit hours, number of students)
- BAE 495K – Ecological Engineering Applications (1 hour): Co-developed and co-instructed with Bill Hunt and Mike Burchell in 2006 (14 BAE undergraduate students)
- BAE 579 – Stream Channel Assessment and Restoration (3 hours): Developed and instructed in 2003 (20 graduate students), 2004 (15 graduate students), 2006 (17 graduate students)
- BAE 590C – Risk Assessment in Stream Restoration (1 hour distance education): Co-developed and co-instructed with Paige Puckett in 2007 (5 students)
- BAE 590X – Fluvial Sediment Transport (3 hours): Developed and instructed in 2005 (5 graduate students)
- BAE 590Y – Ecolhydrology and River Corridor Functions (1 hour distance education): Co-developed with Desiree Tullos and instructed in 2005 (4 students) and 2006 (2 students)
- BAE 590Q – Water Quality Applications (3 hours): Co-developed and co-instructed in 1998 (39 graduate students including 22 Extension Agents)

Extension
- Coordinated the Neuse Education Team, a 7-member team of County and University faculty responsible for educating farmers and communities in 17 counties, resulting in a 30% reduction in nitrogen loading in the Neuse River Basin since 1997
- Coordinated the Extension Watershed Education Network, a 40-member statewide network of Extension professionals responsible for implementing over 100 local water quality education projects since 2001
- Coordinated 25+ days annually of training workshops on stream restoration planning, design, construction, and monitoring, reaching 3600+ natural resource professionals, landowners, government agencies, and non-profit organizations since 1999
- Coordinated biennial regional stream restoration conferences, growing in size to 500+ participants in 2006
• Coordinated 40+ days annually of training workshops on erosion and sediment control, including certification training workshops for NCDOT personnel and contractors, with 1400+ participants since 2005
• Coordinated outreach on water quality protection for county agents, private well users, landowners, government agencies, and others concerned about water quality protection, including conducting regional watershed academies and developing web sites

### Graduate Students

<table>
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<tr>
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<th>Since 1/1/1996</th>
<th>Career</th>
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<tr>
<td>Chair (MS &amp; MBAE))</td>
<td>13</td>
<td>13</td>
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<td>(PhD)</td>
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<td>9</td>
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<td>Committees (MS)</td>
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<td>(PhD)</td>
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### Publication Summary

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<td>Books (peer reviewed)</td>
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<td>Book Chapters (peer reviewed)</td>
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<tr>
<td>Extension Pubs (peer reviewed)</td>
<td>6</td>
<td>25</td>
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<tr>
<td>Patents</td>
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<tr>
<td>Conference Proceedings, Papers, Abstracts</td>
<td>110</td>
<td>163</td>
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<td>Popular Press</td>
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### Grants Summary

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<td>Number</td>
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<td>Amount ($)</td>
<td>$20,047,860</td>
<td>$22,177,588</td>
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### Five Most Important/Significant Publications

DEPARTMENT OF PLANT AND SOIL SCIENCE
TEXAS TECH UNIVERSITY
LUBBOCK, TX  79409-2122
CURRICULUM VITAE

Stephan J. Maas
Professor of Agricultural Microclimatology

Education:
M.S. Texas A&M University. 1975. Meteorology.

Professional Experience:
Professor of Agricultural Microclimatology. Department of Plant and Soil Science. Texas Tech University. 2000 to present.
Graduate Teaching and Research Assistant. Department of Meteorology, Department of Soil & Crop Sciences. Texas A&M University. 1982-84.
Meteorologist. Joint Appointment, Texas Agricultural Experiment Station and U.S. Department of Agriculture. 1980-81.
Research Scientist. Blackland Research Center. Texas Agricultural Experiment Station. 1977-80.

Professional and Honorary Societies:
American Society of Agronomy (ASA)
American Society for Photogrammetry and Remote Sensing (ASPRS)

Professional Accreditations:
None

Honors and Awards:
Honors:

Awards:
Ed Felder Memorial Award. Most distinguished graduating senior in the Department of Meteorology. Texas A&M University. $50 award. 1973.
AMOCO Foundation Award. Distinguished service as a graduate teaching assistant. Texas A&M University. $500 award. 1983.
USDA Superior Performance Award. Outstanding research and technology transfer activities in support of the program of the Western Integrated Cropping Systems Research Unit. $2,000 award. 1995.
USDA Superior Performance Award. Outstanding performance in the development of remote sensing equipment. $2,000 award. 1996.

Thesis/Dissertations:

Principal Research Interests:
Remote sensing, crop growth modeling, environmental factors affecting crop growth, precision agriculture, crop yield prediction.

Books and Book Chapters:

Refereed Publications (Career Total of 26):


**In Press:**


In Review:


In Preparation:


Electronic Media:
None

Technical Publications/Popular Articles (Career Total of 15):


**Abstracts and Proceedings (Career Total of 77):**


In Press:

In Preparation:
none

Seminars and Presentations (Career Total of 46):
Domestic: (Total of 38)


32. Maas, S.J. 2003. At the request of the USDA Laboratory Director, made a presentation to visiting Congressman Randy Neugebauer outlining ongoing precision agriculture research in the Texas High Plains. USDA-ARS Plant Stress Laboratory, Lubbock, TX. Sep.


International: (Total of 8)


**Principal Subject Matter for Teaching:**
Agricultural Microclimatology, Remote Sensing, Crop Modeling

**Formal Courses Taught Last Six Years:**

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1999 2000 2001 2002 2003 2004 Total

**Graduate Courses**

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<tr>
<td>PSS 8000: Doctor’s Dissertation</td>
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**Workshops (Organized/Conducted):**


**Graduate Students Directed:**

**M.S.**


Ph.D.

Non-Thesis None

Graduate Students In Progress (2):
M.S.
None

Ph.D.


Non-Thesis
None

Graduate Committees:
M.S.:
None

Ph.D.:
None

Non-Thesis:
None

Undergraduate Fellows:
None

External Support: Career Total of $1,942,661


20. Maas, S.J. 2002. Received funding through TAES from Texas High Plains Precision Agriculture Initiative (proposal submitted by R. Lascano). (1 year, $20,000.00). Funded


35. Maas, S. J. 2005. Core Funding from Cotton Inc. Agricultural Research. (1 year, $10,000.00 requested).

Service:
A. University Committees and Service:
   Texas Tech University.
B. **College Committees and Service:**  
**College of Agricultural Science and Natural Resources.**  
1. Research Committee. 2000-present  

C. **Departmental Committees and Service:**  
**Department of Plant and Soil Science.**  
1. Physiology Discipline Committee. 2000-present.

2. Graduate Council Approved New Courses  
a. PSS 6301 Quantitative Agricultural Remove Sensing  
b. PSS 6302 Plant Growth Modeling  
c. PSS 5329 Precision Agriculture


D. **Professional Society Service:**  
1. American Society of Agronomy  
a. Associate Editor of *Agronomy Journal*. 2002-present.


2. American Society of Photogrammetry and Remote Sensing  

E. **Professional / Industry Service:**  
1. Manuscript Reviewer  


   c. *J. Precision Agriculture*. 2003 (1 manuscript).

   d. USDA-ARS Peer Review. 2001 (1 manuscript), 2002 (1 manuscript), 2003 (2 manuscripts), 2004 (4 manuscripts).

   e. TAES Peer Review. 2000 (1 manuscript).


   g. *Computers and Electronics in Agriculture*. 2004 (1 manuscript).

F. Professional Development:


3. Attended and completed the course, “Introductory Conversational Spanish I” offered by the Texas Tech Continuing Education Department. Lubbock, TX. Fall 2003.

4. Attended and completed the course, “Introductory Conversational Spanish II” offered by the Texas Tech Continuing Education Department. Lubbock, TX. Fall 2003.

5. Attended and completed 4-week intensive Spanish language instruction at the Academia Vinigulaza, Oaxaca City, Oaxaca, Mexico. Fall 2004.

G. Community Service:
1. Science Fair Judge.
Jennifer Moore-Kucera, Ph.D.
Assistant Professor of Soil & Environmental Microbiology
Dept. of Plant and Soil Science, Texas Tech University
Tel: (806) 742-0116 (work)
Email: Jennifer.moore-kucera@ttu.edu
Website: http://www.pssc.ttu.edu/faculty_pages/JenniferMoore-Kucera.php

EDUCATION:
Ph.D. 2005 Oregon State University, Department of Crop & Soil Sciences, Corvallis, OR
Major: Soil Science (Focus: Soil Microbiology and Biochemistry)
Dissertation: “Microbial Community Structure as Influenced by Season and Stand Age in a Douglas-fir (Pseudotsuga menziesii) Ecosystem.”

M.S. 1998 Iowa State University, Department of Agronomy, Ames, IA
Major: Soil Science (Focus: Soil Microbiology and Biochemistry)
Thesis: "Microbial biomass carbon and nitrogen, dehydrogenase activity, and fixed ammonium as affected by cropping systems."

B.A. 1994 Binghamton University (State University of New York), Department of Biology and Department of Geological Sciences and Environmental Studies, Binghamton, NY
Double Major: Biology and Environmental Studies
Minor: German

EMPLOYMENT HISTORY:
8/2008 - present Assistant Professor, Soil & Environmental Microbiology, Department of Plant and Soil Science, Texas Tech University, Lubbock, TX
Research focus: Soil microbial ecology/ C across the landscape System: Managed and natural landscapes

Research focus: Soil microbial ecology and nutrient management System: Sweet cherry orchards

Research focus: Trace Gas Fluxes/Soil Microbial Ecology System: Semi-arid grasslands

2/2002 - 7/2005 Graduate Research Assistant, Department of Crop and Soil Sciences, Oregon State University, Corvallis, OR
Research focus: Forest soil microbial ecology System: Old-growth and clear-cut Douglas-fir stands

Research focus: Nutrient management System: Apple orchards
11/1999- 10/2000 **Agricultural Research Technologist II**, WSU-TFREC in collaboration with the USDA-ARS Tree Fruit Research Laboratory, Wenatchee, WA
Research focus: Molecular Biology
System: Apple orchards

Research focus: Soil microbial ecology
System: Annual row crops

Project focus: Black fly Ecology and Reduction Program

Project focus: Restoration Ecology

**HONORS/ AWARDS:**

2006 High Superior Performance Award, for the period July 10, 2005 through December 31, 2005, USDA-ARS SWRC, Tucson, AZ

2005 Yerex Graduate Fellowship nominee

2003 FEMS (Federation of European Microbiological Societies) Young Scientist Travel Grant- awarded cost of registration fee to attend and participate in the international conference: Enzymes in the Environment, Prague, Czech Republic

1995 Gamma Sigma Delta, Agricultural Honor Society of America

1993 Recipient of a Student Conservation Association scholarship to work as a soil conservation assistant on the Camp Pendleton Marine Corps Base, CA.

**GRANTS:**


PROFESSIONAL SOCIETIES:
   American Society of Agronomy
   Soil Science Society of America
   American Society for Horticultural Science

TEACHING EXPERIENCE:
Currently Teaching (From Spring 2008 semester to present):
   Instructor, PSS 4331/6432, Soil Microbial Ecology/Advanced Soil Microbial Ecology, Fall 2009.
   Instructor, PSS 4337/6331, Environmental Soil Science/ Advanced Environmental Soil Science, Spring 2010.
   Instructor, IS 1100, Interdisciplinary Studies, Freshman Seminar, Fall 2009.

Previous Teaching Experience:
   Guest Lecturer, Dept. of Forestry, Oregon State University, Corvallis, OR Course: FOR 240 – Forest Biology –Led a 3-hr section of a field soil classification and ecology, Spring 2003, 2004.
   Guest Lecturer, , Wenatchee, WA Master Gardener Program – Soil ecology, nutrition, and management (2hr seminar), March 2001
PEER-REVIEWED PUBLICATIONS:


POPULAR PRESS ARTICLES:


Featured in the article, “OSU Studies Orchard Floor Management in Cherries: Landscape cloth, organic mulch focus of research tests,” written by John Schmitz. Published May 16, 2008.  
PROFESSIONAL PRESENTATIONS:

Marko Davinic, Jennifer Moore-Kucera, Christopher Sheppard, and Thomas Thompson. 2009. Soil Microbial Community Structure Dynamics at Depth in Wastewater Treated Soils. The ASA-CSSA-SSSA Annual Meetings (November 1-4), Pittsburgh, PA.

Jennifer Moore-Kucera, Veronica Acosta-Martinez, and Anita Azarenko. 2008. Soil Microbial Communities and Activities under Different Orchard Floor Management Systems in Oregon Sweet Cherry Orchards. The ASA-CSSA-SSSA Annual Meetings (October 5-9), Houston, TX.

Jennifer Moore-Kucera, Anita Azarenko, Lisa Brutcher, and Annie Chozinski. 2007. Soil enzymes as affected by orchard floor management. The ASA-CSSA-SSSA Annual Meetings (November 4-8), New Orleans, LA.


Lisa Brutcher, Jennifer Moore-Kucera, Anita Azarenko, Russell Ingham, Annie Chozinski, and David Myrold. 2007. Tracking effects of soil community management in sweet cherry orchards using nematode community measures. American Society for Horticultural Science Annual Conference (July 16-19), Scottsdale, AZ.


INVITED PRESENTATIONS:

Soil Microbial Ecology: What’s down there and what can they do for me? for the PSS 1100 course (October 2009).

Just Scratching the Surface? Applications of Soil Microbial Ecology to Answer Agricultural and Ecological Questions. Oklahoma State University, Department of Plant & Soil Science seminar series (Nov 16, 2009), Stillwater, OK and also presented this seminar at Texas Tech University, Department of Natural Resources Management (Nov 18, 2009).

Orchard Floor Management Decisions Impact Nutrient Cycling: Helping your soils feed your trees. Oregon Horticultural Society Meeting (Jan 30, 2008), Portland, OR.

Enhancing Nutrient Cycling in Organic Orchard and Field Crop Systems. Session for the Ecological Farm Conference (Jan 24, 2008), Pacific Grove, CA.

Early Fertility Responses in 1-3 yr old Organic Sweet Cherry Orchards – An Example From the Pacific Northwest. Part of the Organic Tree Fruit Strategies for Michigan and the Midwest” educational program at the Great Lakes Fruit Vegetable and Farm Market Expo (Dec 6, 2007), Grand Rapids, MI.

Does Soil Organic Matter?- Ecological and Environmental Considerations. Part of the “Building Soils and Habitat for Better Fruit and Vines” workshop, (Nov 9, 2006), The Dalles, OR.

Soil Health Indicators in Sweet Cherry Orchards in Oregon. Part of the Soil Management Workshop at The 4th International Organic Tree Fruit Research Symposium, (Mar 3-6, 2007), East Lansing, MI.
Paige Rollins Puckett  
Adjunct Assistant Professor

**EDUCATION**
Doctor of Philosophy, 2007, North Carolina State University, Biological and Agricultural Engineering  
Bachelors of Science, 2003, North Carolina State University, Biological and Agricultural Engineering

**PROFESSIONAL EXPERIENCE**
Department of Biological and Agricultural Engineering, North Carolina State University

- Adjunct Assistant Professor, 1/2010 – present  
  I design and teach Distance Education graduate level courses for degree and non degree students. I am constantly making efforts to streamline the courses and tailor them to students who have full or part time jobs.
- Instructional and Teaching Professional, 6/2007 – 1/2010  
  I researched the success/failure rates of the rock cross-vane, an in-stream structure used for grade control and bank protection in stream restoration, and I developed both a method of monitoring and a mathematical model to predict scour downstream of the structure. This research involved stream surveying, data analysis, and relevant coursework.  I graded labs and projects and am available to help the students.
  I compared four BMP methods for Dr. Hunt: wet ponds, bioretention, sand filters, and artificial wetlands for their efficiency at pollutant.  I also helped plant an artificial wetland.

Water Quality Group, North Carolina State University

- Research Assistant, 2/2002 - 8/2003  
  I surveyed streams with Topcon and Total Station, did bug sampling, sediment sampling, data analysis, CAD, watershed delineation, and report writing.  I aided in writing DWQ reports for streams in North Carolina that were being assessed for their priority of restoration, and I spent on the field surveying streams for the development of the North Carolina coastal curve.  I built an intricate excel sheet that aids in stream monitoring and calculations.

**STATEMENT OF INTENTION**
My immediate and long-term goals for current position of Adjunct Assistant Professor in the Department of Biological and Agricultural Engineering are to:

- Continue to develop my current courses, BAE 582, BAE 583, and BAE 580,
- Provide support for other faculty developing their distance courses,
- Help grow the BAE Distance Education program in the quality and relevance of current and new course offerings, and
- Encourage students currently enrolled in distance courses towards the Certificate Program and/or the MABE Program.

**TEACHING EXPERIENCE**

- BAE 590-603 Introduction to Land and Water Engineering,  
- BAE 582 Stream Restoration Structure Risk and Failure  
- BAE 583 Ecohydraulics and River Corridor Function  
- BAE 473/573 Introduction to Surface/Water Quality Modeling

**TRAINING PROGRAMS AND FELLOWHIPS**
National Science Foundation Graduate Research Fellowship Program, 2004-2007

Preparing the Professoriate, 2005-2006, This program gives doctoral students and faculty the opportunity to develop a mentoring relationship centered on teaching over the course of an academic year. PTP provides students with regular seminar meetings and a hands-on teaching opportunity under a distinguished faculty mentor who is recognized for his or her teaching skills.

Graduate Student Professional Development Workshop, 2004, The program provides advanced graduate students with professional skills and experiences beyond those normally obtained during their formal academic training. The workshop is designed to expose graduate student participants to many professional development issues including personnel management, role of personality types, interviewing skills, stress management, ethics, and interactions with the media.

Park Scholarship, 1999-2003

**PROFESSIONAL LICENSE:**
EIT, Spring 2003.

**SKILLS:**
Name: Gary T. Roberson
Rank: Associate Professor and Extension Specialist

Present Appointment: 0% Research 65% Teaching 35% Extension

Years at current rank 10
Years at NC State University 27

Education

PhD, 1988, N C State University, Biological and Agricultural Engineering
MS, 1980, N C State University, Biological and Agricultural Engineering
BS, 1978, N C State University, Biological and Agricultural Engineering Technology
BS, 1978, N C State University, Agricultural Education

Professional Experience/Employment

1999-Present, Associate Professor and Extension Specialist, Biological and Agricultural Engineering, N C State University
1995-1999, Visiting Associate Professor, Biological and Agricultural Engineering, N C State University
1991-1995, Visiting Assistant Professor, Biological and Agricultural Engineering, N C State University
1988-1991, Visiting Instructor, Biological and Agricultural Engineering, N C State University
1983-1988, Instructor, Biological and Agricultural Engineering, N C State University

Professional Registration/Licensure

Professional Engineer, North Carolina

Scholarly and Professional Honors/Awards

N C State University Faculty Center for Teaching and Learning, Richard Felder Award for Outstanding Service in Support of Teaching and Learning, 2005
American Society for Horticultural Science, Southern Region Extension Publication Award, “1999 North Carolina Commercial Vegetable Recommendations”, D. C. Sanders (Editor), 2000 (Contributing Author)
North Carolina State University Academy of Outstanding Teachers, Outstanding Teacher Award, 1990.
Professional Society Memberships

American Society of Agricultural Engineers
American Society for Engineering Education
National Association of Colleges and Teachers of Agriculture

Honorary Society Memberships

Gamma Sigma Delta

Consulting Activities (since 1/1/1996)

None

Institutional and Professional Service (since 1/1/1996)

BAE Department Facilities and Operations Committee (Chairman)
BAE Department Course and Curriculum Committee
BAE Department Distance Education Committee
ASABE, ESH Division, ESH-01, Executive/Steering Committee
ASABE, ESH Division, ESH-04, Technology Exchange Committee
ASABE, PM Division, PM-48, Vegetable Engineering Committee
ASABE, PM Division, PM-43, Machinery Management Committee (Vice Chairman
ASABE, PM Division, PM-54, Precision Agriculture Committee.
ASABE, 2005/2006 Nominating Committee.

Professional Development Activities (since 1/1/1996)

Sensors and Controls in Real World Applications, NC Section ASAE, 2003


Program Description

Narrative: Applied research in the applications of precision agriculture and machinery management are a vital part of the agricultural machinery systems program in the department. Seeking new and better ways to implement available technologies for North Carolina producers is a primary goal of the extension effort. Results of these studies are directly relayed to producers through extension and outreach activity. Cooperation with projects in Crop Science, Soil Science and Horticulture are key elements of this activity. Extension and Engagement activity requires working with farmers across the state to better understand technology and its applications for a more productive agriculture. In particular, this position serves as primary support for activity in precision agriculture technology and its adaptation. Projects utilizing this technology in peanuts, cotton and vegetable crops have been conducted and continue to be explored. Likewise the position provides support for machinery management efforts to assist farmers in selecting the correct equipment and making effective use of it. Peanut harvesting and mechanization projects are at the forefront of this activity. A recent addition has been the area of agritourism. The use of GPS and GIS technology to develop crop mazes has been a popular and valuable part of the extension education effort to promote precision agriculture technologies.

Teaching responsibility is assigned for the following courses: BAE 023, Light Equipment Technology; BAE 432, Agricultural and Environmental Health and Safety; and BAE/SSC 435/535, Precision Agriculture Technology. BAE 023 is offered to students in the Agricultural Institute. The course emphasizes equipment used in the turf
grass, golf and landscape industries. Further, the course must be maintained to reflect state of the art technology as applied to these industries. Cooperative arrangements with equipment manufacturers are essential in maintaining this exposure to new technologies and products for the students. BAE 432 is a junior/senior level course designed to explore concepts in health and safety in agriculture and related areas. Offered as a traditional classroom course and as a distance education course, BAE 432 is designed for a broad spectrum of students. The course is required in the Agricultural and Environmental Technology curriculum. The course must provide a foundation in common health and safety issues as well as explores developing and current issues such as bioterrorism, zoonotic infections, and catastrophic events. BAE/SSC 435/535 has recently upgraded to permanent status. The objectives of this course are to examine and explore the technologies behind precision agriculture such as GPS, variable rate controls, yield monitors and remote sensors. Efforts to secure additional equipment are a top priority. Undergraduate advising is expected in this position. Undergraduate students enrolled in the Agricultural and Environmental Technology (AET) and the Biological Engineering, Agricultural Concentration (BEA) are routinely assigned for advising. In addition, students in the undeclared agriculture program are also assigned.

Goals (next five years)
- Continue development of BAE 432, Agricultural and Environmental Safety and Health, as a distance education course and a traditional campus based course. Prepare multimedia lectures on additional sections for inclusion in the course content. Develop sections on timely topics such as dust explosions and bioterrorism for inclusion in both course sections.
- Continue developing the distance education section of BAE 435/535. In particular, development of the distance education delivery system for laboratory activity.
- Precision Agriculture Project: Develop information gleaned from precision agriculture for cotton project into usable extension publications and disseminate to farmers via web pages.
- Peanut Harvest Mechanization: Continue development of alternate designs for peanut diggers.
- Machinery Management Project: Continue to develop and deliver presentations on machinery management and maintenance. Develop system where presentations are posted to web for future use.

Accomplishments (since 1/1/1996)

Teaching
- BAE 023, Light Equipment Technology, 3 Credit hours, 786 students, 1996-2006
- BAE 070, Tools and Materials, 3 Credit hours, 19 students, 1996-1997
- BAE 201. Shop Operations and Management, 3 Credit hours, 231 students, 1996-2000
- BAE 432, Agricultural and Environmental Safety and Health, 3 Credit hours, 108 students, 1996-2006
- BAE 435/535, Precision Agriculture Technology, 3 Credit hours, 60 students, 1999-2006

Extension
- Agritourism: Through funding provided by the NCSU Specialty Crops program, developed procedure to design and install crop mazes using GPS technology.
- Farm Machinery Management: All aspects of agricultural machinery are covered and timely and accurate information is provided to farmers in North Carolina.
- Precision Agriculture: A comprehensive program in precision agriculture has been outlined and under continued development. Additional fact sheets and bulletins are under development for posting through the web.
- Harvesting Effectiveness of Peanut Diggers: The project investigates harvesting effectiveness of peanut combines and diggers in an effort to identify design or operational improvements. Combine and digger yield losses have been evaluated. An automatic control system for peanut diggers has been developed and is under testing. Alternative digger designs are also under evaluation.
- Static and Dynamic Accuracy of GPS Systems in Eastern North Carolina. Global Positioning System technology is an increasingly popular topic in North Carolina. This study is designed to address static and
dynamic accuracy of GPS receivers available for agricultural use. A site at Tidewater Research Station is being prepared to allow for long term, repeatable testing. Independent assessment of GPS receivers is essential for farmers to make informed decision regarding purchase of this equipment.

- Geospatial and Precision Technologies Regional Education Initiative: The GIS Academy, sponsored through the CALS GIS Lab, is a series of workshops offered to agricultural professionals on the applications of precision agriculture technology.
- Precision Agriculture for Cotton Production in Eastern North Carolina: The project is evaluating applications of precision agriculture technology in a corn-cotton rotation at the Center for Environmental Farming Systems in Goldsboro, NC. Variable rate nitrogen treatments are compared to whole field nitrogen treatments.

**Graduate Students**

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<tr>
<th>Role</th>
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**Publication Summary**

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**Grants Summary**

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**Five Most Important/Significant Publications**


Dennis Alan Shannon  
Professor, Department of Agronomy and Soils

ACADEMIC QUALIFICATIONS

<table>
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<th>Degree</th>
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<th>Major</th>
<th>Minors</th>
<th>Year</th>
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<tr>
<td>Ph.D.</td>
<td>Cornell University</td>
<td>Crop Science</td>
<td>Agric. Economics, Soil Science</td>
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<tr>
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<td>Cornell University</td>
<td>Crop Science</td>
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<td>McGill University</td>
<td>Plant Science</td>
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<td>1976</td>
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<td>Goshen College</td>
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EMPLOYMENT HISTORY

2004-Present  Professor, Department of Agronomy and Soils, Auburn University
1996-2004  Associate Professor, Department of Agronomy and Soils, Auburn University
1990-1996  Assistant Professor, Department of Agronomy and Soils, Auburn University
1992-2001  Campus Coordinator for USAID/Haiti Productive Land Use Systems Project, South-East Consortium for International Development (SECID)
1990-1991  Senior Agroforester, USAID/Haiti Agroforestry II Project
1983-1985  Grain Legume Agronomist, IITA, Nigeria

INSTRUCTION

2002-2010  Instructor - AGRN 5080/5083/6080/6086 Soil Resources and Conservation. Graduate/Senior level course addressing soils as a natural resource for land use planning, their use and management for sustainable crop production, urban and industrial development and ecosystem protection. Taught as distance education course since 2008.

Graduate committees: Co-directed 3 PhD theses, directed 3 MS theses, 1 in progress. Member 5 doctoral and 3 MS committees

RESEARCH

Past research focused on alley cropping, an agroforestry practice for maintaining soil fertility and soil conservation for low resource farmers in the tropics. Also carried out agronomic research on grain legumes in Africa. Current research focuses on the effect management practices on bioactive compounds in medicinal plants.

PUBLICATIONS


Name: R. Wayne Skaggs
Rank: William Neal Reynolds Distinguished University Professor

Present Appointment: 85% Research 15% Teaching 0% Extension

Years at current rank: 20
Years at NC State University: 41

Education:

Professional Experience/Employment:
1991-Present Distinguished Biological and Agricultural University Professor Engineering Department,
1984-Present William Neal North Carolina State Reynolds Professor University
1979-1984 Professor
1974-1979 Associate Professor
1970-1974 Assistant Professor
1966-1970 Graduate Instructor Agricultural Engineering Department, Purdue Univ.
1964-1966 Grad Res. Assistant Agricultural Engineering
1962-1964 Research Assistant Department, University of Kentucky

Professional Registration/Licensure: P.E. North Carolina

Scholarly and Professional Honors/Awards:
Member, National Academy of Engineering
O. Max Gardner Award, University of North Carolina System, 1997
Distinguished Engineering Alumnus, Purdue University, 1997
Engineering Hall of Distinction University of Kentucky, 1996.
Alexander von Humboldt Foundation Award, 1997
International Distinguished Achievement in Agriculture Award for 1999, International Society of Gamma Sigma Delta
USDA Group Honor Award for Excellence (PLAT team), 2004
W.E. Larson and R.R. Allmares Lecture, University of Minnesota, 2005

Professional Society Memberships:
ASABE, National Academy of Engineering, American Geophysical Union, Soil and Water Conservation Society, International Congress of Irrigation and Drainage

Honorary Society Memberships:
Sigma XI, Gamma Sigma Delta, Phi Kappa Phi, Tau Beta Pi

Consulting Activities (since 1/1/1996):
Sunset Beach Development Co. 2006 Wetland hydrology analysis
City of Hampton Roads 2005 Wetland hydrology analysis
World Bank 1999 Water quality impacts of agricultural drainage Washington, DC
PCS Phosphate, Inc. 1998-2006 Monitoring and modeling hydrology of mining sites Aurora, NC
Architects Tolson, Inc 1998-99 Designing drainage system for Building Construction Raleigh, NC

Institutional and Professional Service (since 1/1/1996)
President Elect, President and Past President of ASAE, 2000-2003
Peer committee, NAE Section 12, Chair, 2004-05
NCSU Graduate School Board of Advisors, 1996-2000
Advisory Board, Ag and Biosystems Engr., N.C. A&T State University, 1999-2005
Member, National Technical Committee for Hydric Soils, 1992-2006
Member, NCSU Council of University Professors, 1991-2006
Member University Research Committee, 1996-2002
Member, Search Committees, 2 for Deans of CALS, 3 for Director Water Resources Research Institute, 2 for Dept. Head, BAE.
Member, BAE Executive Committee, 2000-2006
Member, BAE Graduate Studies Committee, 1996-2006

Professional Development Activities (since 1/1/1996)
Nov., 1996     Lecturer       Malaysian Department
March, 1997    Drainage Engineering

Specialist      Water Resources Center
June, 1998     DRAINMOD Training
and Lecturer    Ministry of Irrigation
(MGRS) Ankara, Turkey

Government of Turkey

Program Description

Narrative:
My research is a team effort with Drs. G.M. Chescheir and Dr. M.A. Youssef in BAE, and Dr. J.W. Gilliam in SSC together with our graduate students. Dr. D.M. Amatya, formerly with our group and now with USDA, FS and adjunct Assistant Professor in BAE, continues to work cooperatively with us. Our overall goal is assess effects of land uses and management practices on losses of fertilizer nutrients to receiving waters. We continued to develop and test both complex and simplified watershed scale models for predicting the hydrology and water quality for drained watersheds. We have conducted comprehensive field experiments on a 10,000 ha watershed that includes the Tidewater Experiment Station (TES) and in an intensively instrumented forested watershed in Carteret County to test all levels of our simulation models. Both field scale and watershed scale research has been done on the site. Much of the research is being done in cooperation with Weyerhaeuser Co. scientists. A total of 8 PhD and 4 M.S theses were completed on this watershed during the 1996-2006 period. Over 40 journal articles have been published on data collected and modeling analyses of a wide range of hydrologic and water quality issues on the two experimental sites. We have worked with the N.C. Division of Water Quality to apply our models to 4 watersheds in the lower coastal plain. The models were used to map areas where best management practices and changes in land use would have the greatest benefit to reducing pollutant loads from the watersheds. Funding from the USDA-NRI, the EPA 319 program, the N.C. Legislature Water Quality Program, and from Weyerhaeuser Company has supported the watershed and field scale research.

Research, funded by N.C. Department of Transportation (DOT), was conducted to develop methods for determining the lateral effect of drainage ditches and borrow pits on the hydrology of adjacent wetlands. A method was developed, tested, and accepted by the NC DOT for application on a statewide basis. An M.S. thesis was written on the work; one journal article has been published and two others are in preparation.
Another major project is being conducted in Uruguay to determine the hydrologic effects of changing land uses from natural pasture to pine forest. This work is being conducted in cooperation Colonvade S.A. and with Dr. Chescheir and an MS student. Two 100 ha watersheds were instrumented to measure runoff and weather conditions on a continuous basis. After collecting background data for a three year period, one of the watersheds was planted to pine. The project has produced one M.S. thesis and an ASABE Transactions paper currently in press. Two other papers are in preparation. It is expected to produce a long-term data set for defining the effects of afforestation on water yield in Uruguay.

Goals (next five years)
My goal is to retire from full time employment within the next two years. I will likely request continued employment on a one-half time basis for two or three years after retirement. My goals for this period are:

- Assist younger faculty members in the transition and continuation of our drainage research program.
- Complete documentation and a distance learning module for DRAINMOD.
- Complete and publish research papers on Plymouth watershed scale project and on the long term project at Carteret 7.
- Complete and publish 2 papers on methods for identifying wetland hydrologic status of questionable sites.
- Complete a project on effects of minor forest drainage in the coastal plains on wetland hydrology and publish a paper on the results.
- Work with Dr. Youssef and researchers in the Midwest on modeling effects of drainage management on nitrogen losses in drainage water in the corn belt region.
- Assist former graduate students in publishing papers on their thesis research.

Accomplishments
Research
- Developed and tested Salinity and the first Nitrogen modules for DRAINMOD (with grad students)
- Published simulation studies showing potential of using shallow drain depths to reduce N losses from drained fields. Work resulted in field experiments to test hypothesis by researchers at several other locations.
- Documented effects of drainage and management practices on hydrology and water quality of drained pine plantations in the N.C. Coastal Plain (with Amatya, Chescheir and others).
- Conducted long-term watershed scale studies of effects of land use and management practices on hydrology and water quality of 10,000 ha poorly drained Lower Coastal Plain watershed (with Gilliam, Chescheir, Amatya, Amatya and graduate students)
- Developed a range of watershed scale models for predicting effects of land use and management practices on hydrology and pollutant load at the watershed outlet (with Chescheir, Fernandez, Amatya and others)
- Developed DRAINMOD-NII to predict effects of both drainage and nitrogen management practices on N losses form drained lands to surface waters (with M. Youssef).
- Develop simplified methods for predicting annual runoff and drainage from drained soils for application in PLAT model (with Evans)
- Initiated and conducted field studies (continuing) to determine effects of afforestation on hydrology and water quality in the Tacuarembo region in Uruguay (with Colonvade S.A., Chescheir, Amatya and graduate student. (funded through 2009).
- Developed a method for predicting lateral impacts of single drainage ditches or borrow pits on wetland hydrology. Method tested in MS work of Brian Phillips. Method accepted by NC DOT and available on their web site.
- Study to determine effects of borrow pits on hydrology of adjacent wetlands nearing completion.
- Founding member of Agricultural Drainage Management Task Force (ADMS) with objectives of implementing drainage management strategies in the Midwest to reduce N losses to surface waters and the Gulf of Mexico. Working with researchers in Midwest to test and apply new version of DRAINMOD.
Teaching:

BAE 771, Theory of Drainage, Saturated Flow, alternate years (fall semester), 10 to 25 students per semester. BAE 771, Theory of Drainage, Unsaturated Flow, alternate years (spring semester) 10 to 20 students per semester.

Extension

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Publication Summary

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Grants Summary

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Five Most Important/Significant Publications

BIOGRAPHICAL SKETCH
Edzard van Santen
Professor
Department of Agronomy and Soils
Auburn University, AL.

Professional experience

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<td>1978</td>
<td>Philipps University Marburg, Germany</td>
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<td>M.S.</td>
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<td>Ph.D.</td>
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Professional experience

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Research focus
Applied cultivar development for forage grasses (annual ryegrass, tall fescue, bahiagrass) and legumes (crimson clover, ball clover). Development of bentgrass cultivars suitable for golf greens in the lower transition zone. Cultivar development and agronomy of cover crop species (black oat, white lupin, fodder radish). Breeding of bioenergy feedstocks such as lowland switchgrass.

Teaching experience
Experimental Designs and Data Analysis: 20 years (~100 students) Advanced Plant Breeding: 20 years (~40 students). Statistical consulting for researchers and graduate students in Agronomy and Soils, Plant Pathology and Entomology, Fisheries and Allied Aquaculture, Biological Sciences, School of Veterinary Sciences, and USDA-ARS National Soil Dynamics Laboratory.

Editorial responsibilities
Editor-in-Chief: Communications in Biometry and Crop Science (2007 - present).
Technical Editor: Communications in Biometry and Crop Science (2006 - 2007).
Technical Editor: Forage and Grazinglands (2009 - present).
Associate Editor: Forage and Grazinglands (2003 - 2009).
Editor in Chief: Proceedings of the 11th International Lupin Conference (2005)
Editor in Chief: Proceedings of the 9th International Lupin Conference (1999)

Publications
Refereed ...........................................................................79
Proceedings .....................................................................38
Abstracts ..........................................................................110
Experiment Station.............................................................60
Michael J. Vepraskas  
William Neal Reynolds Distinguished Professor of Soil Science  
North Carolina State University, Dept. of Soil Science, Box 7619, Raleigh, NC 27695-7619  
E-Mail: michael_vepraskas@ncsu.edu Tel: (919) 515-1458  FAX: 919-515-2167

Professional Preparation
- University of Wisconsin-Madison Geology B.S. 1973
- University of Wisconsin-Madison Soil Science M.S. 1975
- University of Wisconsin-Madison Water Resources Mgmt. M.S. 1975
- Texas A&M University Soil Science Ph.D. 1980

Professional Appointments
- 7/2008-Present: William Neal Reynolds Distinguished Professor of Soil Science, North Carolina State University, Raleigh
- 9/1986-9/1993: Associate Professor, Dept. of Soil Science, North Carolina State University

Honors and Awards (relevant)
- NCSU Agronomy Club “Outstanding Instructor Award, 1996;
- Gamma Sigma Delta’s “Certificate of Merit”, 1996.
- Licensed Soil Scientist in NC (No. 1012), 1996.
- Professional Achievement in Water Quality Award, 2006, Soil & Water Conservation Society, Hugh Hammond Bennett Chapter, NC.
- Soil Science Education Award, Soil Science Society of America, 2006
- Appointed William Neal Reynolds Professor, 2008
- Elected “Fellow” of the American Association for the Advancement of Science (AAAS) 2008
- Outstanding Graduate Instructor Award, NCSU College of Agriculture and Life Sciences, 2009
- Elected “Fellow”, Society of Wetland Scientists, 2010

Adjunct Professorships:
Adjunct Professor of Geology, University of Tennessee, Knoxville, 2000-present.  
Adjunct Professor of Soil Science, Virginia Tech. University, Blacksburg, VA, 2002-present.
Publications (selected)


Synergistic Activities:

- Developed on-line course for “Wetland Soils” and have taught students from across U.S.
- Co-developed a 5-day course on “Hydric Soils” and have taught to personnel from USDA, Corps of Engineers, and consulting biologists from across the U.S.
- Co-developed first practical method to delineate wetland soil boundaries using magnetic susceptibility measurements. Technique is being evaluated by USDA for use in wetland delineation across the U.S.
- Member of the USDA-sponsored “National Technical Committee for Hydric Soils” which establishes guidelines for identifying wetland soils.
DEPARTMENT OF PLANT AND SOIL SCIENCE
TEXAS TECH UNIVERSITY
LUBBOCK, TX  79409-2122

Richard E Zartman
Leidigh Professor of Soil Physics and Department Chair
J. A. Love Endowed Chair

Education:
B.S. The Ohio State University. 1968. Major: Agronomy

Professional Experience:
Department Chair 2011-present
J. A. Love Endowed Chair 2011-present
Leidigh Professor of Soil Physics. Texas Tech University. 2006-present
Associate Chair. Texas Tech University. 1998-2011
Professor of Soil Physics. Texas Tech University. 1991-2006
Associate Professor of Soil Physics. Texas Tech University. 1980-91
Assistant Professor of Soil Physics. Texas Tech University. 1974-80

Professional and Honorary Societies:
American Society of Agronomy
American Society of Agronomy, Texas Chapter
International Society of Aeolian Research
International Soil Science Society
Professional Soil Scientists' Association of Texas
Soil and Water Conservation Society of America
Soil and Water Conservation Society of America, Golden Spread Chapter
Soil Science Society of America
Texas Association of Geoscientists

Professional Accreditations:
Hazardous Waste Supervisor (29 CFR 1910.120)
Certified Professional Agronomist, #330
Certified Professional Soil Scientist, #330
Licensed Professional Geoscientist, Texas #1719

Honors and Awards:
Texas Tech University College of Agricultural Science and Natural Resources
Graduate Student Advising Award. 2006.
Texas Tech University College of Agricultural Science and Natural Resources
Teacher of the Semester. 1995.
Texas Tech University President’s Excellence in Teaching Award. 2001.  
Texas Tech University College of Agricultural Science and Natural Resources  
Outstanding Researcher Award. 2003 and 2006.  
Texas Tech University Teaching Academy. 2003.

**Principal Research Interests:**  
Environmental Soils. My current research is funded by the Department of Defense to determine the fate of ricin in the natural and human modified environments.

**Books and Book Chapters (Career Total of 7):**

**Refereed Publications (Career Total of 54):**

**Technical Publications/Popular Articles (Career Total of 51):**

**Abstracts and Proc. (Career Total of 140):**

**Seminars and Presentations since 2000. (Career total 92):**

**Graduate Students Directed. (Career Total of 32):**

- M.S. (Total of 22)
- Non-Thesis M.S. (Total of 1)
- Non-Thesis M.Ag. (Total of 3)
- Ph.D. (Total of 6)

**Selected Research Projects as PI/co-PI (Career Total $2,014,984):**


**Total Amount of External Support Generated (Last Five Years):** $586,249.