

Name Rodney L. Huffman
Rank Associate Professor

Present Appointment: 65% Research 35% Teaching

Years at current rank 11
Years at NC State University 17

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
1989-1995 Asst. 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
 AutoCAD Use for Stream Restoration and Monitoring workshop 2006
 PE Exam Development Workshops, 2/yr, 2000-2007
 Stormwater BMP Tour 2000
 Grand River Watershed Tour 1999
 Natural Systems for Wastewater Treatment and Water Quality Management 1999
 Distance Education Practicum 1999
 Hydrology Tools for Wetland Determination Workshop 1998
 Outcome-based Engineering Education 1996
 Phytoremediation Workshop 1996
 ASABE annual conferences
 Various technical conferences and seminars

Program Description

Narrative

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.

Accomplishments

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	Course	CR	#students
BAE 323	Water Management	3	208
BAE 324	Elementary Surveying	1	207
BAE 495I	Introductory Geomatics	3	14
BAE 495A	Senior Seminar	1	30
BAE 472	Irrigation & Drainage	3	142
BAE 572	Irrigation & Drainage	3	15
BAE 502	Instr. Hydrologic Appl.	3	15
BAE 570	Soil Water Movement.	1	3

- 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**

<u>Graduate Students</u>	<u>Since 1/1/1996</u>	<u>career</u>
Chair (MS & MBAE)	0	2
(PhD)	1	3
Committees (MS)	10	11
(PhD)	6	7

<u>Publication Summary</u>	<u>Since 1/1/1996</u>	<u>career</u>
Refereed journals	4	10
Books (peer reviewed)	1	1
Book Chapters (peer reviewed)	2	2
Extension Pubs (peer reviewed)	1	7
Patents	0	0
Conference Proceedings, Papers, Abstracts	14	37
Popular Press	0	0
Software	0	2
Technical Reports	3	7

<u>Grants Summary</u>	<u>Since 1/1/1996</u>	<u>career</u>
Number	19 (4)	31 (6)
Amount (\$)	1,575,455 (540,534)	2,998,104 (576,034)

Numbers in parentheses are for grants as lead PI

Five Most Important/Significant Publications

Fangmeier, D. D., W. J. Elliot, S. R. Workman, R.L. Huffman, and G.O.Schwab. 2006. Soil and Water Conservation Engineering, 5th ed. Thomson Delmar Learning. 502 pp.

Grabow, G. L., R. L. Huffman, R. O. Evans, D. L. Jordan, R. C. Nuti. 2006. Water distribution from a subsurface drip irrigation system and dripline spacing effect on cotton yield and water use efficiency in a coastal plain soil. Transactions of the ASABE 49(6): 1823–1835.

Vepraskas, M. J. , Huffman, R. L. , Kreiser, G. S. 2006. Hydrologic models for altered landscapes. Geoderma, 131(3-4), 287-298.

Huffman, R. L. 2004. Seepage evaluation of older swine lagoons in North Carolina. Transactions of the ASAE, 47(5), 1507-1512.

Stallings, C., S. Khorram, and R. L. Huffman. 1999. Incorporating ancillary data into a logical filter for classified satellite imagery. Geocarto International 14(2): 41-50.