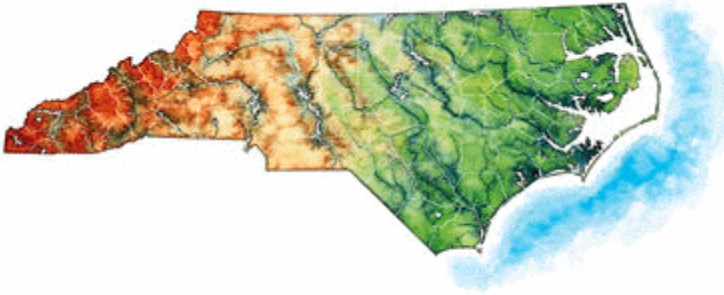


SOIL SCIENCE GRADUATE PROGRAMS



DEPARTMENT of SOIL SCIENCE

**COLLEGE of AGRICULTURE
and LIFE SCIENCES**

**NORTH CAROLINA STATE UNIVERSITY
Raleigh, North Carolina**

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www.soil.ncsu.edu

Other Links of Interest:

NCSU Homepage
www.ncsu.edu

NCSU Financial Aid
www.fis.ncsu.edu/financial_aid/

NCSU Office of International Students
www.ncsu.edu/oisss/

NCSU Housing Office
www.ncsu.edu/housing

Graduate Student Relocation Guide
www.fis.ncsu.edu/grad_publicns/survival

City of Raleigh Homepage
www.raleigh-nc.org/

The Soil Science Department at NCSU offers graduate educational opportunities to prepare students for careers as soil scientists, environmental scientists, educators, & leaders in agricultural & environmental issues. The Department has a long tradition of instructional & research excellence leading to a Masters or Doctoral degree in Soil Science. The Department has six well-established core areas of research:

***Soil/Land Management**

***Soil Physics**

***Soil Fertility & Plant Nutrition**

***Soil Chemistry**

***Soil Microbiology & Biochemistry**

***Soil Genesis, Classification, & Morphology**

Our emphasis in Soil Science graduate education at NCSU is primarily focused on four strategic issues:

***Land Use Planning**

***Sustainable Ag. Production**

***Waste Management**

***Soil & Water Quality**

The Department has an active international program in soil science-related issues, with active research programs in Central & South America, Africa, & Asia. A Master of Soil Science & a Master of Natural Resources degree (non-thesis) option is also available for students who desire to expand their education of soil science without research emphasis. Strong multi-disciplinary efforts are encouraged with faculty from departments such as Animal Science, Biological & Ag. Engineering, Botany, Chemistry, Crop Science, Engineering, Entomology, Forestry, Horticulture, Plant Pathology, Poultry Science, and Statistics. The USDA-ARS provides opportunity for graduate study as well. Opportunities for collaboration with scientists from federal agencies & private industry exist at the near-by Research Triangle Park, as well as Duke University & UNC-Chapel Hill. Many of the faculty have cooperative international research projects or extension/educational-research projects to provide students with the opportunity to teach and conduct research off campus and abroad.

N.C. State University and its 15 Research Stations across the state offer students an opportunity to study soil-related factors ranging from organic soils near the Atlantic Ocean, to soils located in the Appalachian Mountains.

Cost of Study: Tuition and fees per semester for a full-time graduate student are approximately \$2250.50 for North Carolina residents and \$8274.50 for non-residents.

Financial Aid: Graduate assistantships are available for outstanding MS (\$14,000/yr) and PhD (\$15,500/yr) candidates in a variety of areas of research. In addition to a monthly stipend, tuition (in-state and out-of-state) will be waived for students receiving assistantships. Health insurance is provided for students on assistantships at no additional cost. University fees are the responsibility of the student and are approximately \$1088 per year.

The Community: The N.C. State campus serves over 29,000 students, with approximately 5,000 of those pursuing advanced degrees. Graduate enrollment in the Department of Soil Science ranges from 40-55 students per year. Our campus is located in the Research Triangle area of North Carolina, recognized as one of the best areas in the U.S. in which to live.

Applications: For an application or additional information go to www.soil.ncsu.edu or write to:

Michael G. Wagger

Director of Graduate Programs

Department of Soil Science

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North Carolina State University

Raleigh, NC 27695-7619

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Please visit www2.acs.ncsu.edu/grad/ for an on-line application. The Graduate Record Exam (GRE) is not required for the application, but is suggested when feasible. For applicants whose native language is not English, a minimum TOEFL score of 550 is required.

The Departmental Faculty Specialization & Selected Examples of Current Activities:

Soil Physics

- ◆ Study the impact of soil properties on land use & the role of their spatial & temporal variability in precision agriculture
- ◆ Contribution of the vadose zone to groundwater recharge & pollutant transport
- ◆ Modeling movement of water & transport of chemical, colloidal, & biological pollutants

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Environmental Soil Physics

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D. Keith Cassel, Professor and Department Head
Soil Physics
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Soil Microbiology

- ◆ Quantify nutrient availability from waste sources applied to diverse ecosystems
- ◆ Quantify kinetics of nutrient transformations under nutrient sources & different management systems
- ◆ Characterize microbial function & effectiveness in bioremediation
- ◆ Characterize the fate of pathogens in wetlands receiving hazardous waste materials

Wei Shi, Asst. Professor
Soil Microbiology and Ecology
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Soil Fertility & Plant Nutrition

- ◆ Calibrate soil & tissue tests for nutrient deficiency & toxicity; environmental risk assessment of nutrients
- ◆ Evaluate processes that influence the fate of nutrients derived from organic by-products
- ◆ Quantify spatial relations between soil properties & crop productivity
- ◆ Develop P-based nutrient management plans in diverse soil/crop management systems

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Precision Agriculture
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Watershed, Soil Fertility and Nutrient Management
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Soil Genesis and Classification

- ◆ Predict risk of seasonal saturation in soils using color.
- ◆ Identify zones of solute movement in landscapes using site characteristics & hydrologic models.
- ◆ Wetland soil identification, developments, and restoration techniques.
- ◆ Characterize soil spatial variability within map units and across landscapes with regard to properties affecting land use.

H. Joseph Kleiss, Professor and Teaching Coordinator

Soil Genesis and Soil Interpretation

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Michael J. Vepraskas, Professor

Wetland Soils

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Soil Chemistry

- ◆ Advance the molecular-level understanding of inorganic/organic solute interactions with mineral surfaces & organic matter.
- ◆ Incorporate measurements of volatile emissions from soils of potential environmental contaminants into development of BMPs.
- ◆ Apply state-of-the-art analytical instrumentation to discern the fate of inorganic/organic solutes applied to soils & other porous media.
- ◆ Incorporate measurements of transport of potential environmental contaminants into models/databases (GIS-based) used to predict potential environmental impacts.

Dean L. Hesterberg, Assoc. Professor

Soil Physical Chemistry

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Wayne P. Robarge, Professor

Soil Physical Chemistry

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Soil Management and Water Quality

- ◆ Evaluate & improve erosion-control practices on disturbed sites.
- ◆ Develop criteria for predicting the effectiveness of riparian buffers in removing pollutants.
- ◆ Evaluate the environmental impact of on-site wastewater treatment.
- ◆ Improve wetland restoration & creation techniques to maximize functions & values.

Stephen W. Broome, Professor

Restoration of Plant and Soil Systems

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Water Quality Protection

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