

# Soil Science

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Soil scientists study and manage land and water resources to protect the environment and enhance agricultural productivity. Graduate education opportunities in Soil Science at NC State prepare students for careers with public and private organizations in soil, agricultural, environmental, and natural resource sciences. Our graduates find employment opportunities with private sector firms, government organizations, academia, and entrepreneurship.

You will have the opportunity to study and do research with world-class faculty in outstanding laboratory and field facilities. Graduate students may specialize in the following sub-disciplines: soil physics; soil chemistry; soil microbiology and biochemistry; soil fertility and plant nutrition; soil genesis, morphology and classification; and soil, water and land management and conservation. Students can also incorporate other disciplines into their work, presenting outstanding opportunities to focus on issues of interest.

## Graduate Degrees

The Department of Crop and Soil Sciences offers three graduate degrees in Soil Science. A short description of each follows.

The **Master of Soil Science** (the MR degree) is a non-thesis, course-based program that is available as both a campus-based and an online, distance education program (<https://go.ncsu.edu/online-soil-science-masters/>). This degree is considered a terminal degree and is well suited to professionals requiring further education in soils for their careers.

The **Master of Science in Soil Science** (MS) is a research degree that requires the successful completion of coursework, a research problem, and the submission of a written thesis that documents the research.

The **Doctor of Philosophy** (Ph.D.) degree symbolizes the ability of the student to undertake original research with minimal supervision and demonstrates the student's ability to write a dissertation reporting the results of this research. Most students in the Soil Science Ph.D. complete an MS degree prior to enrolling in the Ph.D., although exceptions are sometimes made.

## Admission Requirements

A minimum of a 3.0 GPA at the baccalaureate (BS) or master's (MS) level is required. However, exceptions may be made for master's applicants with a very strong GPA in science classes, an exceptional track record in their final two years, or substantial post-baccalaureate work experience. Students accepted will typically have a BS or MS degree in Soil Science, or closely related fields, with strong preparation in the biological and physical sciences. Research experience is helpful. The Graduate Record Exam (GRE) is not required for application or admission to Soil Science graduate programs. International students must demonstrate proficiency in English prior to admission. Admissions are competitive and subject to adequate funding for research assistantships. A committee of faculty members evaluates each application and admission is offered if funding is available to support a student. Master of Soil Science applicants are admitted without regard to funding; the department does not provide stipends for students in the MR program.

## Degrees

- Soil Science (MR) (<http://catalog.ncsu.edu/graduate/agriculture-life-sciences/soil-science/soil-science-mr/>)

- Soil Science (MS) (<http://catalog.ncsu.edu/graduate/agriculture-life-sciences/soil-science/soil-science-ms/>)
- Soil Science (PhD) (<http://catalog.ncsu.edu/graduate/agriculture-life-sciences/soil-science/soil-science-phd/>)
- Soil Science (Minor) (<http://catalog.ncsu.edu/graduate/agriculture-life-sciences/soil-science/soil-science-minor/>)

## Faculty

Aziz Amoozegar

**Area of Research:** Environmental Soil Physics

Stephen W. Broome

**Area of Research:** Environmental Soil Science

David A. Crouse

**Area of Research:** Soil Science Education

Owen W. Duckworth

**Area of Research:** Soil Biogeochemistry

Alan J. Franzluebbers

**Area of Research:** Soil Ecology and Management

John L. Havlin

**Area of Research:** Soil Fertility

Joshua L. Heitman

**Area of Research:** Soil Physics & Hydrology

Richard A. McLaughlin

**Area of Research:** Urban Soil & Water Management

Michael D. Mullen

**Area of Research:** Soil Biology & Soil Science Education

Deanna L. Osmond

**Area of Research:** Soil Fertility & Watershed Management

Wei Shi

**Area of Research:** Soil Microbiology & Ecology

Michael J. Vepraskas

**Area of Research:** Wetland Soils & Pedology

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## Associate Professors

Alexandria K. Graves

**Area of Research:** Soil Microbiology

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Kevin Garcia

**Area of Research:** Plant-Microbe Interactions & Nutrient Transport

Terrence G. Gardner

**Area of Research:** Soil & Environmental Microbial Ecology

Luciano C. Gatiboni

**Area of Research:** Soil Fertility & Nutrient Management

Amy M. Johnson

**Area of Research:** Soil Science

Stephanie B. Kulesza

**Area of Research:** Nutrient Management and Animal Waste

Hui Li

Matthew C. Ricker

**Area of Research:** Pedology

Alex L. Woodley

**Area of Research:** Sustainable Agricultural Systems

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## Practice/Research/Teaching Professors

Robert E. Austin

**Area of Research:** Geospatial Information and Analytics in Soils,  
Agriculture and Environmental Science

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Stanley W. Buol

Keith Cassel

Maurice Cook

Fred Cox

Carl Crozier

George Cummings

J. Wendell Gilliam

Dean L. Hesterberg

Daniel Israel

Joseph Kleiss

David Lindbo

Gordon Miner

George C. Naderman Jr.

Wayne Robarge

Thomas J. Smyth

Richard Volk

Michael Waggoner

Jeffrey G. White

Arthur Wollum