SOIL AND CROP SCIENCES (PHD)

Graduate School

Program Website (https://cals.cornell.edu/school-integrative-plant-science/degrees-programs/msphd-graduate-fields/msphd-field-soil-crop-sciences/)

CIP: 01.1102 | **HEGIS:** 0102.00 | **NYSED:** 13008

Graduate Field

Soil and Crop Sciences (https://catalog.cornell.edu/graduate-school/soil-crop-science/)

Program Description

The Field of Soil and Crop Sciences occupies a modern and diversified agronomic research facility. An air-conditioned, eleven-story research tower and adjoining wings incorporate fully equipped laboratory, teaching, office, and supporting spaces. Growth chambers and greenhouses are on the campus, and there are three main field stations near Ithaca. Some members of the field are staff members at the Robert W. Holley Center for Agriculture and Health or the Boyce Thompson Institute for Plant Research (http://bti.cornell.edu), both of which are on campus.

Many of the faculty members have research programs concerning international agricultural and environmental issues in tropical and subtropical regions.

Field crop science covers a wide spectrum, from field-scale applied projects to cell physiology and biotechnology. Studies seek to improve crop productivity and quality, both nationally and internationally, and to identify physiological factors that could be improved through plant breeding or genetic engineering.

Soil science focuses on the processes and properties of the soil environment. It emphasizes improving the suitability of soil for crop growth while preserving its value as a natural resource by using ecologically sound approaches.

Concentrations

- Agronomy
- Environmental information science
- Field crop science
- Soil science

Program Information

- Instruction Mode: In Person
- Location: Ithaca, NY
- Minimum Credits for Degree: 72

Program Requirements

- Minimum Semesters for Degree: 6

Graduate School Milestones

- Responsible Conduct of Research Training: Required
- Open Researcher and Contributor ID (ORCID): Required
- Student Progress Reviews (SPR) begin: Second Year
- Examination for admission to candidacy (A Exam): Spring of third year
- Defense of Dissertation (B Exam): Spring of seventh year

Field Specific Milestones

- One semester of teaching assistantship required

Course Requirements

- Course requirements are determined by the student's Special Committee.
- Enrollment in a GRAD research course or the equivalent field specific research course is expected of all students.

University Graduation Requirements Requirements for All Students

In order to receive a Cornell degree, a student must satisfy academic and non-academic requirements.

Academic Requirements

A student's college determines degree requirements such as residency, number of credits, distribution of credits, and grade averages. It is the student's responsibility to be aware of the specific major, degree, distribution, college, and graduation requirements for completing their chosen program of study. See the individual requirements listed by each college or school or contact the college registrar's office (https://registrar.cornell.edu/service-resources/college-registrar-directory/) for more information.

Non-academic Requirements

Conduct Matters. Students must satisfy any outstanding sanctions, penalties or remedies imposed or agreed to under the Student Code of Conduct (Code) or Policy 6.4. Where a formal complaint under the Code or Policy 6.4 is pending, the University will withhold awarding a degree otherwise earned until the adjudication process set forth in those procedures is complete, including the satisfaction of any sanctions, penalties or remedies imposed.

Financial Obligations. Outstanding financial obligations will not impact the awarding of a degree otherwise earned or a student's ability to access their official transcript. However, the University may withhold issuing a diploma until any outstanding financial obligations owing to the University are satisfied.

Learning Outcomes

A candidate for a doctoral degree in Soil and Crop Sciences is expected to work independently and to demonstrate mastery of knowledge and leadership in the Field of Soil and Crop Sciences. Recipients of the doctoral degree will demonstrate the ability to initiate, lead and complete research in the field of soil and crop sciences. Candidates are expected to independently synthesize and create new knowledge, making an original and substantial contribution to the discipline in a timely fashion.

Proficiencies

- Demonstrate professional skills:
  - Always maintain ethical standards in the discipline
  - Listen to, give, and receive feedback effectively.
- Mastery of advanced research skills:

- Recognize and apply fundamental concepts from soil and crop sciences
- Synthesize existing knowledge by identifying and applying appropriate resources and critically analyzing and evaluating one's own findings and those of others
- Master application of existing research methodologies, techniques, and technical skills
- Communicate research findings through publishing in scholarly literature and oral presentations in professional settings.

- Demonstrate commitment to advancing the values of scholarship:
  - Show awareness of current scientific advances relevant to the field of Soil and Crop Sciences and show the ability to synthesize and discuss their implications to the Field and beyond
  - Show commitment to personal professional development through engagement in professional societies, publication, and other knowledge transfer modes
  - Show a commitment to support learning through teaching, collaborative inquiry, mentoring, or demonstration.
- Make an original and substantial contribution to the discipline:
  - Think originally and independently to develop new concepts and methodologies
  - Identify new research opportunities
  - Apply research methodologies independently to generate new information and concepts of relevance to Soil and Crop Sciences.