

PLANT AND SOIL SCIENCE PH.D.

All students must meet the Requirements for the Doctor of Philosophy Degree

OVERVIEW

The mission of the Department of Agriculture, Landscape, and Environment (formerly Plant and Soil Science) is to expand, integrate, and extend the knowledge of agricultural systems and environmental quality in plant/soil ecosystems affecting the people of Vermont, the region, and the world. The department will provide excellence in education, research, and extension that will foster environmentally, economically, and socially sound practices.

The department offers graduate programs leading to the Doctor of Philosophy (Ph.D.) in Plant and Soil Science. A dissertation, based on original research, is required for this degree. Completion of the requirements normally takes 3 to 4 years for students who start with a completed Master of Science (M.S.) degree. For students who start with a Bachelor of Science (B.S.) degree, take 5 years.

The Department is comprised of faculty representing the disciplines of agroecology, agronomy, crop genetics, entomology, horticulture, landscape design, plant pathology, and soil science. Research faculty are involved in studying plant, soil or insect interactions within environments managed for food, fiber, waste utilization, or for landscape purposes. The objectives of these studies are: (1) to develop fundamental knowledge of environmental impacts and interactions and (2) to apply knowledge to better manage systems and promote environmental health. Specifically, departmental projects have included:

- Agroecological practices in Vermont and international communities
- Analytical procedures for testing soils and environmental samples
- Biological control of insect pests and invasive earthworms – entomopathogenic fungi
- Compost biology and its effects on vegetable production
- Design and analysis of experiments and surveys
- Development of sustainable apple production systems
- Diversified horticulture which involves the planning, production, handling, and marketing of horticultural crops with emphasis on multiple, diverse crops produced with environmentally and economically sound techniques.
- Ecological landscape design
- Effects of nitrogen (from acid rain) on forest soils and bog ecosystems
- Evaluation of new crops and cropping systems
- Evaluation and identification of woody and herbaceous landscape plants adapted to environmental conditions in Vermont/New England
- Field and forage crop management and utilization, forage quality, pasture and grazing management, and pest/weed management

- Green stormwater infrastructure for improving water quality
- Integrated pest management (IPM) in greenhouse and field situations
- Interaction between soil manganese oxides and heavy metals
- Invasive earthworm ecology, life history, control and their impacts on the environment
- Nematodes and microarthropods as environmental indicators for terrestrial and wetland soils
- Nutrient dynamics and management in agricultural systems

SPECIFIC REQUIREMENTS

Requirements for Admission to Graduate Studies for the Degree of Doctor of Philosophy

A Bachelor of Science or a Master of Science degree in an appropriate agricultural, environmental, biological, or physical science. GREs are not required.

Students admitted into M.S. program in the Department may petition the Department’s Graduate Affairs Committee to transfer into the Ph.D. program after 1 year.

Minimum Degree Requirements for the Degree of Doctor of Philosophy

Requirement Description	Credits
Credit hours to be earned in partial fulfillment of the Ph.D. requirements	75
Maximum number of credits of graduate-level coursework may be eligible for transfer to meet the total credit requirements	24
Minimum graded course work credits in Agriculture, Landscape, and Environment and closely related disciplines (e.g. botany, chemistry, forestry, microbiology, biochemistry or geology); at least 9 credits must be at the 6000- or 7000-level.	30
Research credits and seminars to make up 75 credit hours	Variable
Satisfactory participation in department seminars during residency is required. Ph.D. students are required to enroll in at least 2 ALE seminar courses (non-graded) during their tenure at UVM.	2
Participation in department seminars during residency is strongly encouraged.	
Doctoral students must take part in the department's undergraduate teaching program and in outreach activities related to their research efforts. They are expected to teach for 2 semesters and conduct outreach activities in 2 semesters. The studies committee will guide the outreach efforts.	
Committee meetings, Individual Development Plans (IDP) and Annual Evaluations	
Students are required to meet with their studies committee at least once a year but are encouraged to meet every semester.	
An annual evaluation is required for all Ph.D. students. This can be done as part of the IDP process.	

The IDP process is iterative. Updates to the IDP with reflections about previous achievements and new goals should be discussed at the study committee meetings.	
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Comprehensive Examination

Comprehensive examinations are typically taken after completion of most of all coursework but within 3 years of enrolling as a graduate student and at least 6 months before the dissertation is submitted. Failing to meet this timeline will result in the student being placed on academic probation. A written AND oral comprehensive examination must be passed by the candidate. It is the student's responsibility to schedule an examination time that is satisfactory for all committee members. The written comprehensive examination is taken first followed by the oral examination. The comprehensive examination is not the same as an oral dissertation defense and must be satisfactorily passed before defending the dissertation. A unanimous vote of approval by the members of the Studies Committee is required for the student to pass the preliminary oral examination. Approval may be conditional, depending upon completion of specified additional work. If the oral and/or written comprehensive examination is not passed, the student is permitted to retake the examination once. Failure to pass the second examination will result in dismissal from the graduate program.

Requirements for Advancement to Candidacy for the Degree of Doctor of Philosophy

Satisfactory completion of Comprehensive Examination and Dissertation Proposal.