

PLANT AND SOIL SCIENCE

<http://www.uvm.edu/cals/pss>

OVERVIEW

The mission of the Department of 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 a Master of Science (M.S.) degree in all fields in plant science and soil science and a Doctor of Philosophy (Ph.D.) degree in plant science and soil science. A thesis, based on original research, is required for the M.S. degree, and completion of the requirements normally takes 2.5 years. A dissertation, based on original research, is required for the Ph.D. degree, and completion of the requirements typically takes 3 to 4 years.

The department is comprised of faculty representing the disciplines of agroecology, agronomy, 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:

- Biological control of insect pests – entomopathogenic fungi
- Integrated pest management (IPM) in greenhouse and field situations
- Agro-ecological practices in Vermont and international communities
- Ecological landscape design
- Green stormwater infrastructure for improving water quality
- Design and analysis of experiments and surveys
- Field and forage crop management and utilization, forage quality, pasture and grazing management, and pest/weed management
- Analytical procedures for testing soils and environmental samples
- Effects of nitrogen (from acid rain) on forest soils and bog ecosystems
- Interaction between soil manganese oxides and heavy metals
- Nutrient dynamics and management in agricultural systems
- Invasive earthworms
- Nematodes and microarthropods as environmental indicators for terrestrial and wetland soils
- Development of sustainable apple production systems
- Evaluation and identification of woody and herbaceous landscape plants adapted to environmental conditions in Vermont/New England

- 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.

DEGREES

Plant and Soil Science M.S.

Plant and Soil Science Ph.D.

FACULTY

Anderson, Collin; Associate Research Professor, Department of Plant and Soil Science; PHD, University of Manitoba

Bishop-von Wettberg, Eric; Assistant Professor, Department of Plant and Soil Science; PHD, Brown University

Bradshaw, Terence; Research Assistant Professor, Department of Plant and Soil Science; PHD, University

Chen, Yolanda H.; Associate Professor, Department of Plant and Soil Science; PHD, University of California Berkeley

Darby, Heather Marie; Extension Professor; Department of Ext - Programming and Faculty Support; PHD, Oregon State University

Faulkner, Joshua; Research Assistant Prof; Department of Ext - Programming and Faculty Support; PHD, Cornell University

Gorres, Josef H.; Associate Professor; Department of Plant and Soil Science; PHD, University of Manchester

Grubinger, Vernon; Extension Professor; Department of Extension - Programming and Faculty Support; PHD; Cornell University

Hazelrigg, Ann; Extension Assistant Professor, Extension; PHD, University of Vermont; MS, Cornell University

Hurley, Stephanie E.; Associate Professor, Department of Plant and Soil Science; DDES, Harvard University

Izzo, Victor; Senior Lecturer, Department of Plant and Soil Science; PHD, University of Vermont

Mendez, Victor E.; Professor; Department of Plant and Soil Science; PHD, University of California Santa Cruz

Merrill, Scott; Research Assistant Professor, Department of Plant and Soil Science; PHD, Colorado State University

Neher, Deborah; Professor; Department of Plant and Soil Science; PHD, University of California Davis

Parker, Bruce Lawrence; Professor; Department of Plant and Soil Science; PHD, Cornell University

Ross, Donald Savage; Research Professor Emeritus; Department of Plant and Soil Science; PHD, University of Vermont

Skinner, Margaret; Research Professor; Department of Plant and Soil Science; PHD, University of Vermont

Starrett, Mark C.; Associate Professor; Department of Plant and Soil Science; PHD, North Carolina State University-Raleigh

Courses

PSS 5990. Special Topics. 1-18 Credits.

Lectures, laboratories, readings, field projects, surveys, or research designed to provide specialized experience in horticulture, agronomy, soils, entomology, and integrated pest management. Prerequisite: Instructor permission.

PSS 6010. Professional Skills Colloquium. 1 Credit.

Presentation and peer review of oral and written communication. Professional development skills including technical writing, literature review, mentorship, scientific integrity, grant proposals, and job market.

PSS 6110. Introduction to Agroecology. 3 Credits.

In-depth overview of research and applications in the field of agroecology, with a focus on providing the student with conceptual and analytical content.

PSS 6120. Ecological Foundations of Agro. 3 Credits.

Examines the ecological foundations of agroecology, largely from a biophysical perspective. Over the course of three sequential modules, students will explore the fundamental principles of ecology and their application to agricultural systems and landscapes. Prerequisite: One semester biological science at the 2000-level or Instructor permission.

PSS 6130. PAR & Transdiscipl Agroecology. 3 Credits.

Introduces students to Participatory Action Research (PAR) in the context of agroecology, and examines how the integration of PAR and transdisciplinary approaches can serve to deepen our collective understanding of complex problems/issues. Prerequisite: PSS 6110.

PSS 6140. Agroecol, Food Sov. & Soc Mov.. 3 Credits.

Investigates social, political, and economic elements of the global food system from multiple perspectives, considering the ability to scale-up agroecology, and the potential intersection between agroecology, food sovereignty and government policies.

PSS 6150. Agroecology Grad Capstone. 3 Credits.

The capstone designed for the application of newly developed knowledge and skills in a culminating experience/project that addresses an agroecological topic relevant to the individual student. Prerequisites: PSS 6110, PSS 6120, PSS 6130, PSS 6140.

PSS 6391. Master's Thesis Research. 1-18 Credits.

Research for the Master's Thesis.

PSS 6940. Seminar Series. 1 Credit.

Presentations of personal research by faculty, Graduate students, and outside guest speakers. Attendance and oral presentations are required of Graduate students in Plant & Soil Science. Repeatable two times for Master's students and four times for Doctoral students.

PSS 6990. Special Topics. 1-18 Credits.

See Schedule of Courses for specific titles.

PSS 6991. Internship. 1-18 Credits.

On-site supervised work experience combined with a structured academic learning plan directed by a faculty member or a faculty-staff team in which a faculty member is the instructor of record, for which academic credit is awarded. Offered at department discretion.

PSS 6993. Independent Study. 1-18 Credits.

A course which is tailored to fit the interests of a specific student, which occurs outside the traditional classroom/laboratory setting under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.

PSS 6995. Graduate Independent Research. 1-18 Credits.

Graduate student work on individual or small team research projects under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.

PSS 7491. Doctoral Dissertation Research. 1-18 Credits.

Research for the Doctoral Dissertation.

PSS 7990. Special Topics. 1-18 Credits.

See Schedule of Courses for specific titles.

PSS 7991. Internship. 1-18 Credits.

On-site supervised work experience combined with a structured academic learning plan directed by a faculty member or a faculty-staff team in which a faculty member is the instructor of record, for which academic credit is awarded. Offered at department discretion.

PSS 7995. Graduate Independent Research. 1-18 Credits.

Graduate student work on individual or small team research projects under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.