PLANT AND SOIL SCIENCE

http://www.uvm.edu/cals/pss (http://www.uvm.edu/~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 two and one-half years. A dissertation, based on original research, is required for the Ph.D. degree, and completion of the requirements typically takes three to four 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. (http://catalogue.uvm.edu/graduate/plantsoil/plantandsoilscienceems/)
- Plant and Soil Science Ph.D. (http://catalogue.uvm.edu/graduate/plantsoil/plantandsoilsciencephd/)

FACULTY

Bishop-von Wettberg, Eric; Assistant Professor, Department of Plant and Soil Science; PHD, Brown University
Bosworth, Sidney Carl; Extension Professor, Department of Programming and Faculty Support; PHD, University of Kentucky
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; Cornell University
Gorres, Josef H.; Associate Professor; Department of Plant and Soil Science; PHD, Oregon State University
Grubinger, Vernon; Extension Professor; Department of Extension - Programming and Faculty Support; PHD; Cornell University
Hazlrigg, Ann; Extension Assistant Professor, Exension; PHD, University of Vermont; MS, Cornell University
Hurley, Stephanie E.; Associate Professor, Department of Plant and Soil Science; DDES, Harvard University
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; 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 209. Diversified Farm Operations. 6 Credits.
An experiential course in sustainable, diversified vegetable production that includes soil fertility, weed, insect and disease control, crop planning and farm management skills. Prerequisites: PSS 021 and one 100-level PSS course, equivalent experience, or Instructor permission.
PSS 311. **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. Prerequisite: Graduate standing or Instructor permission.

PSS 312. **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 100-level or Instructor permission.

PSS 313. **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 311.

PSS 314. **Agroecol, Food Sov. & Soc Mov.. 3 Credits.**
Examines 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. Prerequisite: Graduate standing.

PSS 315. **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 311, PSS 312, PSS 313, PSS 314.

PSS 381. **Graduate Special Topics. 1-3 Credits.**
Advanced readings and discussion of horticulture, crops, or soils research literature.

PSS 391. **Master's Thesis Research. 1-18 Credits.**
PSS 392. **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 393. **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 and Soil Science. Repeatable 2 times for M.S. students and 4 times for Ph.D. students.

PSS 394. **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 and Soil Science. Repeatable 2 times for M.S. students and 4 times for Ph.D. students.

PSS 395. **Advanced Special Topics. 1-18 Credits.**
See Schedule of Courses for specific titles.
PSS 491. Doctoral Dissertation Research. 1-18 Credits.
PSS 496. Advanced Special Topics. 1-18 Credits.
See Schedule of Courses for specific titles.