PLANT AND SOIL SCIENCE

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

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 a Master of Science (M.S.) and a Doctor of Philosophy (Ph.D.) degree in Plant 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 for students that already have an M.S. degree. Students who start with a Batchelor of Science (B.S.) degree usually take 5 years to complete their Ph.D.

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:

- Agro-ecological practices in Vermont and international communities
- Analytical procedures for testing soils and environmental samples
- Biological control of insect pests – 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 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

DEGREES

Plant and Soil Science M.S.

Plant and Soil Science Ph.D.

FACULTY

Anderson, Collin; Associate Research Professor, Department of Agriculture, Landscape, and Environment; PHD, University of Manitoba
Bishop-von Wettberg, Eric; Assistant Professor, Department of Agriculture, Landscape, and Environment; PHD, Brown University
Bradshaw, Terence; Research Assistant Professor, Department of Agriculture, Landscape, and Environment; PHD, University of Vermont
Chen, Yolanda H.; Associate Professor, Department of Agriculture, Landscape, and Environment; PHD, University of California Berkeley
Darby, Heather Marie; Extension Professor, Department of Extension - Programming and Faculty Support; PHD, Oregon State University
Faulkner, Joshua; Research Assistant Prof, Department of Extension - Programming and Faculty Support; PHD, Cornell University
Gorres, Josef H.; Associate Professor, Department of Agriculture, Landscape, and Environment; PHD, University of Manchester
Grubinger, Vernon; Extension Professor, Department of Extension - Programming and Faculty Support; PHD; Cornell University
Hazelrigg, Ann; Extension Assistant Professor, Department of Extension; PHD, University of Vermont; MS, Cornell University
Hurley, Stephanie E.; Associate Professor, Department of Agriculture, Landscape, and Environment; DDES, Harvard University
Izzo, Victor; Senior Lecturer, Department of Agriculture, Landscape, and Environment; PHD, University of Vermont
Mendez, Victor E.; Professor, Department of Agriculture, Landscape, and Environment; PHD, University of California Santa Cruz
Merrill, Scott; Research Assistant Professor, Department of Agriculture, Landscape, and Environment; PHD, Colorado State University
Neher, Deborah; Professor Emerita, Department of Agriculture, Landscape, and Environment; PHD, University of California Davis
Parker, Bruce Lawrence; Professor Emeritus, Department of Agriculture, Landscape, and Environment; PHD, Cornell University

Skinner, Margaret; Research Professor, Department of Agriculture, Landscape, and Environment; PHD, University of Vermont
Starrett, Mark C.; Associate Professor, Department of Agriculture, Landscape, and Environment; PHD, North Carolina State University-Raleigh

Courses

ALE 5990. Special Topics. 1-18 Credits.
See Schedule of Courses for specific titles.

ALE 5991. 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.

ALE 5993. 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.

ALE 5994. Teaching Assistantship. 1-3 Credits.
Student service as a teaching assistant, usually in an introductory level course in the discipline, for which credit is awarded. Offered at department discretion.

ALE 5995. Graduate Independent Research. 1-18 Credits.
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.

ALE 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.

ALE 6110. Transformative Agroecology. 3 Credits.
Covers the evolution of agroecology from its origins to the present, including the myriad ways it is both understood and practiced, evaluating examples from around the world to explore agroecology's biophysical, sociocultural, and political potential for food system transformation.

ALE 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: ALE 6110 or Instructor permission.

ALE 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: ALE 6110.

ALE 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.

ALE 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: ALE 6110, ALE 6120, ALE 6130, ALE 6140.

ALE 6391. Master's Thesis Research. 1-18 Credits.
Research for Master?s Thesis.

ALE 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.

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Student service as a teaching assistant, usually in an introductory level course in the discipline, for which credit is awarded. Offered at department discretion.

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

ALE 7491. Doctoral Dissertation Research. 1-18 Credits.
Research for Doctoral Dissertation.

ALE 7990. Special Topics. 1-18 Credits.
See Schedule of Courses for specific titles.

ALE 7991. Internship. 1-18 Credits.
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