

INTEGRATIVE PLANT SCIENCE (GRADUATE FIELD)

Program Website (<https://cals.cornell.edu/school-integrative-plant-science/degrees-programs/mps-degree/>)

Field Description

The Master of Professional Studies in Integrative Plant Science is a one-year, STEM-designated, course-based master's degree program ideal for career-focused students. Students engage with foremost experts in plant and agricultural sciences while exploring one of our fourteen concentrations, which examine fundamental and applied aspects of plants, soils, microbes, and their interactions within natural and managed ecosystems.

A hallmark of the MPS program is the balanced portfolio of technical knowledge, analytical skills, and professional development built into the curriculum, designed to equip students with the skill set and knowledge necessary for careers in industry, government, or non-profit agencies.

Though similar to a Master of Science (MS) degree in its academic rigor, the MPS degree differs from a traditional MS degree in its structure and focus. An MS prepares students for a research-based career, with students developing an original research thesis over the course of two or three years. In contrast, the MPS degree is a one-year, course-based program, designed to impact knowledge and skills in a given area of concentration. Instead of a thesis or research project, MPS students complete a capstone project which allows them to apply their knowledge and skills in a practical manner.

Subject and Degrees

Integrative Plant Science

- Integrative Plant Science (MPS) (<https://catalog.cornell.edu/programs/integrative-plant-science-mps/>)

Concentrations by Subject

Integrative Plant Science

- agronomy
- cannabis science
- climate change and agriculture
- controlled environment agriculture
- crop science
- geospatial applications
- hemp science
- plant biotechnology
- plant breeding
- plant protection
- plant systems
- public garden leadership
- soil science
- viticulture

Faculty

Taryn L. Bauerle (<http://cals.cornell.edu/taryn-l-bauerle/>)

- **Campus:** Ithaca - (Divisional Member)
- **Concentrations:** *Integrative Plant Science*: climate change and agriculture
- **Research Interests:** Root dynamics and environmental stress physiology, soil science

Mark P Bridgen (<http://cals.cornell.edu/mark-p-bridgen/>)

- **Campus:** Ithaca
- **Concentrations:** *Integrative Plant Science*: plant biotechnology
- **Research Interests:** floriculture breeding; plant tissue culture; plant propagation; herbaceous ornamental plants; cut flowers; breeding plants

Carlyn S. Buckler (<http://cals.cornell.edu/carlyn-buckler/>)

- **Campus:** Ithaca - (Divisional Member)
- **Concentrations:** *Integrative Plant Science*: hemp science; plant protection; plant systems
- **Research Interests:** Hemp Science

Daniel H Buckley (<http://cals.cornell.edu/daniel-h-buckley/>)

- **Campus:** Ithaca - (Divisional Member)
- **Concentrations:** *Integrative Plant Science*: soil science
- **Research Interests:** Soil microbiology

Clare L Casteel (<http://cals.cornell.edu/clare-casteel/>)

- **Campus:** Ithaca - (Divisional Member)
- **Concentrations:** *Integrative Plant Science*: plant protection; plant systems
- **Research Interests:** Plant-microbe interactions, plant protection, plant pathology

Jerome Henry Cherney (<http://cals.cornell.edu/jerome-henry-cherney/>)

- **Campus:** Ithaca - (Divisional Member)
- **Concentrations:** *Integrative Plant Science*: agronomy
- **Research Interests:** Forages, perennial grasses, biofuels

Kerik D. Cox (<http://cals.cornell.edu/kerik-d-cox/>)

- **Campus:** Ithaca
- **Concentrations:** *Integrative Plant Science*: plant protection
- **Research Interests:** orchard fungal ecology; extension pathology; pesticide management; fruit pathology

William L Crepet (<http://cals.cornell.edu/william-l-crepet/>)

- **Campus:** Ithaca
- **Concentrations:** *Integrative Plant Science* plant biotechnology
- **Research Interests:** paleobotany; systematics and evolution of angiosperms; evolutionary history of floral structure and angiosperm pollination mechanisms

Ria D'Aversa (<http://cals.cornell.edu/ria-daversa/>)

- **Campus:** Ithaca - (Divisional Member)
- **Concentrations:** *Integrative Plant Science*: viticulture
- **Research Interests:** Viticulture

Antonio Ditommaso (<http://cals.cornell.edu/antonio-ditommaso/>)

- **Campus:** Ithaca
- **Concentrations:** *Integrative Plant Science*: agronomy; plant protection
- **Research Interests:** weed ecology; biological control; integrated weed management

Giulia Friso (<http://cals.cornell.edu/Giulia-Friso/>)

- **Campus:** Ithaca - (Divisional Member)
- **Concentrations:** *Integrative Plant Science*: cannabis science; plant systems
- **Research Interests:** Cannabis Science, Plant Systems

Susheng Gan (<http://cals.cornell.edu/susheng-gan/>)

- **Campus:** Ithaca - (Divisional Member)
- **Concentrations:** *Integrative Plant Science*: plant biotechnology; plant breeding
- **Research Interests:** Molecular mechanisms of senescence; postharvest physiology

Maria Alejandra Gandolfo Nixon (<http://cals.cornell.edu/maria-alejandra-gandolfo-nixon/>)

- **Campus:** Ithaca - (Divisional Member)
- **Concentrations:** *Integrative Plant Science*: plant breeding; plant systems
- **Research Interests:** Plant Evolution, Plant Structure and Anatomy, Paleobotany

Michael Allen Gore (<http://cals.cornell.edu/michael-allen-gore/>)

- **Campus:** Ithaca - (Divisional Member)
- **Concentrations:** *Integrative Plant Science*: climate change and agriculture; plant breeding
- **Research Interests:** Breeding for nutritional quality

Deb Grantham (<http://www.northeastipm.org/>)

- **Campus:** Ithaca - (Divisional Member)
- **Concentrations:** *Integrative Plant Science*: soil science
- **Research Interests:** Natural resources and the environment, Soil hyperspectral reflectance, Watershed education

Michelle L Heck (<http://www.ars.usda.gov/northeast-area/ithaca-ny/robert-w-holley-center-for-agriculture-health/emerging-pests-and-pathogens-research/docs/michelle-cilia/>)

- **Campus:** Ithaca
- **Concentrations:** *Integrative Plant Science*: plant protection

Peter R. Hobbs (<http://cals.cornell.edu/peter-hobbs/>)

- **Campus:** Ithaca - (Divisional Member)
- **Concentrations:** *Integrative Plant Science*: agronomy
- **Research Interests:** Soil and Crop Science

Kathie Hodge (<http://cals.cornell.edu/kathie-therese-hodge/>)

- **Campus:** Ithaca - (Divisional Member)
- **Concentrations:** *Integrative Plant Science*: plant protection; plant systems
- **Research Interests:** Mycology

Jian Hua (<http://cals.cornell.edu/jian-hua/>)

- **Campus:** Ithaca - (Divisional Member)
- **Concentrations:** *Integrative Plant Science*: plant biotechnology; plant protection; plant systems
- **Research Interests:** Molecular biology of plant stress

Yu Jiang (<http://cals.cornell.edu/yu-jiang/>)

- **Campus:** Ithaca
- **Concentrations:** *Integrative Plant Science*: geospatial applications

Dan Katz (<http://cals.cornell.edu/daniel-katz/>)

- **Campus:** Ithaca - (Divisional Member)
- **Concentrations:** *Integrative Plant Science*: climate change and agriculture; geospatial applications
- **Research Interests:** Modeling airborne pollen concentrations by quantifying plant location and size, pollen production, flowering phenology, and atmospheric dispersion. This interdisciplinary work includes methods from ecology, remote sensing, Bayesian statistics, citizen science, engineering, and epidemiology

Vipin Kumar (<http://cals.cornell.edu/vipin-kumar/>)

- **Campus:** Ithaca - (Divisional Member)
- **Concentrations:** *Integrative Plant Science*: agronomy; plant protection
- **Research Interests:** Plant Protection, Agronomy, Crop Science

Elizabeth M. Lamb (<http://cals.cornell.edu/elizabeth-betsy-lamb/>)

- **Campus:** Ithaca - (Divisional Member)
- **Concentrations:** *Integrative Plant Science*: plant protection; plant systems
- **Research Interests:** Integrated pest management in landscapes and greenhouses

Christopher Johannes Lehmann (<http://cals.cornell.edu/johannes-lehmann/>)

- **Campus:** Ithaca
- **Concentrations:** *Integrative Plant Science*: geospatial applications; soil science
- **Research Interests:** soil fertility management; soil biogeochemistry

Jason P. Londo (<http://cals.cornell.edu/jason-londo/>)

- **Campus:** Ithaca
- **Concentrations:** *Integrative Plant Science*: viticulture
- **Research Interests:** Research on the genetics and physiology of abiotic stress resistance in cultivated and wild grapevine with special emphasis on cold hardiness and drought resistance. Specific areas of study include genomics, population genetics, and plant physiology.

Louis Longchamps (<http://cals.cornell.edu/louis-longchamps/>)

- **Campus:** Ithaca
- **Concentrations:** *Integrative Plant Science*: agronomy; geospatial applications; plant protection

John E Losey (<http://cals.cornell.edu/john-e-losey/>)

- **Campus:** Ithaca - (Divisional Member)
- **Concentrations:** *Integrative Plant Science*: plant protection
- **Research Interests:** Insect ecology and plant interactions

Carmen Enid Martinez (<http://cals.cornell.edu/carmen-enid-martinez/>)

- **Campus:** Ithaca - (Divisional Member)
- **Concentrations:** *Integrative Plant Science*: soil science
- **Research Interests:** Environmental and soil chemistry

Neil S. Mattson (<http://cals.cornell.edu/neil-mattson/>)

- **Campus:** Ithaca
- **Concentrations:** *Integrative Plant Science*: controlled environment agriculture
- **Research Interests:** floriculture; plant physiology; mineral nutrition; crop modeling

Andrew James McDonald (<http://cals.cornell.edu/andrew-mcdonald/>)

- **Campus:** Ithaca
- **Concentrations:** *Integrative Plant Science*: agronomy; geospatial applications
- **Research Interests:** international cropping systems, sustainability

William B Miller (<http://cals.cornell.edu/william-b-miller/>)

- **Campus:** Ithaca - (Divisional Member)
- **Concentrations:** *Integrative Plant Science*: controlled environment agriculture
- **Research Interests:** Physiology and management of greenhouse crops

Ashley Louise Miller Helmholtz (<http://cals.cornell.edu/ashley-helmholtz/>)

- **Campus:** Ithaca - (Divisional Member)
- **Concentrations:** *Integrative Plant Science*: plant systems; public garden leadership
- **Research Interests:** Relationships between people and plants

Gaurav Dilip Moghe (<http://www.moghelab.org/>)

- **Campus:** Ithaca - (Divisional Member)
- **Concentrations:** *Integrative Plant Science*: plant biotechnology; plant systems
- **Research Interests:** Molecular biology and gene function

Virginia Moore (<http://cals.cornell.edu/virginia-moore/>)

- **Campus:** Ithaca - (Divisional Member)
- **Concentrations:** *Integrative Plant Science*: agronomy; plant breeding; plant systems
- **Research Interests:** Plant breeding, cover crops, sustainable agriculture

Rebecca Judith Nelson (<http://cals.cornell.edu/rebecca-judith-nelson/>)

- **Campus:** Ithaca
- **Concentrations:** *Integrative Plant Science*: plant protection
- **Research Interests:** genetics of quantitative disease resistance; international agriculture; current focus on two diseases of maize that are important both in the United States and in Africa: northern corn leaf blight and gray leaf spot

Teresa Pawlowska (<http://cals.cornell.edu/teresa-e-pawlowska/>)

- **Campus:** Ithaca - (Divisional Member)
- **Concentrations:** *Integrative Plant Science*: plant protection; plant systems
- **Research Interests:** Mycology and microbiomes of fungi

Wojtek Pawlowski (<http://cals.cornell.edu/wojtek-pawlowski/>)

- **Campus:** Ithaca - (Divisional Member)
- **Concentrations:** *Integrative Plant Science*: plant biotechnology; plant breeding
- **Research Interests:** Plant Biotechnology, Plant Breeding

Gregory Michael Peck (<http://cals.cornell.edu/gregory-michael-peck/>)

- **Campus:** Ithaca - (Divisional Member)
- **Concentrations:** *Integrative Plant Science*: plant systems
- **Research Interests:** Orchard management, soil science

Marvin P Pritts (<http://cals.cornell.edu/marvin-p-pritts/>)

- **Campus:** Ithaca
- **Concentrations:** *Integrative Plant Science*: agronomy
- **Research Interests:** cultural practices and physiology of berry crops

Anusuya Rangarajan (<http://cals.cornell.edu/anusuya-rangarajan/>)

- **Campus:** Ithaca
- **Concentrations:** *Integrative Plant Science*: agronomy
- **Research Interests:** Adaptive research and extension program focuses on advancing reduced, minimum and no-till strategies in vegetable crops grown in the upper Northeast. Research has included developing new equipment and strategies to optimize these systems in both conventional and organic agriculture systems.

Stephen Reiners (<http://cals.cornell.edu/stephen-reiners/>)

- **Campus:** Ithaca
- **Concentrations:** *Integrative Plant Science*: agronomy
- **Research Interests:** vegetable crop production

Jocelyn K. C. Rose (<http://cals.cornell.edu/jocelyn-kenneth-campbell-rose/>)

- **Campus:** Ithaca - (Divisional Member)
- **Concentrations:** *Integrative Plant Science*: plant biotechnology; plant systems
- **Research Interests:** Plant Biotechnology, Plant Physiology

Frank S Rossi (<http://cals.cornell.edu/frank-s-rossi/>)

- **Campus:** Ithaca - (Divisional Member)
- **Concentrations:** *Integrative Plant Science*: plant systems
- **Research Interests:** Turfgrass management, plant protection

David G Rossiter (<http://www.css.cornell.edu/faculty/dgr2/>)

- **Campus:** Ithaca
- **Concentrations:** *Integrative Plant Science*: geospatial applications
- **Research Interests:** Spatial modelling and analysis of soil resources.

Jonathan Matthew Russell-Anelli (<http://cals.cornell.edu/jonathan-russell-anelli/>)

- **Campus:** Ithaca
- **Concentrations:** *Integrative Plant Science*: soil science
- **Research Interests:** soil and crop sciences

Matthew Ryan (<http://cals.cornell.edu/matthew-r-ryan/>)

- **Campus:** Ithaca
- **Concentrations:** *Integrative Plant Science*: agronomy
- **Research Interests:** sustainable cropping systems; cover crops; integrated pest management; weed science

Diana S Sinton (<http://cals.cornell.edu/diana-sinton/>)

- **Campus:** Ithaca
- **Concentrations:** *Integrative Plant Science*: geospatial applications
- **Research Interests:** geospatial sciences with focus on geographic information science (GIScience) and cartographic communication.

Sonja M. Skelly (<http://cals.cornell.edu/sonja-skelly/>)

- **Campus:** Ithaca
- **Concentrations:** *Integrative Plant Science*: public garden leadership
- **Research Interests:** urban horticulture

Lawrence B. Smart (<http://cals.cornell.edu/lawrence-b-smart/>)

- **Campus:** Ithaca
- **Concentrations:** *Integrative Plant Science*: plant breeding
- **Research Interests:** breeding, genomics and physiology of shrub willow as a bioenergy crop; yield trials and variety selection; characterization of gene expression important to biomass production

Christine Durbahn Smart (<http://cals.cornell.edu/lawrence-b-smart/>)

- **Campus:** Ithaca
- **Concentrations:** *Integrative Plant Science*: plant protection
- **Research Interests:** biology and management of vegetable diseases; host-pathogen interactions

Karen Lynn Snover-Clift (<http://www.npdn.org/DesktopDefault.aspx>)

- **Campus:** Ithaca - (Divisional Member)
- **Concentrations:** *Integrative Plant Science*: plant protection; plant systems
- **Research Interests:** Plant disease diagnosis

Richard Stup (<http://cals.cornell.edu/richard-stup/>)

- **Campus:** Ithaca - (Divisional Member)
- **Concentrations:** *Integrative Plant Science*: plant systems
- **Research Interests:** Plant Systems

Ying Sun (<http://cals.cornell.edu/ying-sun/>)

- **Campus:** Ithaca
- **Concentrations:** *Integrative Plant Science*: geospatial applications
- **Research Interests:** geospatial sciences

Janice E Thies (<http://cals.cornell.edu/janice-e-thies/>)

- **Campus:** Ithaca - (Divisional Member)
- **Concentrations:** *Integrative Plant Science*: soil science
- **Research Interests:** Soil microbiology

Joyce Van Eck (<http://cals.cornell.edu/joyce-van-eck/>)

- **Campus:** Ithaca - (Divisional Member)
- **Concentrations:** *Integrative Plant Science*: plant biotechnology; plant breeding
- **Research Interests:** Plant Biotechnology, Crop Improvement

Harold Mathijs Van Es (<http://cals.cornell.edu/harold-mathijs-van-es/>)

- **Campus:** Ithaca
- **Concentrations:** *Integrative Plant Science*: geospatial applications; soil science
- **Research Interests:** soil and water management; precision agriculture; soil quality; nitrogen dynamics

Justine E. Vanden Heuvel (<http://cals.cornell.edu/justine-e-vanden-heuvel/>)

- **Campus:** Ithaca
- **Concentrations:** *Integrative Plant Science*: geospatial applications; viticulture
- **Research Interests:** viticulture; culture and physiology of optimizing fruit aroma and flavor composition

Peter Benson Woodbury (<http://cals.cornell.edu/peter-woodbury/>)

- **Campus:** Ithaca
- **Concentrations:** *Integrative Plant Science*: agronomy; geospatial applications

Dominic Woolf (<http://cals.cornell.edu/dominic-woolf/>)

- **Campus:** Ithaca
- **Concentrations:** *Integrative Plant Science*: geospatial applications; soil science
- **Research Interests:** soil carbon modeling, soil carbon sequestration, microbial dynamics of soil carbon, climate-change mitigation, biochar and bioenergy with carbon capture and storage.