HORTICULTURAL BIOLOGY (MS)

Graduate School

Program Website (https://cals.cornell.edu/school-integrative-plant-science/school-sections/sips-horticulture-section/)

CIP: 01.1103 | **HEGIS:** 0109.00 | **NYSED:** 13047

Graduate Field

Horticulture (https://catalog.cornell.edu/graduate-school/horticulture/)

Program Description

As the only horticulture program in the Ivy League, our faculty, staff and students work to shape the food systems and landscapes of today and tomorrow.

Our faculty work across New York to make discoveries and share knowledge about fruits, vegetables and landscape plants. Members of the graduate field of horticulture reside in the Section of Horticulture on the Ithaca campus, and at the New York State Agricultural Experiment Station in Geneva. They are called on by farmers, golf course managers, urban foresters, government officials and many others to solve problems around the globe.

If you've ever been shaded by trees on a city street, enjoyed an apple in winter, visited a farmer's market or watched a sporting event on natural grass, then it is likely you have been touched by our work.

The field of Horticulture offers three graduate student degree options: MS, MS/PhD, PhD. For more information please visit the CALS website (https://cals.cornell.edu/school-integrative-plant-science/degrees-programs/msphd-graduate-fields/msphd-field-horticulture/).

Research Facilities

At the Ithaca campus, research facilities include laboratories equipped for studies of all aspects of plant physiology, including photosynthesis, pre- and postharvest physiology, biochemistry, biotechnology, photobiology, analysis for chemical elements, and tissue culture. Extensive greenhouse and growth chamber facilities permit varying degrees of plant environmental control. Facilities for postharvest research include rooms for refrigerated and controlled atmosphere storage. Field facilities include two research orchards for study of fruit crops, two vegetable research farms, an outdoor nursery, turfgrass research areas, and the Cornell Botanic Gardens, an extensive botanical garden. At the Agricultural Experiment Station in Geneva, laboratories, greenhouses and growth chamber facilities similar to those in Ithaca are found. In addition, 600 acres of orchards and 200 acres of vegetable experimental farmland are available for research purposes. A wide range of apple, grape, and vegetable germplasm is maintained by the USDA Plant Introduction Station, the National Clonal Repository and the fruit and vegetable breeders. Research is also conducted at the Hudson Valley Lab (fruit research), the Long Island Horticultural Research and Extension Center (grape and vegetable research), and the Fredonia Grape Research Station.

Concentrations

- Breeding of horticultural crops
- Horticultural crop management systems
- Human-plant interactions
- Physiology and ecology of horticultural crops

Program Information

- Instruction Mode: In Person
- Location: Ithaca, NY
- Minimum Credits for Degree: 48

Program Requirements

- Minimum Semesters for Degree: 2

Graduate School Milestones

- Responsible Conduct of Research Training: Required
- Open Researcher and Contributor ID (ORCID): Required
- Student Progress Reviews (SPR) begin: Second Year
- Masters Exam (M Exam): Spring of second year
- Thesis: Spring of second year

Field Specific Milestones

- Field progress review every year
- One semester teaching assistantship required

Course Requirements

- Course requirements are determined by the student's Special Committee.
- Enrollment in a GRAD research course or the equivalent field specific research course is expected of all students.

University Graduation Requirements Requirements for All Students

In order to receive a Cornell degree, a student must satisfy academic and non-academic requirements.

Academic Requirements

A student's college determines degree requirements such as residency, number of credits, distribution of credits, and grade averages. It is the student's responsibility to be aware of the specific major, degree, distribution, college, and graduation requirements for completing their chosen program of study. See the individual requirements listed by each college or school or contact the college registrar's office (https://registrar.cornell.edu/service-resources/college-registrar-directory/) for more information.

Non-academic Requirements

Conduct Matters. Students must satisfy any outstanding sanctions, penalties or remedies imposed or agreed to under the Student Code of Conduct (Code) or Policy 6.4. Where a formal complaint under the Code or Policy 6.4 is pending, the University will withhold awarding a degree otherwise earned until the adjudication process set forth in those procedures is complete, including the satisfaction of any sanctions, penalties or remedies imposed.

Financial Obligations. Outstanding financial obligations will not impact the awarding of a degree otherwise earned or a student's ability to access their official transcript. However, the University may withhold

issuing a diploma until any outstanding financial obligations owing to the University are satisfied.

Learning Outcomes

- The overall goal is to train future leaders in horticultural research, education and outreach in both industry and public landscape spheres:
  - Students will develop a working knowledge of commercial horticultural plant management (i.e. crop production and/ or landscape management).
  - Students will develop proficiency in horticultural research systems using appropriate current technologies and methods.
  - Students will become effective horticulture teachers and extension educators by first-hand experience with teaching assistantships (TAs) and extension- outreach assistantships (EOAs) and through participation in departmental outreach efforts.
- Foster scholarship, research and communication skills in horticultural science:
  - Students will master the application of the scientific method to experimental design and interpretation.
  - Students will have a contemporary knowledge of the biology underlying the horticultural processes they study beyond what is taught in graduate courses.
  - Students will develop effective writing skills that communicate research results to appropriate audiences.
  - Students will be proficient at delivering presentations based on their research results to diverse audiences, as measured by audience evaluations.
- Engage in and conduct original research:
  - Students will advance knowledge in their discipline.
  - Students will, where appropriate, master and improve contemporary research techniques used in their discipline.
  - Students will become a national authority in the subject area of their thesis research.
- Prepare to be professionals in their discipline:
  - Students will know, and be known to, leaders in their discipline.
  - Students will be familiar with the expectations of professionals in their field. For those pursuing faculty positions, these expectations include curriculum development, teaching, grant writing and administration, publishing, team management, collegiality, professionalism, and outreach.