The Agronomy program is administered in the Department of Plant Science, College of Agricultural Sciences. Each student will be associated with an adviser who may provide financial support, research facilities, and/or office space. Applicants are encouraged to explore, study, and research opportunities by contacting faculty who may be prospective advisers.

This program provides opportunities for students interested in Agronomy to become professional leaders and independent scholars. Faculty in this program are competent to prepare students in the subfields of Agronomy including:

- plant ecology
- plant genomics
- plant breeding
- plant physiology
- field and forage crop management
- turfgrass management

Admission Requirements

Applicants apply for admission to the program via the Graduate School application for admission (http://gradschool.psu.edu/prospective-students/how-to-apply). Requirements listed here are in addition to Graduate Council policies listed under GCAC-300 Admissions (http://gradschool.psu.edu/graduate-education-policies).

Scores from the Graduate Record Examinations (GRE), or from a comparable substitute examination, are required for admission. At the discretion of the graduate standards committee, a student may be admitted for graduate study in the program without these scores.

Prerequisites for major work in Agronomy vary with the area of specialization and the degree sought, but courses in chemistry, mathematics, physics, geology, basic and applied biological sciences, and English communication skills are required. A baccalaureate degree in basic or applied natural sciences is preferred for M.S. degree applicants.

A minimum junior/senior grade-point average 3.00 (on a 4.00 scale) is required in all courses in the biological and physical sciences regardless of when taken. Exceptions to these requirements may be made for students with special backgrounds, abilities, and interests.

Degree Requirements

Master of science (M.S.)

Requirements listed here are in addition to Graduate Council policies listed under GCAC-600 Research Degree Requirements. (http://gradschool.psu.edu/graduate-education-policies)

A minimum of 31 credits at the 400, 500, 600, or 800 level is required, with at least 18 credits at the 500 and 600 level, combined, including:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGRO 501</td>
<td>Graduate Student Dialogue</td>
<td>1</td>
</tr>
<tr>
<td>AGRO 555</td>
<td>Effective Scientific Communications</td>
<td>2</td>
</tr>
<tr>
<td>AGRO 590</td>
<td>Colloquium ¹</td>
<td>1</td>
</tr>
<tr>
<td>AGRO 600</td>
<td>Thesis Research</td>
<td>6</td>
</tr>
</tbody>
</table>

Total Credits 31

¹ Students are required to participate in AGRO 590 each semester they are registered, but can only count a maximum of 1 credit of AGRO 590 towards the degree.

In addition, M.S. students are required to complete 1 credit of AGRO 602; however, this 1 credit cannot be counted towards the degree requirements. The remaining elective credits may be chosen from a list of approved electives maintained by the program office.

The thesis must be accepted by the advisory committee members, the head of the graduate program, and the Graduate School, and the student must pass a thesis defense.

Doctor of philosophy (Ph.D.)

Requirements listed here are in addition to Graduate Council policies listed under GCAC-600 Research Degree Requirements. (http://gradschool.psu.edu/graduate-education-policies)

While a minimum number of courses for the degree is not specified, the Ph.D. committee has the responsibility of specifying courses and credits essential for the education and development of the candidate. Students are expected to be educated in depth in a specific subfield of agronomy and to have a perspective of the general field. Normally, 55 to 60 credits in formal course work beyond the B.S. degree are required including:

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</thead>
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<tr>
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<td>1</td>
</tr>
<tr>
<td>AGRO 590</td>
<td>Colloquium ¹</td>
<td>1</td>
</tr>
</tbody>
</table>

¹ Students are required to participate in AGRO 610 each semester they are registered, but can only count a maximum of 1 credit of AGRO 610 towards the degree.
AGRO 600             Thesis Research             12
or AGRO 610           Thesis Research Off Campus

1 Doctoral candidates are required to participate regularly in a
departmental seminar and to register for at least 2 credits of
the seminar during the Ph.D. program. However, only 1 credit of
AGRO 590 can be counted towards the degree.

In addition, Ph.D. students are required to complete 2 credits of
AGRO 602; however, these 2 credits cannot be counted towards the
degree requirements.

The communication requirement for the Ph.D. degree may be met
by completing at least 6 credits of course work in an area of English
communications approved by the student’s Ph.D. committee.

Every student has a close professional relationship with his or her
faculty adviser. While research that is done for the dissertation will
be on subjects that fall within the ongoing research program of the
adviser, students are encouraged to propose research projects that are of
interest to them. The department encourages professional development
of students through participation in meetings of relevant professional
societies and organizations.

Dual-Titles

Dual-Title M.S. and Ph.D. in Agronomy and International
Agriculture and Development

Requirements listed here are in addition to requirements listed
in GCAC-208 Dual-Title Graduate Degree Programs (http://
gradschool.psu.edu/graduate-education-policies/gcac/gcac-200/
gcac-208-dual-title-graduate-degree-programs).

Graduate students with research and educational interests in
international agriculture may apply to the dual-title degree program in
Agronomy and International Agriculture and Development. The goal of
the dual-title degree in AGRO and INTAD is to enable graduate students
from AGRO to acquire the knowledge and skills of their primary area of
specialization in AGRO, while at the same time gaining the perspective
and methods needed for work in the international agriculture. Graduate
study in this program seeks to prepare students to assume leadership
roles in science, engineering, outreach, and project management
anywhere in the world. Students acquire a broad perspective on how to
apply their research findings in the context of the broader international
community. Thus, the dual-title will allow students to master their field
of specialization from an international perspective so that they can
effectively engage in agricultural development activities within various
countries and regions.

Admission Requirements
Students must apply and be admitted to the graduate program in AGRO
and the Graduate School before they can apply for admission to the dual-
title degree program. After admission to their primary program, students
must apply for admission to and meet the admissions requirements of
the INTAD dual-title program. Refer to the Admission Requirements tab
on the INTAD Bulletin page (http://bulletins.psu.edu/graduate/programs/
majors/international-agriculture-development). Doctoral students must
be admitted into the dual-title degree program in INTAD prior to taking the
qualifying examination in their primary graduate program.

Degree Requirements for the Dual-Title M.S.
To qualify for the dual-title degree, students must satisfy the degree
requirements for the M.S. degree, listed on the Degree Requirements

Degree Requirements for the Dual-Title Ph.D.
To qualify for the dual-title degree, students must satisfy the degree
requirements for the Ph.D. degree, listed on the Degree Requirements

Degree Requirements for the Dual-Title Ph.D.
To qualify for the dual-title degree, students must satisfy the degree
requirements for the Ph.D. degree, listed on the Degree Requirements

Student Aid
Graduate assistantships available to students in this program and other
forms of student aid are described in the Tuition & Funding (http://
gradschool.psu.edu/graduate-funding) section of The Graduate School’s
website. Students on graduate assistantships must adhere to the course
load limits (http://gradschool.psu.edu/graduate-education-policies/gsad/
gsad-900/gsad-901-graduate-assistants) set by The Graduate School.

Courses
Graduate courses carry numbers from 500 to 699 and 800 to 899.
Advanced undergraduate courses numbered between 400 and 499 may
be used to meet some graduate degree requirements when taken by
graduate students. Courses below the 400 level may not. A graduate
A student may register for or audit these courses in order to make up deficiencies or to fill in gaps in previous education but not to meet requirements for an advanced degree.

Agronomy (AGRO) Course List (https://bulletins.psu.edu/university-course-descriptions/graduate/agro)

**Learning Outcomes**

**Master of science (M.S.)**

1. **Know:** Graduates of the Agronomy or Horticulture M.S. degree programs will demonstrate mastery of the principles and common research methods within the field of agronomy or horticulture. The demonstration will cover mastery of biotechnology, sustainability, profitability, weed mgmt. and herbicide resistance, nutrient mgmt., food safety, and/or turfgrass science.

2. **Create/Apply:** Graduates of the Agronomy or Horticulture M.S. degree programs will be able to assimilate essential concepts and literature in agronomy and horticulture, create hypotheses, develop tests of hypotheses, and develop solutions to agronomic and horticultural problems. M.S. graduates will also be able to carry out applied research projects that address problems in the field of agronomy or horticulture.

3. **Communicate:** Graduates of the Agronomy or Horticulture M.S. degree programs will be able to effectively communicate technical knowledge, research findings, and current topics in agronomy or horticulture verbally and in writing to scientists and lay people.

4. **Critical thinking:** Graduates of the Agronomy or Horticulture M.S. degree programs will be able to critically analyze research performed by others and evaluate agronomic or horticultural problems and formulate solutions to problems.

5. **Professional practice:** Graduates of the Agronomy or Horticulture M.S. degree programs will demonstrate ability to collaborate in a collegial manner and demonstrate high ethical standards, values, and best practices.

**Doctor of Philosophy (Ph.D.)**

1. **Know:** Graduates of the Agronomy/Horticulture Ph.D. Programs will demonstrate in-depth knowledge of essential theories and research methods within the fields of agronomy or horticulture. The demonstration areas will cover the application of biotechnology, sustainability, profitability, weed mgmt. and herbicide resistance, nutrient mgmt., food safety, and/or turfgrass science.

2. **Create/Apply:** Graduates of the Agronomy/Horticulture Ph.D. Programs will be able to assimilate essential theory and literature in agronomy to generate new ideas and develop creative solutions to agronomic and horticultural problems. Graduates of the program will also be able to conduct original research in an independent manner that addresses problems in the fields of agronomy or horticulture.

3. **Communicate:** Graduates of the Agronomy/Horticulture Ph.D. Programs will be able to convey ideas, arguments, and current topics in agronomy or horticulture verbally and in writing to scientists and lay people.

4. **Critical thinking:** Graduates of the Agronomy/Horticulture Ph.D. Programs will be able to critically analyze research performed by others in the fields of agronomy or horticulture.

5. **Professional practice:** Graduates of the Agronomy/Horticulture Ph.D. Programs will demonstrate the ability to work with others in a collegial manner and demonstrate the highest ethical standards, values, and best practices in their field.

**Contact**

**Campus**

University Park

**Graduate Program Head**

Erin L Connolly

**Director of Graduate Studies (DGS) or Professor-in-Charge (PIC)**

Peter Landschoot

**Program Website**

View (http://plantscience.psu.edu/graduateprograms)