

Graduate Programs

Master of Science Degrees

Plant Sciences Option

The department conducts research programs in: cereal quality; cropping systems/specialty crops; and molecular and conventional approaches to plant improvement. Faculty have expertise in molecular genetics, plant breeding and genetics, cereal quality, cytogenetics, biochemistry, plant physiology and agronomy.

Plant Pathology Option

Most research projects in this option are problem-oriented and pertain to major plant pathological problems in the state. Current research projects involve soil-borne diseases of cereals, the genetic basis for disease resistance in field crops, cereal leaf spots, virus diseases of cereals and potatoes, bacterial diseases and the biochemistry and molecular genetics of plant

disease. Additional projects pertain to biocontrol of plant diseases and biocontrol of weeds using plant pathogens and/or their toxins.

Doctor of Philosophy Degrees

Plant Sciences - Plant Pathology Option

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Plant Sciences - Plant Genetics Option

The department offers advanced study leading to a Ph.D. degree in Plant Genetics with supporting minors. Thesis research problems are related to the diverse research projects of the faculty.

The Department of Plant Sciences and Plant Pathology

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Financial Assistance - Graduate research assistantships are available from several sources including state, regional and federal grants. For more information, contact the department.

Department of Plant Sciences and Plant Pathology

Unique, hands-on study programs for students interested in landscape design, and the biology, genetics and biochemistry of plants



MONTANA
STATE UNIVERSITY

College of
AGRICULTURE



Gain real-world skills while working side-by-side with world-class faculty! The Plant Sciences and Plant Pathology Department's undergraduate and graduate programs help students learn the skills necessary for top professions such as **crop scientists, researchers, horticulturists, landscape designers, consultants, teachers,** and many others.

The department and college have outstanding facilities, including the Plant Growth Center and one of only two bio-containment facilities in the U.S. for quarantining and testing insects and plant pathogens for biocontrol of weeds and plant diseases. Unlike some universities in which state-of-the-art equipment is reserved only for top researchers, Montana State University encourages students to use the facilities and equipment that mirror those found in real-world careers.

Students in Plant Sciences and Plant Pathology also take advantage of Bozeman's tremendous location, where the surrounding mountains, valleys, rangelands and Yellowstone National Park become outdoor classrooms for teaching, research and recreation. Montana's rich agricultural heritage, outstanding natural resource base and environmental opportunities all contribute to your educational experience as a student in Plant Sciences and Plant Pathology.



MSU's College of Agriculture in Bozeman, Montana is the ideal setting for students interested in the natural environment, ecology, biotechnology and the relationship between humans and the outdoors. Many of our "labs" are outdoors in the mountains, valleys and rangelands of beautiful southwestern Montana.

All programs of study are based in science and research. You will learn skills and study critical issues that prepare you to step into the challenges and opportunities of the working world. And, just as you are drawn to Montana for its unique balance of learning and lifestyle, our professors have also chosen MSU for its supportive, ambitious and down-to-earth atmosphere. As leaders in their fields, MSU faculty have chosen Bozeman for its dynamic, collaborative and inspiring setting.

The MSU College of Agriculture is supported by the Montana Agricultural Experiment Station (MAES), which conducts relevant research for the people of Montana, and MSU Extension, which disseminates the research findings through a network of county and reservation offices and other venues. Many College of Agriculture faculty and staff are fully or partially funded by MAES or MSU Extension.

If you want to be challenged, meet inspiring people, and prepare for a professional career in one of the most beautiful places on earth, the MSU College of Agriculture is for you.

Undergraduate Programs

Plant Sciences Majors

Crop Science Option

The challenge for crop scientists is to implement crop and soil management systems that maintain and/or increase production, while at the same time conserving our soil and water resources and preserving the delicate balance in the agro-ecosystem.

Curriculum: Students take basic courses in math and statistics, biology and chemistry. Upper division courses include plant genetics, plant biotechnology, crop production, cropping systems, nutrient cycling, and courses in pest management including plant pathology, weed science, and entomology.

Graduates find careers in farming and ranching; as crop production specialists; in pest management; in seed, fertilizer, and chemical industries; with banks and other lending institutions; with the Cooperative Extension Service and with government agencies such as the USDA.

Plant Biology Option

Plant Biology option provides a broad education in the plant sciences. The expertise of the faculty provides an opportunity to focus at the cellular and molecular level, while exploring opportunities in plant ecology and systematics.

Curriculum: Students are expected to obtain a solid background in math through introductory calculus, in chemistry through organic and biochemistry, and in physics. Upper

division courses provide training in genetics, plant physiology, plant biotechnology, ecology, systematics, evolution, plant development, anatomy, pathology, and molecular biology.

Graduates are prepared for advanced graduate work and academic and professional careers.

Horticulture Majors

Horticulture Science Option

Horticulture is the science and art of growing and maintaining plants for food, enjoyment and improvement of the human environment.

Curriculum: Students take basic courses in math, biology, chemistry, plant identification, and soils. Upper division work involves training in botany, physiology, pathology, propagation, nursery management, and landscape management.

Graduates find careers in floral and nursery crop production, grounds maintenance, landscape nurseries, greenhouse businesses, turfgrass management and in research with private companies, public agencies and educational institutions.



Landscape Design Option

Technical and creative studies in this option lead to problem-solving skills which are used to create beautiful, functional, and efficient landscape designs.

Curriculum: Students take basic courses in math, biology, chemistry, plant identification, soils and design technologies. Upper division work includes training in planting design, site development, landscape construction, landscape computer technology, and landscape architecture.

Graduates find careers with nurseries, contractors, and planning agencies; others are self-employed as landscape designers, consultants and contractors.

Biotechnology Major

Plant Systems Option

Biotechnology combines traditional genetics with the rapidly expanding methods of molecular biology. The Plant Systems Option is for students with an interest in applying this new technology to plant systems.

Curriculum: Students obtain a solid base in chemistry and biological sciences and take courses in plant physiology, plant development, biotechnology and related areas. Independent research is strongly encouraged.

Graduates find careers in academic, industry and government research labs and are well prepared for graduate training.