Sustainable Food & Bioenergy Systems

The Sustainable Food and Bioenergy Systems (SFBS) program offers an interdisciplinary, hands-on curriculum focused on the ecological, cultural, economic, and health aspects of food and bioenergy systems from production through consumption. The degree plan is intended to prepare and motivate students as agents of change to address society’s most pressing food and system related issues towards sustainable environmental and human well-being. Students of the program are provided with broad interdisciplinary training founded on a core SFBS curriculum while gaining disciplinary training by selecting one of four program options housed in either the College of Agriculture, or the College of Education, Health and Human Development: (1) Sustainable Food Systems, (2) Agroecology, (3) Sustainable Crop Production and, (4) Sustainable Livestock Production. The SFBS program seeks to enhance students’ practical and critical thinking skills to explore food system topics through service-based learning internships, hands-on production, training on research methods, independent and group projects, and community engagement. Students must receive a grade of “C” or higher in all required courses as outlined in the major.

Agroecology Option (http://catalog.montana.edu/undergraduate/education-health-human-development/sustainable-food-bioenergy-systems/agroecology-option/)—Department of Land Resources and Environmental Sciences

Agroecology explores how crops and pest organisms interact with their environment, and the application of technology to efficiently and sustainability produce crops. Agroecology focuses on application of population principles and community ecology, environmental science, and cropland ecosystems. The curriculum is based on the philosophy that to be able to successfully predict management outcomes and thus make informed recommendations, one must understand fundamental principles of evolution, ecology, soil science, agronomy, and pest management.

The curriculum originates from a base in biological science which includes a broad knowledge of organisms (including plants, animals and microorganisms), and the physical and chemical characteristics of environments. In the Agroecology curriculum, students will develop a knowledge of the diversity of organisms and how they interact in natural and managed ecosystems. Furthermore, the curriculum will build on this knowledge in courses that demonstrate the application of ecology and environmental science principles. Students will also learn how new technologies like remote sensing and geographic information systems are modernizing agriculture. In later stages of the curriculum, students may select from an array of upper division courses in natural ecosystems, cropping systems, pest management, applied ecology, soil and water science, biochemistry, and policy and planning courses that enable them to specialize in food or bioenergy-related areas best suited to their own career vision.

Career Opportunities

Graduates from this option find careers in conventional and organic farming; as crop production specialists and consultants; in pest management; in seed, fertilizer, and chemical industries; with banks and other lending institutions; and as managers of CSAs and local food organizations. Other career opportunities exist in the Extension Service, state and federal agencies, and private or nonprofit organizations.

Sustainable Crop Production Option (http://catalog.montana.edu/undergraduate/education-health-human-development/sustainable-food-bioenergy-systems/sustainable-crop-production-option/)—Department of Plant Sciences and Plant Pathology

Where does our food come from? Are there ways to sustainably maintain production levels and yet protect our natural resources? Is it possible to improve the quality and nutrition of our food supply? Are local food systems a viable alternative to corporate agricultural production? Can crops grown for bioenergy production reduce our use of fossil fuels and lessen carbon dioxide emissions? The answers to these questions and many more are discovered by students in the Sustainable Crop Production option. The curriculum is designed to train students in a broad range of principles and practices in sustainable crop production, including agronomy, soil fertility, plant genetics, plant physiology, greenhouse production, plant propagation, integrated pest management, and small business management. Both large- and small-scale food and bioenergy production systems are examined.

Career Opportunities

Graduates from this option find careers in conventional and organic farming; as crop production specialists and consultants; in pest management; in seed, fertilizer, and chemical industries; with banks and other lending institutions; and as managers of CSAs and local food organizations. Other career opportunities exist in the Extension Service, state and federal agencies, and private or nonprofit organizations.
Undergraduate Curricula in Sustainable Food and Bioenergy Systems

- Agroecology Option (http://catalog.montana.edu/undergraduate/education-health-human-development/sustainable-food-bioenergy-systems/agroecology-option/)
- Sustainable Crop Production Option (http://catalog.montana.edu/undergraduate/education-health-human-development/sustainable-food-bioenergy-systems/sustainable-crop-production-option/)
- Sustainable Food Systems Option (http://catalog.montana.edu/undergraduate/education-health-human-development/sustainable-food-bioenergy-systems/sustainable-food-systems-option/)