

DEPARTMENT OF CROP AND SOIL SCIENCES
Strategic Plan
(Revised November, 2009)

VISION - *Feed the world – save the planet*

Our vision is to be leaders in scientific exploration, teaching, and extension of plant and soil sciences and in the training of future scientists to improve the quality of life and long-term sustainability of agricultural systems.

MISSION

The Department of Crop and Soil Sciences serves the Land Grant mission and tradition by conducting fundamental and applied plant and soil research, offering nationally and internationally competitive undergraduate and graduate education and training programs, and extending the science of our disciplines to serve the public.

Our mission is to discover and develop principles of plant and soil sciences through scientific investigation and to apply these principles to the development of new crops and varieties, and new crop, soil, and water management practices in agricultural, urban, and natural environments; to teach principles and applications to undergraduate and graduate students; provide experiential training and learning opportunities for students to work with world-class faculty; promote diversity of ideas, people, and cultures; and to disseminate accumulated knowledge through resident instruction, distance and continuing education, extension, publications, and professional associations.

VALUES

The faculty and staff of the Department of Crop and Soil Sciences are committed to the core values of accountability, integrity, respect, honesty, passion, quality and work ethic. By upholding these values we strive for our students to develop scientific and professional values of their own. We abide by the following principles:

- Uphold the highest standards of scientific investigation and professional comportment, and an uncompromising commitment to the advancement of knowledge.
- Honor the rights and accomplishments of others and properly credit the work and ideas of others.
- Strive to avoid conflicts of interest.
- Adhere to scientific and professional ethics standards as outlined by our professional societies and the general scientific community.

CORE RESEARCH AND SCHOLARLY PROGRAMS

The following program areas define the current scope of research and outreach programs in the Department of Crop and Soil Sciences. As such they also define the boundaries for investment of department resources in the future.

- Bioenergy and bioproduct production
- Cereal crop chemistry and quality
- Crop physiology and biotechnology
- Crop genetics and breeding
- Crop production systems (dryland and irrigated)
- Forage production and management
- Remote sensing and geographic information systems
- Landscape pedology
- Low impact urban development
- Soil physics and vadose zone hydrology
- Soil biology
- Soil quality
- Soil chemistry
- Soil fertility and nutrient management
- Soil management
- Turfgrass science and management
- Cereal variety testing
- Weed ecology, science, and management

STRATEGIC DIRECTIONS

The Department has identified three priority areas for future research growth and investment. These align with areas of preeminence described in the Strategic Plan of the College of Agricultural, Human and Natural Resource Sciences at Washington State University, as well as areas of preeminence recognized by Washington State University.

- ***Molecular genetics, classical field breeding, and biotechnology*** to improve the basic understanding of genetic control and heritability of traits leading to enhancement of crop plants; to introgress traits and genetically transform plants to improve yields, nutrient use efficiency, biotic and abiotic stress resistance, end use quality, food safety, and human health; and to develop new bioproducts.
- ***Sustainability of agricultural systems*** through integrated and multidisciplinary analysis of basic processes and production management controls of food, fiber, and bioproducts to protect soil, air, and water quantity and quality. Provide knowledge for the evolution of new crop rotations and soil, nutrient, and weed management practices in direct-seed, precision agriculture, and bio-intensive and organic agriculture systems based on innovative studies of the biological, chemical, and physical processes of these systems over space and time.
- ***Vadose Zone Hydrology*** to advance the basic understanding of hydrological and associated processes in and connected to the vadose zone. Research areas include, but are not limited to, soil-plant-atmosphere interactions, nutrient cycling, vadose zone gas and heat transfer, urban storm water management, microbial and rhizosphere dynamics, and contaminant flow and transport. This strategic emphasis focuses on environmental

science research with a core connection to water movement in the unsaturated zone between the ground surface and the groundwater table.

EMERGING FOCUS AREAS

- ***Bioproducts and bioenergy development, production, and education** to support the growing role of agriculture in supplying society with renewable sources of clean biofuels and bioproducts such as industrial chemicals, healthy food products, enzymes, and fiber.*
- ***Cross-disciplinary integration and assessment of curricula in plant sciences, agricultural systems and environmental sciences** by working with other units in CAHNRS and other colleges to improve coordination of curriculum development and delivery, recruiting, advising, and stakeholder support while enhancing visibility, student interest, and learning outcomes.*