DEPARTMENT OF CROP AND SOIL SCIENCES

STRATEGIC PLAN OVERVIEW

VISION

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

> *We discover and develop principles of crop and mil sciences through scientific investigation and apply these principles to the development of new crop varieties and new crop, soil and water management practices in agricultural, urban and natural environments; teach principles and applications to undergraduate and graduate students; provide experiential learning opportunities for students to work with world-class faculty; promote diversity of ideas, people, cultures; disseminate accumulated knowledge through resident instruction, continuing education, extension, publications, and professional contacts. Our department addresses the needs of our stake holders, clientele, and the general public through research and educational support for a plentiful and safe food supply, and to ensure that agriculture and green space industries remain competitive, productive, and profitable. We are the state's only department for research and extension of agronomic sciences, and the only department to offer four-year and graduate degrees in the agronomic sciences. We are responsible for providing new crop varieties and sustainable management practices to growers for the state's eight million acres of agricultural land as well as urban and natural environments, and to educate future generations of leaders in the agricultural industry and scientific community. The mission statement underscores the well-balanced programs across the tripartite mission of the land grant institution in academic programs, research and extension, and the balance and interrelationship between scientific principles and application in all three endeavors.*

VALUES:

The faculty and staff of CSS are committed to the core values of accountability, integrity, positive attitude, 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 highly encourage our students to reflect on and consider the following guiding principles established by our professional societies:

1. Uphold the highest standards of scientific investigation and professional comportment, and an uncompromising commitment to the advancement of knowledge.
2. Honor the rights and accomplishments of others and properly credit the work and ideas of others.
3. Strive to avoid conflicts of interest.
4. Demonstrate social responsibility in scientific and professional practice, by considering whom their scientific and professional activities benefit and whom they neglect.
5. Provide honest and impartial advice on subjects about which they are informed and qualified.
6. As mentors of .the next generation of scientific and professional leaders, strive to instill these ethical standards in students at all educational levels.

STRATEGIC DIRECTIONS:

- ***Classical field breeding and biotechnology for genetic enhancement*** *of cereal, hop and legume crops, including genetic transformation and introgression from wild relatives to improve crop yields, food quality, food safety, human health, nutrient use efficiency, pest resistance, and bioproduct development for improving long term sustainability of agricultural systems.*
- ***Molecular genetics,*** *including genomics, proteomics, and bioinformatics to improve basic understanding of genetic control and heritability of agronomically useful crop and soil microbial traits to the genetic enhancement program described above.*
- ***Sustainability of agricultural cropping systems*** *through integrated and multidisciplinary analysis of basic processes and production management controls of food, fiber and new bioproducts while protecting soil, air and water quality. Provide knowledge base for the evolution of new crop rotations, soil, nutrient and weed management in direct-seed, precision agriculture, bio-intensive and organic agriculture, based on advanced knowledge of biological, chemical and physical processes of these systems over space and time. Focal systems include cereal-legume, irrigated row crops, viticulture, tree fruits, forages for livestock, fresh vegetable and ornamentals.*
- ***Environmental protection*** *through crop and soils research to minimize negative agricultural impacts on soils, air and water while promoting agricultural benefits to environmental quality such as reduced runoff and leaching of soil sediments, fertilizers and pesticides, enhanced carbon sequestration, reduced gaseous and*

dust emissions to the atmosphere, enhanced wildlife habitats and biological diversity, green space protection, and waste recycling. In addition, protect soil, air aid water quality from negative impacts of non-agricultural systems such as mining, radioactive hazardous waste, industrial and urban waste management through studies of vadose zone hydrology, microbial and rhizosphere dynamics, nutrient cycling, and biodegradation of toxic compounds.

- ***Greenspace and quality of life preservation*** *through turf science and management, providing state of the art knowledge in the agronomic management of golf courses, sports turf fields and lawns.*
- ***Food security and safety*** *through research and extension that analyzes issues and promotes precautionary measures against biological and chemical agents, gene modifications that could potentially impact the safety of our food production systems and surrounding environment.*
- ***Bioproducts and bioenergy*** *research education and development for supporting the growing role agriculture will supply society with renewable sources of clean biofuels such as ethanol and biodiesel, and bioproducts such as industrial chemicals, healthy food products, enzymes and fiber through new crop development and adaptation in sustainable cropping systems.*
- ***Cross-disciplinary integration of curricula in plant sciences, agricultural system and environmental soil science*** *by working with other units in CAHNRS and other colleges to improve coordination of curriculum development, recruiting and advising, and stakeholder support while increasing visibility and student interest.*