

## **Vision Statement**

As Head of the Department of Soil and Crop Sciences (SOCR), I will lead the department in developing a vision to respond to the dual challenges of food security and environmental sustainability. I expect to draw from the expertise of current faculty and to develop synergies with other units within the College of Agricultural Sciences. Developing the SOCR vision will initiate a collaborative strategic planning process that would serve as a guide to articulate and enhance our teaching, research and extension missions. The visioning process will give all faculty members a chance to embrace emerging opportunities in the changing landscape for agricultural production, research funding, and education. My interdisciplinary background, international experience, and collaborative team-building approach provide me with tools to lead SOCR in articulating a vision that will serve our students and stakeholders well as we face numerous 21<sup>st</sup> century challenges.

The SOCR departmental vision should enhance the linkages between the teaching, research and extension components of our mission in order to strengthen strategic outcomes in all aspects. Many SOCR faculty members are internationally recognized for their outstanding, societally relevant research programs, so there is strong potential to encompass and build upon these existing strengths to enhance recognition of the Department as a whole.

Ensuring continued success of SOCR degree programs depends on maintaining or increasing student engagement and career preparation. Many undergraduates are already involved in the research enterprise, but their part-time jobs should give them quantitative skills in addition to basic laboratory and field skills. Developing an internship program for our students in partnership with local and international industries would enhance graduates' employability and increase stakeholder satisfaction. Student outcomes should focus on creativity and critical thinking skills that they develop while tackling real-world problems, and their writing skills could be honed while developing relevant publications geared toward outreach, extension or research.

The departmental strategic planning process needs to look outward as well as inward, to establish and prioritize outcomes that are relevant to the needs of stakeholders in industry, government and academia. In order to train the next generation of scientists and agricultural practitioners, the planning process needs to evaluate SOCR degree programs and prepare to reinvigorate them as needed to provide students with the skills they need to be ready for the workforce. The vision for SOCR needs to address strategic planning going on within the College of Agricultural Sciences, and must articulate with industry and governmental stakeholders who rely on our expertise. The strategic plan needs to identify potential new income streams from state and local funding sources, including industry as well as agencies.

While I would emphasize the importance of a collaborative strategic planning process, I would introduce a few of my own ideas targeted toward emerging challenges and opportunities. My approach would seek to foster new interdisciplinary teams within the department that could develop new capacity to meet agricultural challenges, and I would also broadly encourage multi-disciplinary teams that span departments within the CAS and

beyond. Often, soil scientists and crop scientists conduct research independently, studying similar problems from different angles, but overlooking insights from other perspectives. Through my research I have developed an appreciation of the importance of plant-soil-microbe interactions in underpinning agricultural productivity. I would like to promote interactions between SOCR faculty members specializing in crop genomics/genetics, soil fertility/quality, and microbiology in order to build new interdisciplinary strength in this arena. Enhancing linkages between crop and soil scientists within SOCR and across the CAS could attract new investment to build capacity in “next generation” agricultural research.

An important aspect of the planning process will be to identify strategic gaps that need to be filled in order to achieve departmental outcomes. Some gaps are already being addressed, such as the recent or upcoming hires in agroecology and soil microbiology. An emerging area of demand is likely to be in the realm of computational science and informatics that will inform precision agriculture and provide a platform for analysis of large datasets that emerge from –omics techniques, GIS, remote sensing, and phenomics-based plant imaging. I would raise the possibility of developing departmental expertise in “agro-informatics” that could train students as well as growers and other stakeholders who increasingly rely on big data.

The SOCR department is a national leader in sustainable agriculture, with strengths in crop genetics/genomics, soil carbon and fertility management, water quality, and more. SOCR faculty members are leading the development of “[Climate-smart Soils](#)” that mitigate agricultural contributions to greenhouse gas emissions. This concept could be expanded to encompass “climate-smart agriculture” by showcasing departmental strengths such as crop breeding and genetics, irrigation management, precision agriculture and environmental remediation. Existing strengths can readily be applied to new technologies related to plant-soil-microbe interactions, deployment of environmental sensors including laser-based greenhouse gas monitoring, and field-based phenomics. The SOCR department has tremendous potential to grow its programs of education, research and extension by promoting current strengths and establishing new technologies, while embracing the dual challenges of producing food for nine billion while sustaining a healthy environment.