

Interdisciplinary Approaches to Society's Grand Challenges

Since Congress passed the Morrill Land Grant Act in 1862, land grant universities have invested in research and education infrastructure to advance agriculture through discovery and application. Our early food system was primarily production driven and the core of our research and education efforts in Agronomy at Purdue remains agricultural production. Our faculty and staff are committed to serving agriculture by conducting and disseminating results from fundamental and applied research to maintain U.S. competitiveness in the global market in crop and animal production.

However, because land grant colleges have developed unparalleled expertise in the life and earth sciences, we are being asked by society to expand our research agenda to address some of society's greatest challenges beyond domestic food production. Problems of society today are complex, often global in nature, and require diverse perspectives offered by multi-disciplinary teams. The diversity in the expertise of our faculty in Agronomy offers unique and creative approaches to addressing societal challenges. Our faculty recognize they must integrate their expertise with other disciplines to address issues such as climate change, world hunger, waste management, energy/food/water security, and natural resource conservation. Our ability to deliver on solutions surrounding these issues makes a strong case for sustained state and national support for our research and education programs.

Although strategic planning is a frequent activity in the department, our faculty have been formally preparing for this comprehensive review since fall 2007. An outcome of this planning process has been the recognition of six grand challenges upon which the faculty will focus their collective expertise over the next decade. The grand challenges are:

- **Bio-feedstock Production and Development**
- **Chemical & Biological Constituents in the Environment and their Impact on Human and Ecosystem Health**
- **Climate Change - Impacts on Agriculture and Natural Resources**
- **Harnessing Plant Breeding and Genetics to Identify and Develop Economically Important Crop Traits**
- **International Agriculture Research and Engagement**
- **Landscape-scale Management for Sustainable Plant Production and Ecosystems**

Each of these grand challenges is a complex, large scale problem that requires a multidisciplinary approach and that has considerable economic and social implications. Our ability to grow our economy and to maintain a high standard of living for our citizens depends, to a great extent, on our ability to successfully address each of these issues. We can't expect that solutions to these issues will be found quickly. These are long term problems, demanding a long term commitment by society.