User-Driven Research and Agricultural System Decision Support

Abstract:
Agricultural systems worldwide have been shaped by the abundance and quality of land and water resources in an area, climate, and cultural, economic, and political conditions. Many of these agricultural systems are being threatened by increasing population, increasing pressure on land and water resources, and land degradation. As these threats increase, climate variability amplifies the risks to food and economic security. A goal of our research is to provide climate forecast information that can be used to influence decisions and reduce risks of economic or environmental losses or to take advantage of favorable climate. Various models and analytical tools are used to understand and quantify climate-related risks to agriculture, to estimate potential value of using climate forecasts for management decisions, and to communicate this information to agricultural users. A major component of our research involves working with farmers and their advisors using various approaches. We have learned that cooperation with trusted advisors, the Cooperative Extension Service in this case, is essential. Although farmers routinely use short-term weather forecasts and they face uncertainty and risk in all of their enterprises, their use of seasonal climate forecast information in decision making is limited. However, their interest is high, and we have found that direct involvement of agricultural decision makers and their advisors provides a forum for colearning, for setting priorities for research and development of information and tools, and for communicating climate information to decision makers. Here we describe a decision support system (AgClimate.org) that serves as a tool for consolidating and communicating climate forecast information for agricultural decision making and as a focal point for cooperation. Engaging the agricultural community in research on seasonal climate forecast and risk management can serve as an entry point for broader discussions about climate variability over longer time frames.