USDA-CSREES 2006 National Water Quality Conference

Sustainable Irrigation and Cropping Systems for Areas with Limited Water in Colorado and the West

The influence of drought and urban growth has caused concern among agriculturally dependent rural communities in the West about losses of irrigated cropland due to the reallocation of water rights to urban and industrial uses. Currently, an integrated, multi-disciplinary, multi-agency research program has begun at Colorado State University (CSU) with the long-term objective of developing and maintaining the sustainability and profitability of irrigated agricultural production systems in an environment of increasing competition for water. The Irrigation Water Optimization Program (IWOP) is a replicated, systems level study being conducted at CSU's Agricultural Research, Development and Education Center (ARDEC) in Fort Collins, CO. This program will also include additional field studies conducted in cooperation with the Northern Colorado Water Conservancy District (NCWCD) and cooperating farmers in the South Platte River Basin. In 2005, the IWOP research team established a pilot research project that evaluates water use efficiency and irrigation productivity for seven distinct cropping systems under both sprinkler and furrow irrigation systems. Our research plan includes detailed evaluations of crop water stress and insect pest profiles in order to make sound crop management plans for each cropping system. The economic component of this project will evaluate the profitability for individual farms of potential irrigation systems in an uncertain precipitation and farm price environment and will produce decision support tools to guide farm decisions. In addition to the farm scale evaluations, the project will address the economic impacts of rural to urban water transfers given potential changes in irrigated cropping patterns. A comprehensive and innovative outreach and education plan has been developed to transfer the study findings to traditional and non-traditional audiences, including students, farmers, rural communities, and urban policy makers. This plan involves student training, curriculum development, a web delivered information database, a broadly represented stakeholder focus group, and extension based outreach.

Author: Matt Neibauer
Coauthor(s): Dr. Neil Hansen, Soil and Crop Sciences, Colorado State University Dr. Reagan Waskom, Soil and Crop Sciences, Colorado State University Dr. Dwayne Westfall, Soil and Crop Sciences, Colorado State University Troy Bauder, Soil and Crop Sciences, Colorado State University