Capacity Building Workshop for Irrigation Professionals in the North Central Region

Background

The North Central region of the US has a climatic gradient ranging from arid and semi-arid in western Nebraska to humid in eastern Michigan. Despite these climatic differences, the need for supplemental irrigation is nearly universal due to variations in soil-water holding capacity, the distribution of precipitation, and crop water requirements of commodity crops, among other factors. While there are examples of large-scale research-based irrigation programs that contribute to water conservation, the need for supplemental irrigation continues to raise questions in terms of the sustainability of water supplies as many major water users still struggle to implement research-based practices to conserve water for future use and prevent water degradation from leaching nitrate nitrogen.

Most north central region states share similar localized water concerns however, the resources to address them vary between states. Information, data, and knowledge transfer between states can enhance their capability to address local water resource management challenges through adoption of research and science-based practices used in other states. Extension professionals and Soil and Water Conservation District (SWCD) staff have an interest in learning more about the applied irrigation research currently being conducted in key western states such as Nebraska. Once Extension and SWCD professionals are well versed in irrigation research, this knowledge can then be extended to key farmers, ranchers and stakeholders in more northern and eastern states throughout the region.

Goals

This project was designed to help farmers and ranchers make research-based decisions about how and when to use water for irrigation, and to promote scientifically-proven practices that preserve and protect water resources. Specifically, this project used a train-the-trainer model to disseminate best management practices for irrigation across six states of the North Central region and to increase multistate connectivity among university professionals and partners.

Additionally, a subgroup of participants collaborated to explore potential grant opportunities to sustain irrigation best management practices across the North Central region. Specifically, future grant opportunities enabling participants to investigate best practices for producing measurable water quality results from sensor-based irrigation water management were explored.

Addressing the Challenge

In June of 2015, a group of researchers, extension faculty, and soil and water conservation staff met at the Irrigation Capacity Building Workshop at the South Central Agricultural Laboratory (SCAL) of the University of Nebraska-Lincoln, near Clay Center, NE, and Lincoln, NE. Attendees shared irrigation water management success stories, discussed cutting-edge irrigation research, and examined opportunities for inter-state collaboration. The group explored research related to subsurface drip irrigation fundamentals, center pivot full and limited irrigation and nitrogen management, variable rate irrigation and nitrogen management, cover crops impacts on soil quality and water balance, and other topics.

At the workshop, each state representative gave an overview of the major irrigation water issues within their area and provided current state strategies in place for addressing groundwater contamination and promoting sustainability of ground and surface water use for irrigation. Research on the science surrounding water balances and sensor technology were discussed, multi-state research updates were shared, and emerging issues surrounding water quality related to irrigation were investigated.

A subgroup also worked collectively to create a joint research proposal to USDA NIFA-AFRI that aimed at quantifying the water quality impacts of implementing technology-based irrigation water management on large scales.

Program Outcomes and Impacts

The states who participated in the Irrigation Capacity Building workshop represent roughly 25% of the total irrigated farm and ranch land in the US, and each of these states had its own concerns about the quantity and quality of water related to crop irrigation which were addressed.

Participant surveys demonstrated that after attending the workshop 86% of participants felt that they had increased their understanding of how to utilize soil moisture sensors in their education/extension/outreach programs. Furthermore, the majority of participants noted they saw significant value in attending this multistate workshop and they were very likely to promote the use of soil moisture sensors, and other technologies, as irrigation water management tools in their states.

This workshop was one example of positive impacts the NCRWN brings to various states and professionals by allowing stakeholders to learn from each other, discuss common water management issues, and work on information and technology transfer to address water management challenges.

CONTACT

Suat Irmak, Ph.D., Professor
Soil and Water Resources and Irrigation Engineering
University of Nebraska-Lincoln
239 L.W. Chase Hall
Lincoln, NE 68583-0726
Phone: (402) 472-4865
sirmak2@unl.edu