



Water Resources Intern: Mara Zelt

Major: Biological Systems Engineering

School: University of Nebraska-Lincoln

Organization Background

University of Nebraska-Lincoln extension offices are a resource for the communities they serve. Extension educators provide access to the latest University research, advanced technologies and developing new strategies for agricultural production as well as opportunities for youth education and development.



Project Description

This summer's pollution prevention projects through Holt county extension have included installing watermark moisture sensors and ET gauges and where necessary assisting producers to understand the technology in order to promote maximum water efficiency and maintain high crop yield. One set of three sensors was installed for a producer and an additional 13 sets of three sensors were installed in Extension research or educational plots in northern Nebraska. Irrigation systems for three producers were also analyzed for sprinkler package optimization and pumping plant efficiency in order to provide recommendations to improve irrigation practices. This summer's pollution prevention project also included site visits to several local wastewater treatment facilities. These visits provided an opportunity to look for potential energy savings as well as assisting in a state wide assessment of treatment facilities that will provide the basis for more detailed assessments in the future.

Pollution Prevention Benefits

There is potential for savings of water, energy and reduction of GHG releases with the implementation of watermark sensors and other irrigation system improvements recommended by in this report. The wastewater treatment facilities discussed in this report could see savings of energy and reduction of greenhouse gasses and a corresponding savings of taxpayer resources.

Results

Table 1: Summary of Potential Annual Savings with Implementation of Agricultural Recommendations

Improvement Opportunity	Water Savings (gallons)	Energy Savings (kWh or gal diesel)	Cost Savings	Greenhouse Gas Reduction (CO ₂ equivalent/yr)
Soil Sensors	14,100,000	640 gal diesel and 11800 kWh	\$3400	13.3 Metric Tons
Pumping Plant Improvements	--	1300 gal diesel and 3600 kWh	\$3400	13.5 Metric Tons
End Gun Management	1,100,000	--	--	--
Total	14,200,000	1940 gal diesel and 15400 kWh	\$6800	26.8 Metric Tons