

P3 Intern: Jacob Rix

School: University of Nebraska-Lincoln

Major: Mechanized Systems Management

Background:

The Nebraska Extension's mission is "Helping Nebraskans enhance their lives through research-based education." There are 83 offices across the state that continue to serve all 93 Nebraska counties. In 2014, there is was over 4,056 participants through the 94 locations that were present in Nebraska particularly for water and cropping systems. Those numbers tend to grow each year expanding the network system. The main goal for all the extension offices is to be able to communicate and connect with the local agricultural communities about updated research that can be used to further improve farm and ranch operations. The extension office has focuses in other areas besides agriculture such as food sciences, community environment, and 4H development.



Project Description:

Jacob Rix and Chuck Burr, crop and water systems extension educator, collaborated with ten producers this summer. Four out of the three producers were previously a part of the 2015 Nebraska Water Balance Alliance. 2015 Data from each of the producer's field was collected and used in the University-Lincoln Extension Pumping Plant Efficiency Calculator App. The calculated results were then compared with Sargent's pumping plant testing that was performed in early August. The purpose is to test the accuracy of the app but determine if this producer's pumping plant should be considered for replacement to increase the NPPC efficiency. Irrigation uniformity tests were performed for each of the fields to determine whether the water distribution is even, then P2 benefits were estimated. The fourth producer is outside the NEWBA and looked at improved irrigation efficiency through watermark sensors.

Pollution Prevention Benefits:

Water reduction, increase in fuel savings, and reduction in greenhouse emissions are the primarily potential benefits for each of the producers if they follow up on the recommendations. Farmers across Southwest Nebraska will be able to expand their knowledge in irrigation efficiency and potentially improve on irrigation scheduling. Results can be found in Table 1.

Table 1:

Ag Producer	Cost Savings	Energy Savings	Greenhouse Reductions	Pumping Reductions	Pounds of Nitrogen Reduced
Producer 1	\$4,800	35,000 kWh	38 MTCO ₂ e	7,300,000 gallons	2,300 lbs.
Producer 2	\$3,300	30,300 kWh	33 MTCO ₂ e	4,300,000 gallons	1,300 lbs.
Producer 3	\$1,900	900 gallons	9 MTCO ₂ e	6,500,000 gallons	
Producer 4	\$858	10,211 kWh	11 MTCO ₂ e		