Project Goals

- To decrease the amount of water wasted in corn production
- To promote efficient irrigation systems
- To determine the best irrigation technique for Nebraska

Background

Water Use in the World

- 67% for Agriculture
- 8% for Energy
- 8% for Forestry
- 9% for Industry

Irrigated Water Uses

- 37.5% for Corn
- 6.4% for Irrigation
- 11% for Mining
- Others

70% of the world’s water is used for agriculture (1).

Corn production uses 22% of irrigated water (2).

Irrigated Corn: 2007

45% of irrigated corn is in Nebraska; therefore, it is important to implement water efficiency methods (3).

Analysis of Predicted Results

Water Conservation Efficiency

The water conservation efficiency for subsurface drip irrigation is higher by over 20%, when given 50 gallons of water per acre for 5 consecutive years in the month of August.

Average Crop Yield

The increase in average crop yield for subsurface irrigation was statistically significant compared to sprinkler and furrow.

Methods

Implement and analyze each system in 20 acre corn fields in Nebraska.

Cost and Funding

Total Irrigation System Costs

When analyzing implementation, maintenance, labor, and water costs, subsurface irrigation is more expensive than sprinkler and furrow irrigation combined.

Government Irrigation Spending Distribution

The majority of the US irrigation investments were towards irrigation maintenance and expansion rather than water conservation (4).

Cost effectiveness

Crop yield

Recommendations

- 20% of federal funding currently used in irrigation maintenance should be transferred to water conservation. These funds would include the implementation of more efficient irrigation systems, like subsurface drip irrigations.
- More research should be completed to determine if subsurface drip irrigation is viable for other regions of the world and other crops on large scale operations.

References