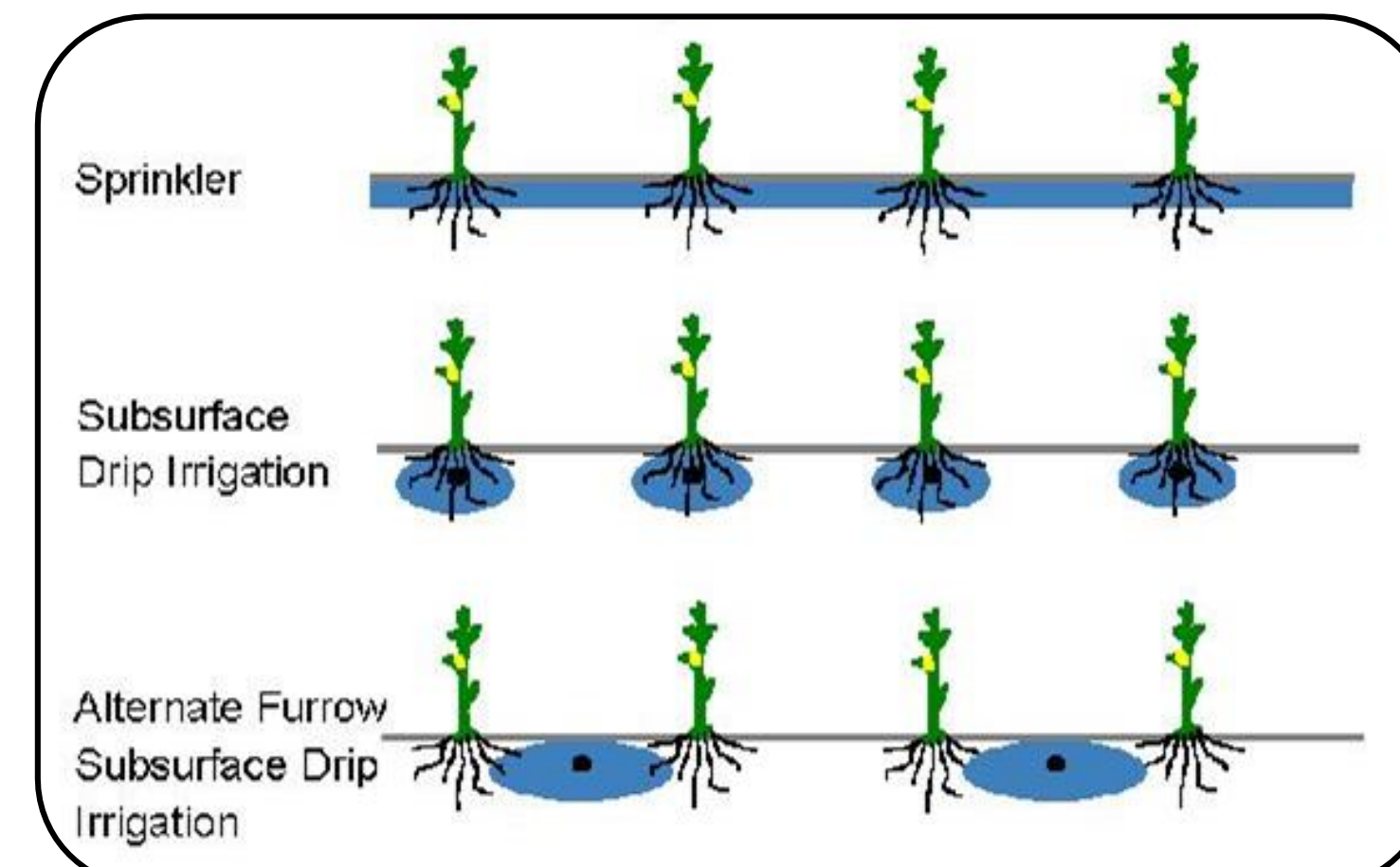


Project Goals

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

Methods



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

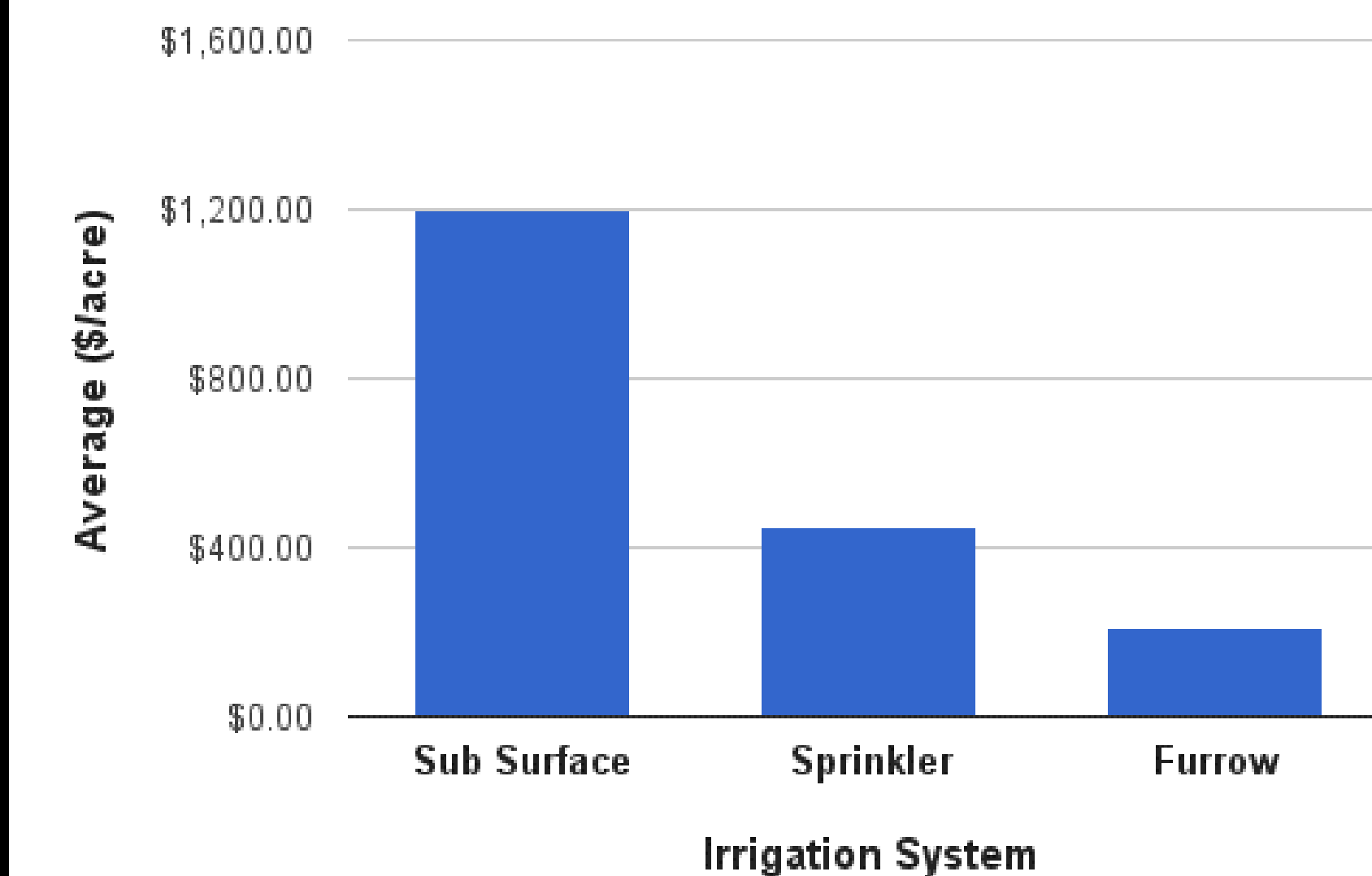
Water conservation efficiency

Cost effectiveness

Crop yield

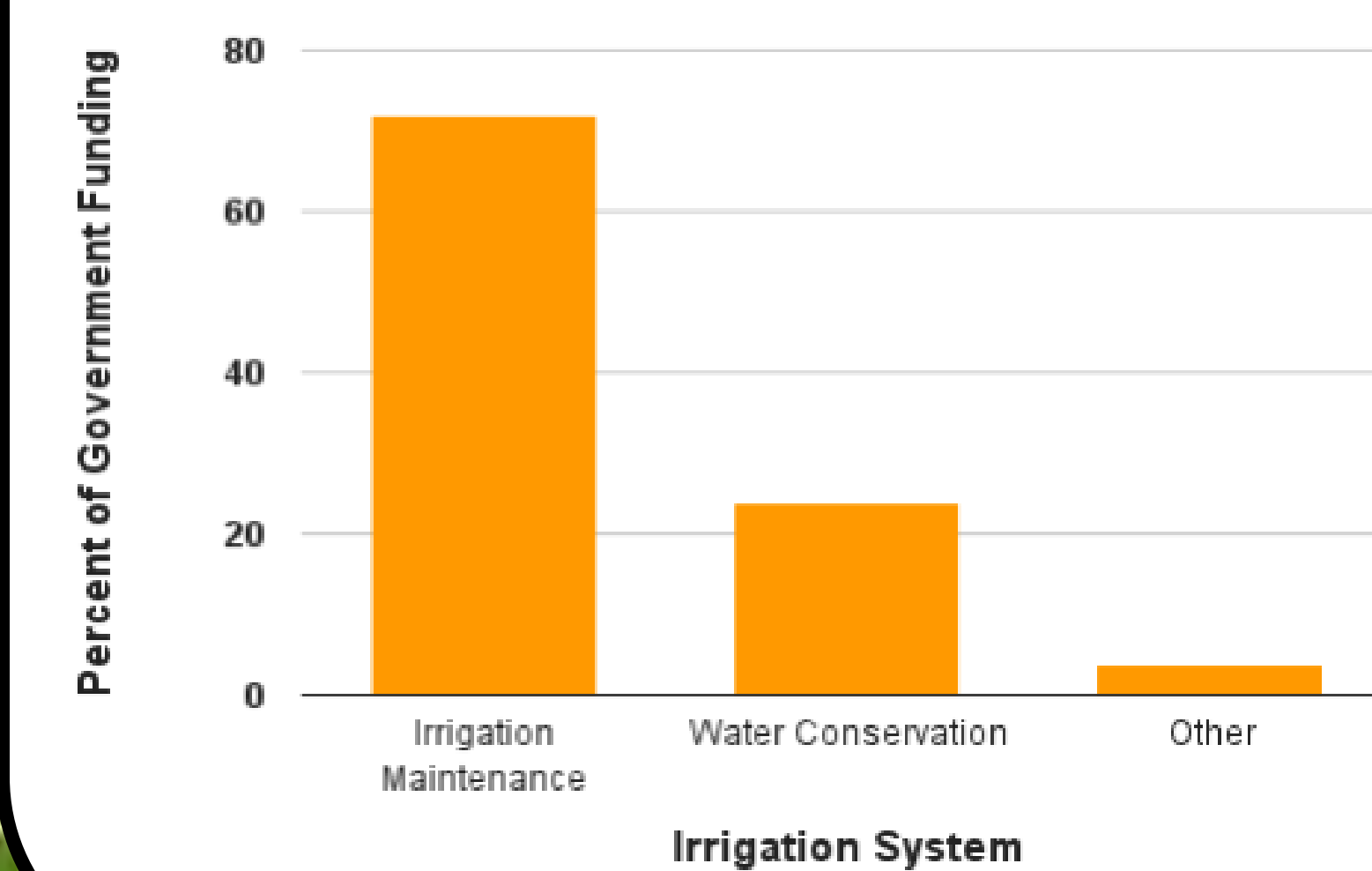
Cost and Funding

Total Irrigation System Costs



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

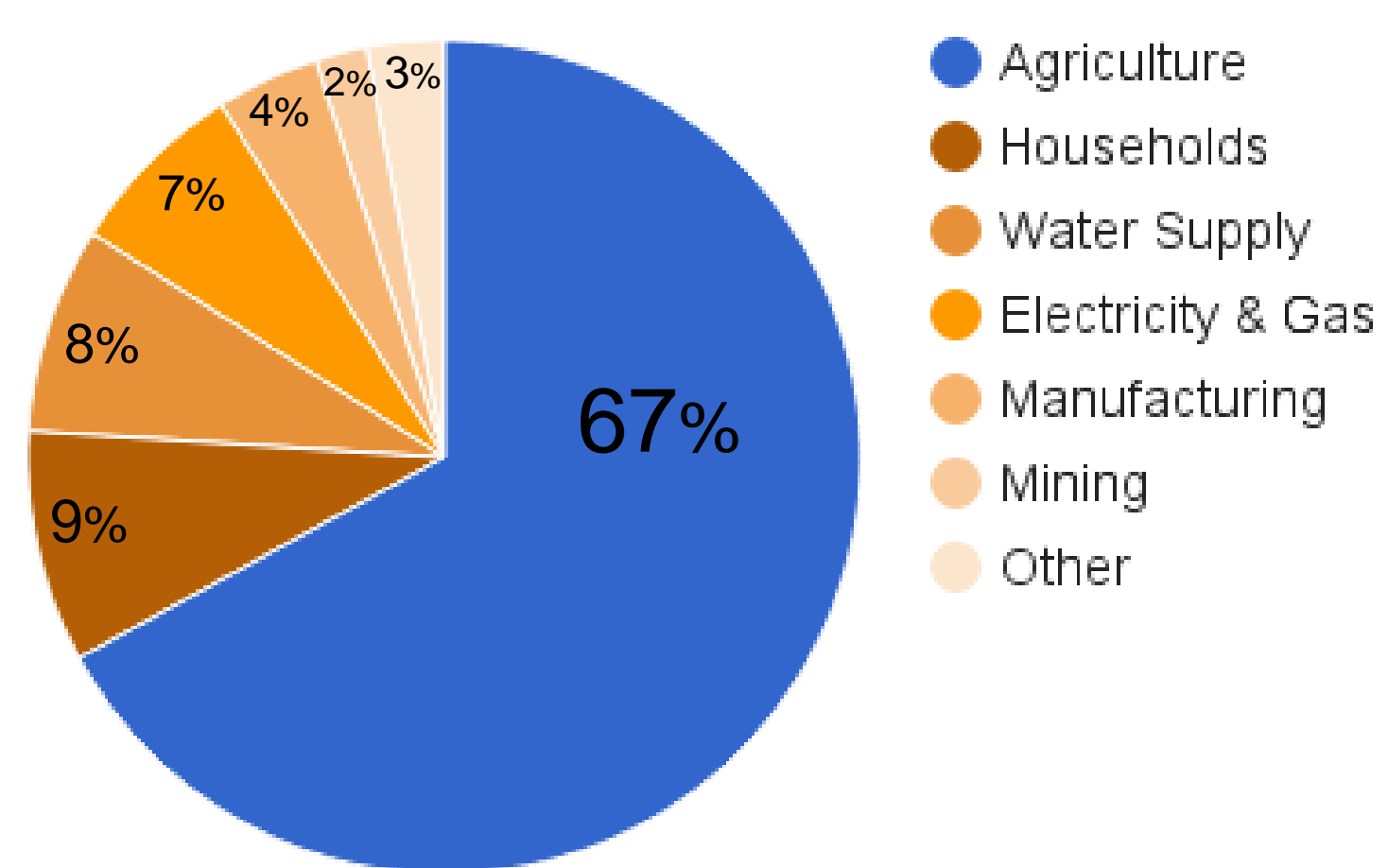
Government Irrigation Spending Distribution



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

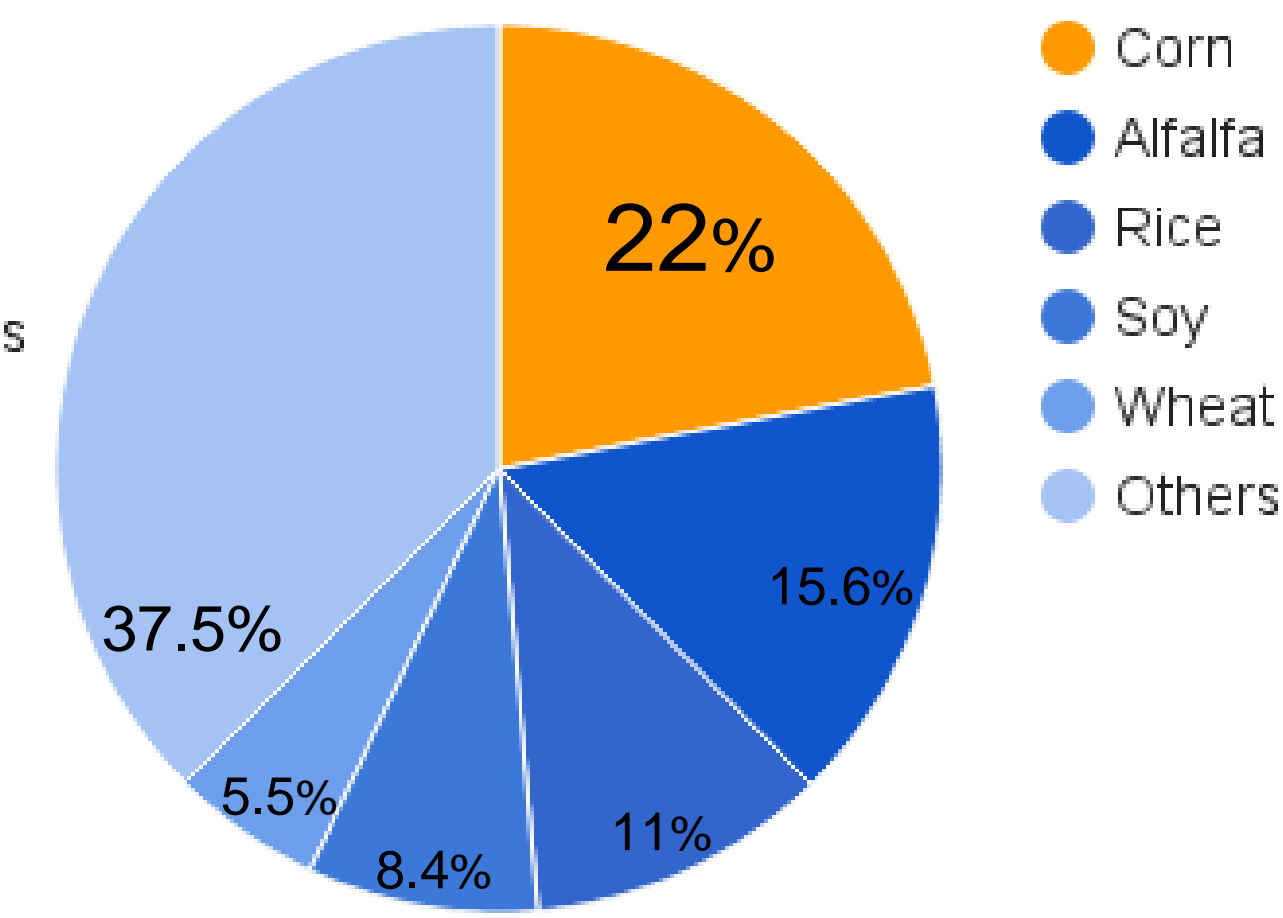
Background

Water Use in the World



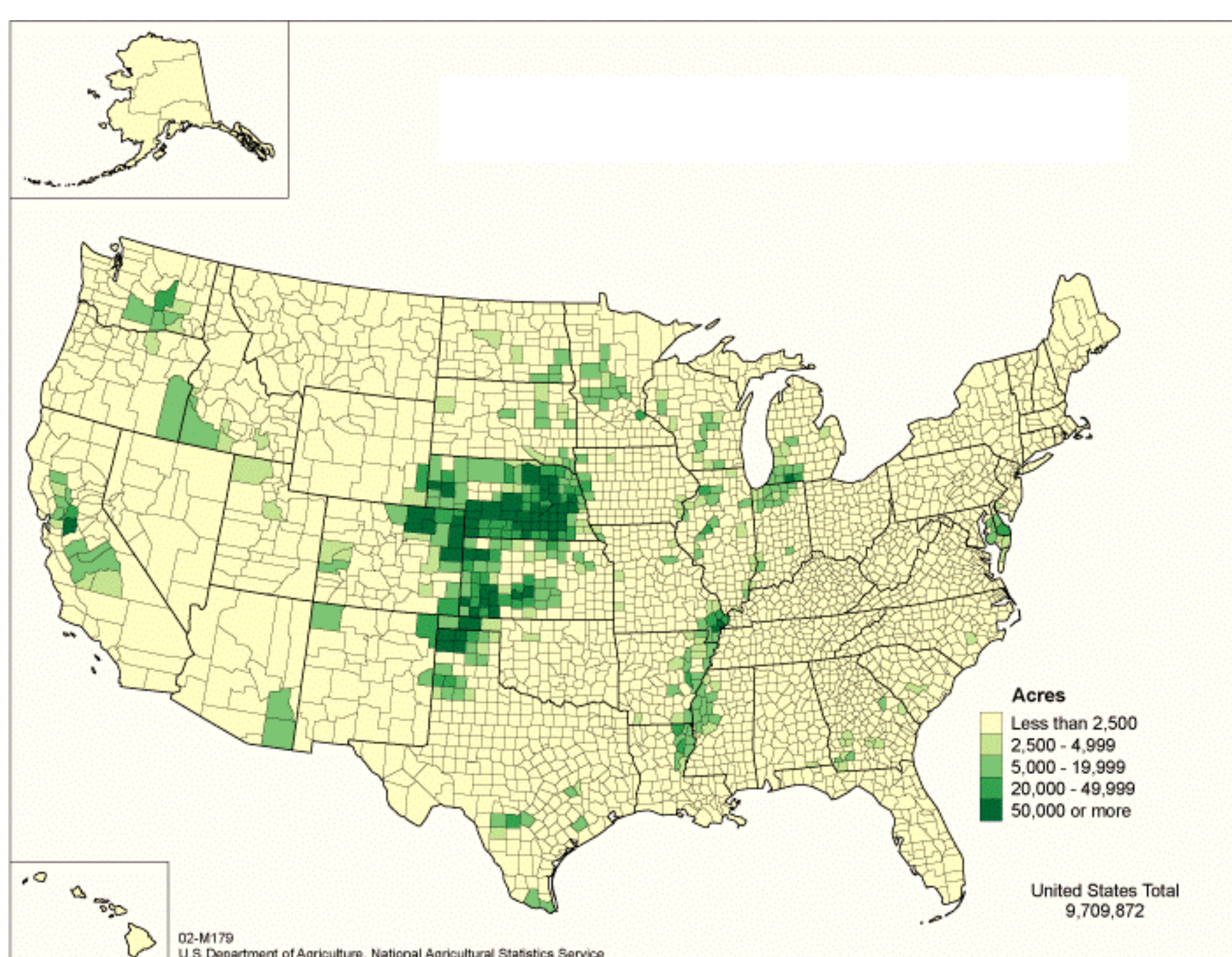
70% of the world's water is used for agriculture (1).

Irrigated Water Uses



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

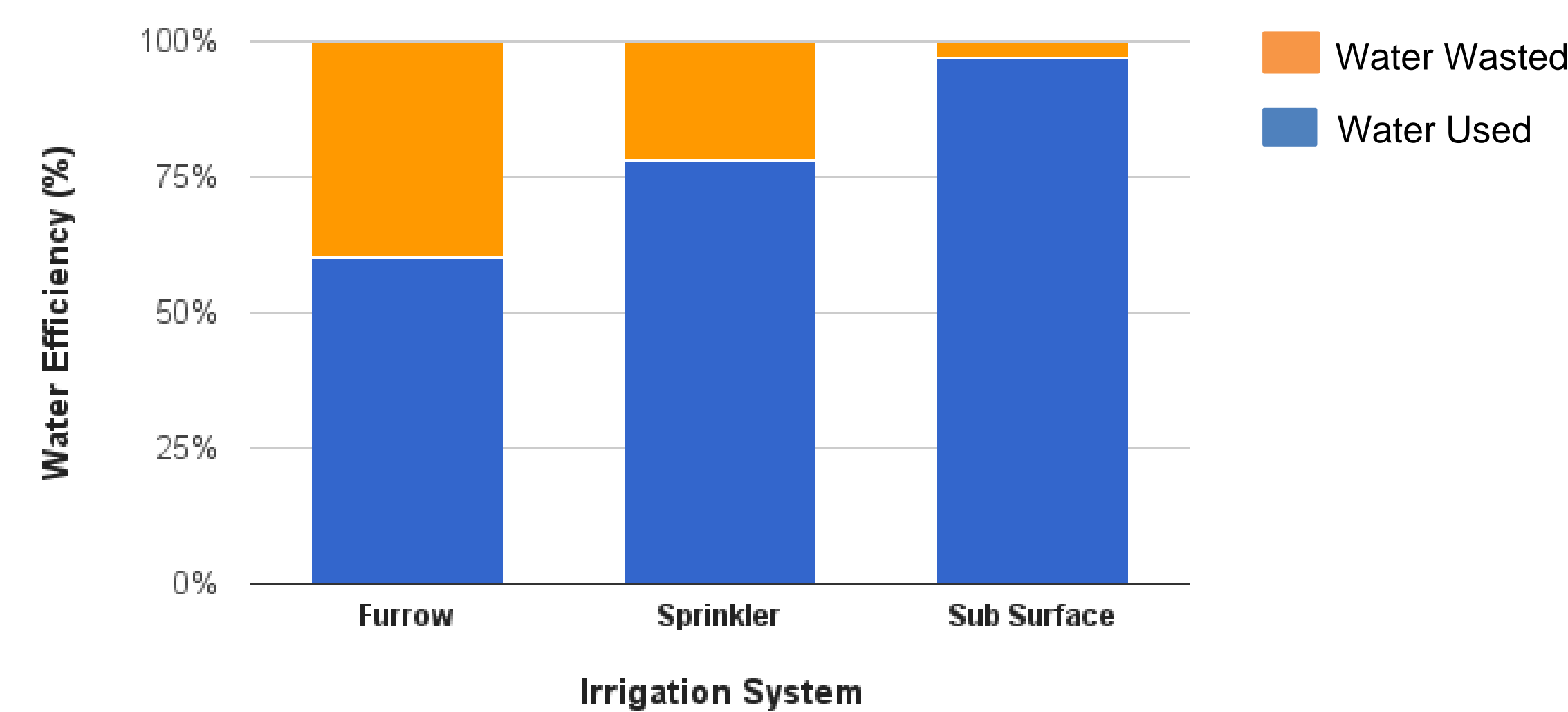
Irrigated Corn: 2007



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

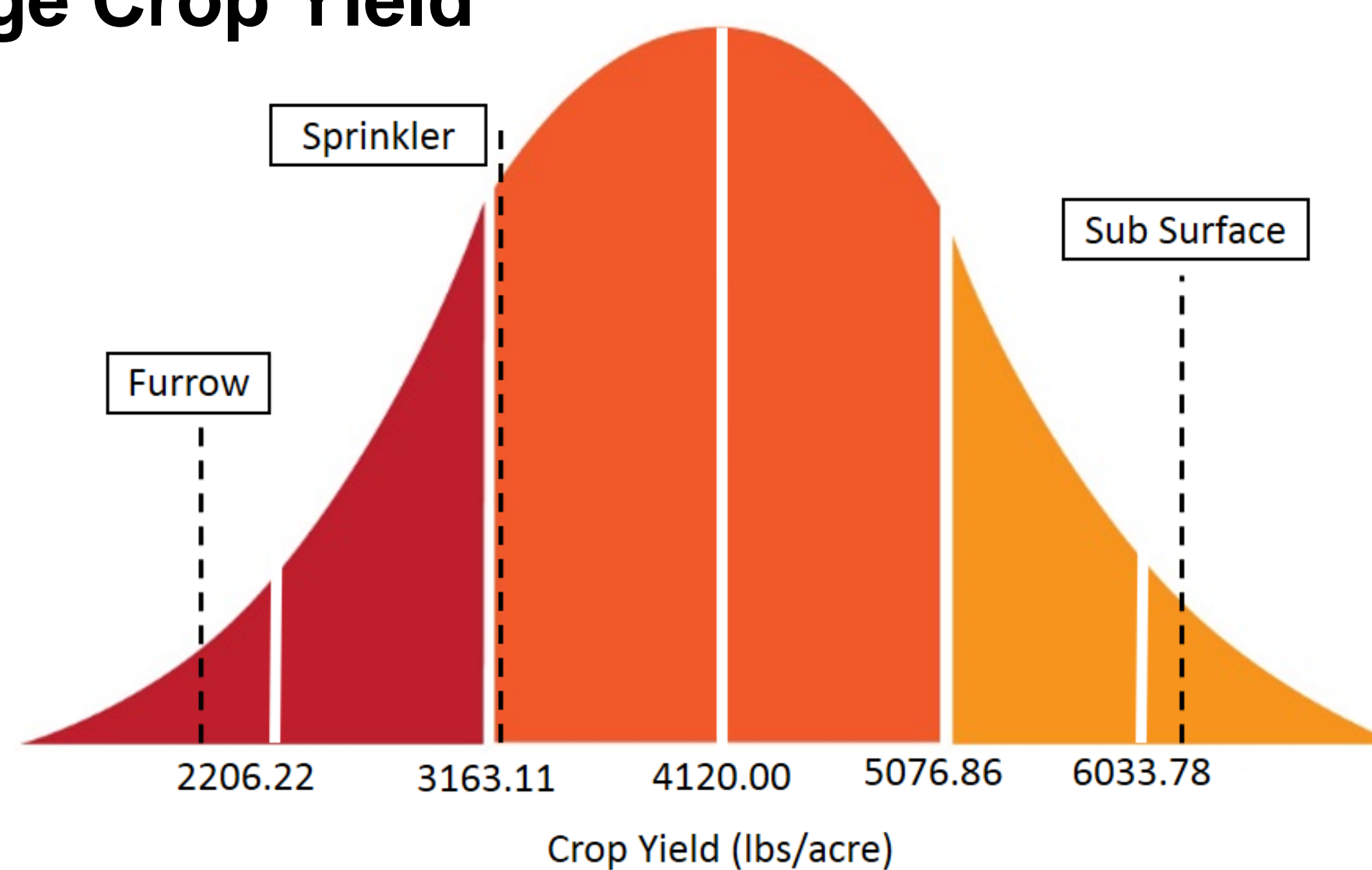
Analysis of Predicted Results

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 sub surface irrigation was statistically significant compared to sprinkler and furrow.

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

1. Steduto, P., et al. *Coping with Water Scarcity: An Action Framework for Agriculture and Food Security*. 38:38; Vol. Rome: Food and Agriculture Organization of the United Nations, 2012. Web.
2. United States Department of Agriculture. "Farm and Ranch Irrigation Survey." *2012 Census of Agriculture 3* (2014) Web.
3. *Irrigated Corn for Grain, Harvested Acres: 2007*. Digital image. *Census of Agriculture*. United States Department of Agriculture. Web.
4. Schaible, Glenn, and Marcel Aillery. "USDA ERS - Irrigation & Water Use: Background." *USDA ERS - Irrigation & Water Use: Background*. United States Department of Agriculture - Economic Research Service, 8 Oct. 2015. Web.