

PRODUCTION SYSTEMS

Objective: Reduce dependence on underground water resources by developing and evaluating crop and livestock systems that optimize productivity, product and environmental quality, and profitability. A broad ranging, multidisciplinary attack is essential to developing new or improved management systems across a range of ecosystems.

- **Efficient crop rotation systems ('crop' includes both row crops and forage crops)**
 - Effects of different irrigation strategies
 - Interactions of water use on plant quality
 - enhance capture of precipitation through crop rotations
 - Soil management and crop rotations to improve crop water use, reduced erosion, and improved carbon sequestration
 - Determine tillage impacts on water storage and use
- **Integrated crop, forage, and livestock systems**
 - Transition from irrigated to dryland
 - Optimize forage quality and yield
 - Annual vs. perennial forages
 - Locally grown forages compared to industry co-products as feeds for livestock.
 - Modeling of integrated systems
- **Plant species/variety options for reduced water use**
 - Water efficient genotypes of crops
 - Genetic, environment, and water management limitations to maximum yield

Outcome: Develop and evaluate crop and livestock production systems that can reduce irrigation water volume usage and enhance profitability to sustain rural economies across the Ogallala region.