From Dust Bowl to protein bowl
Shawn Lepard, Panhandle Irrigators
Oklahoma Panhandle
Beaver, Cimarron and Texas Counties

- Three top Ag producing counties in OK
- Ogalalla aquifer used to grow corn
- Corn used to feed cattle and hogs
- Regional processing of beef and pork leading producers and exporter of American protein
Costs

- Significant cost of drilling a well, irrigation equipment and fuel costs for pumping water
- Motivation for water conservation and efficiency is prioritized by economics rather than policies
No till leaves all of the previous crop residue on the soil surface, protecting it from wind erosion and evaporation.

When the crop is seeded, only a narrow band of residue is moved out of the way allowing the seed to be put into the soil.

Using pre-emerge chemical control ensures that weeds never grow and use moisture that is meant for a crop.
Are We Irrigating Our Crops Efficiently?

<table>
<thead>
<tr>
<th>Method</th>
<th>Field Application Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface</td>
<td>64%</td>
</tr>
<tr>
<td>Sprinkler</td>
<td>85%</td>
</tr>
<tr>
<td>Drip</td>
<td>89%</td>
</tr>
</tbody>
</table>

**Cimarron**

- **Sprinkler**
- **Drip**
- **Surface**

**Beaver**

- **Sprinkler**
- **Drip**
- **Surface**

**Texas**
How has technology helped us?

- Telemetry enables growers to monitor and control irrigation application from mobile devices thus preventing wasting of water.
- Soil moisture probes help growers make irrigation timing decisions.
- Variable Rate Irrigation utilizes GPS to apply varying rates of water throughout a field, applying more water to drier areas and less water to wetter areas.
Remote monitoring of soil moisture

- Soil moisture monitoring probes are installed in a field and use telemetry to send real time readings to the grower.
- Probes collect data every 4” down to 48”
- Data helps to make irrigation decisions such as the amount of water to apply and the timing of irrigation.
VRI—variable rate irrigation: the future?

- The newest technology in pivot irrigation
- GPS is used to make “prescriptions”
- These prescriptions are then used to control irrigation amounts by turning individual nozzles on and off.
- This results in the “right amount of water being applied in the right spot”.

Panhandle Irrigators
WATER USE AND IRRIGATED CROPLAND IN THE PANHANDLE