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Environmental Federation of Oklahoma: Technology, Water Conservation and a Healthy Rural Economy – Examples from Agriculture

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Introduction

Background

- Theme
 - Technology and water conservation
 - Examples from Agriculture
 - Applicable to water conservation generally
 - Underlying presumption – science as a trustworthy foundation for public policy
- Background
 - Water for 2060 Act, Okla. Stat. Tit. 82 § 1088.11-1088.14 -- public policy of the State
 - Agriculture largest water user – 45% in 2010; projected 40% in 2060



Three Approaches: Water Conservation in Agriculture

- Irrigation Technology
- Crop Selection
- Agronomic Adaptations
- An integrated management approach
- Change in Mindset
 - Productivity per unit of land (yield per acre)
 - Productivity per unit of water (yield per acre feet)
 - Options must be economically viable



Irrigation Technology

- Continued move away from furrow irrigation
- Three options – already used
 - Sprinkler – Low Energy Precision Application (LEPA) – already heavily adopted – 85%+
 - Polytubing –
 - Micro-irrigation – drip irrigation
- Delivery system efficiencies – Reclamation Projects
- Timing – scheduled, reduced irrigation levels



Crop Selection

- Choice of crops to grow
 - Crops requiring less water: e.g. sorghum versus corn
 - Alternate crops suitable to geography
- Crop improvement through genetics
 - Drought-tolerant crops; heat-tolerant crops; enhanced photosynthesis crops; faster maturing crops
 - Both conventional and modern biotechnology breeding



Agronomic Adaptations

- Reduced tillage and cover crops
 - Build organic matter and conserve water
- Big data technologies
 - Water sensors – soil moisture; evaporation rates
 - Drones
 - Smart phone apps – crop maturity stages
- Information for decision-making about the timing and application rate of irrigation
- Integrated management – sophisticated understanding of a complex system



Concluding Observations

- Agricultural Producers – flexible in choices and favorable to adoption of technologies for water conservation
- Governmental policies – favorable to scientific research and diffusion of knowledge about science and technology
- Governmental agencies – favorable to technology and science – avoid creating barriers to innovation in agriculture
- General Public – accepting of technologies and science for agricultural water conservation



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Thank you.
Questions?

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