

Evaluation Of Irrigation Efficiency Strategies For Far West Texas

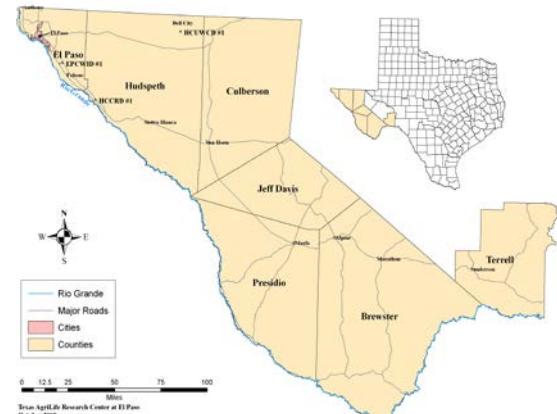
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BACKGROUND

The Texas State Water Plan addresses how each of 16 regions will supply projected water demands for the next 50 years. Water availability in these plans is based on supply conditions experienced during the drought of record, that is, the severe drought conditions in the 1950's. In arid Far West Texas (Region E in the State Plan), agriculture is projected to have the largest unmet demand for water during drought. In the Far West Texas Water Plan, the primary strategy proposed to mitigate the impact of insufficient water supplies for agriculture is implementation of water conservation best management practices. However, the conservation practices identified were generic and gave a wide range of potential water savings compiled from many other sources and for other locations and conditions. The applicability to and actual water savings of the proposed practices in Far West Texas were generally unknown.



Far West Texas Water Planning Region (E)

OBJECTIVES

This research evaluated the applicability, water savings potential, implementation feasibility and cost effectiveness of seventeen irrigated agriculture water conservation practices in Far West Texas during both drought and full water supply conditions. Factors considered in evaluating conservation strategies included water sources, use, water quality, cropping patterns, current irrigation practices, delivery systems, technological alternatives, market conditions and operational constraints. The study examined potential water savings in over 90% of the irrigated agricultural acreage in Far West Texas.



Lined American Canal Extension in El Paso

PROJECT RESULTS AND BENEFITS

- This study found very limited opportunities exist for significant additional water conservation in Far West Texas irrigated agriculture due to various reasons.
- The applicability of most of the strategies is closely related to the water source (surface water or ground water), delivery system (gravity flow or pump/pressurized systems) and water quality. Elevated salinity is a factor in the ability to conserve water in all areas.
- Lining or pipelining district canals provides great potential for water conservation. However the cost for lining canals is too great for agricultural use.
- Additional irrigation scheduling and tail water recovery systems provide very small potential for economic and efficient additional water conservation.
- If all of these strategies were implemented, the total potential water savings during drought and full supply years are estimated to be 32,587 and 76,926 acre-feet, which would satisfy less than 25% of the projected unmet agricultural water demand under drought-of-record conditions.
- Overall, there are no silver bullets for agricultural water conservation in Far West Texas short of taking irrigated land out of production when water supplies are limited. Some of strategies have been incorporated in the regional water plan.



Low pressure linear sprinkler system