



## **USDA-CSREES 2006 National Water Quality Conference**

### **Water Conservation in the Rio Grande Basin through Efficient Reclaimed Water Use**

El Paso with a population of 800,000 and Ciudad Juarez with a population of 1.2 million are rapidly growing communities along the Texas/Mexico border located within the Chihuahuan Desert. Both cities rely primarily on underground aquifers for their drinking water that will be depleted in 25 years for El Paso and less than five years for Juarez. About 80 percent of the Rio Grande water is allocated for irrigated agriculture.

Extending water supplies, whether from the river, aquifer or water treatment plant, is essential for the Rio Grande basin, where rapid population growth, high agricultural irrigation usage, and salinity and quality problems are adding stress on already limited water resources. Discovering safe, beneficial and economically feasible strategies to utilize reclaimed wastewater and salty groundwater will benefit the basin. The long-term goal is to maintain agricultural productivity and urban landscapes with alternative irrigation sources to conserve the region's depletable aquifers.

Texas presently reuses 9 percent of its wastewater. There is potential in Texas to increase water conservation to approach countries such as Israel, which reuses 60 percent of its wastewater. A field study was conducted at Rogelio Sanchez, Texas State Prison in El Paso, TX to examine the economics, safety, and health measures for Texas to increase its use of alternative irrigation sources in compliance with TAC Subchapter 210f graywater systems regulations. The use of prison laundry water and salty groundwater as irrigation sources were assessed with regard to soil salinity management, production of vegetables, and vertical movement of water in sandy soil.

Preliminary results indicate that vegetables responded favorably to surface irrigation with laundry water low in total dissolved salts (TDS), high in phosphates with no indication of viable E. coli. Vegetables fruits were dwarfed using salty groundwater containing nitrates. Salts accumulated on the soil surface regardless of irrigation sources.

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