

Rio Grande Basin Initiative

The Rio Grande Basin is a highly productive agricultural area, with irrigated agriculture claiming more than 85 percent of its water. Population growth and urban water demands in the basin are expected to double in the next 50 years.

The Basin's agricultural crop industry, comprised principally of cotton, grain sorghum, grapefruit, chilies, pecans, citrus, sugarcane and vegetables has an economic impact of more than \$1 billion annually. By investing in improvements in irrigation conveyance systems and efficient on-farm water use, both urban and agricultural interests can benefit from increased water availability and resulting economic enhancements.

The project team is comprised of Texas AgriLife Research scientists, Texas AgriLife Extension Service specialists and agents, and New Mexico State University Experiment Station researchers and Cooperative Extension Service specialists and agents. They are working with local irrigation districts, agricultural producers, homeowners and other agencies to address water issues through the federally funded Rio Grande Basin Initiative. The initiative focuses on increasing available water through efficient irrigation and water conservation.

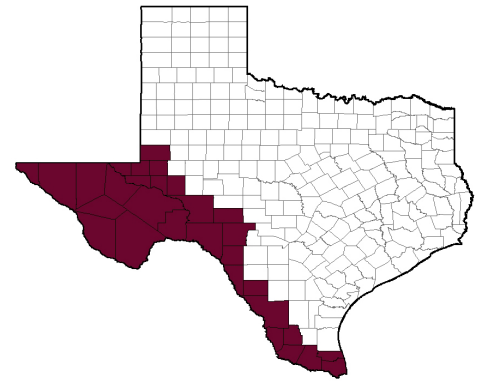
Objectives

- Meet present and future water demand through conservation measures
- Expand efficient use of available water resources by improving water conveyance canals and implementing more efficient irrigation systems
- Broaden outreach and teaching programs on how to efficiently utilize water resources to agricultural producers and urban water users
- Expand extension outreach and teaching programs on how to efficiently utilize water and apply water-conserving practices

Components

- **Irrigation District Studies:** Conduct economic and engineering evaluations of irrigation district infrastructure needs and develop data and strategies for efficiently delivering water to facilitate infrastructure improvement projects
- **Irrigation Education and Training:** Develop and deliver on-farm demonstrations and trainings for growers, county agents
- **Institutional Incentives for Efficient Water Use:** Identify legal and institutional barriers that keep irrigation districts and growers from investing in or creating incentives for water conservation and develop better irrigation district management plans
- **On-Farm Irrigation System Management:** Deliver tools that improve on-farm irrigation scheduling, maximize efficient water use and use the most effective irrigation systems
- **Urban Water Conservation:** Develop strategies for increased landscape water conservation and reuse of municipal effluent and provide education for improved in-home water usage

- **Environment, Ecology and Water Quality Protection:** Deliver methods for riparian and aquatic weed control and demonstrate efficient irrigation of crops and crop water use in fields
- **Saline and Wastewater Management and Water Reuse:** Support the appropriate use of saline and reclaimed water resources to irrigate urban landscapes and agricultural crops
- **Basinwide Hydrology, Salinity Modeling and Technology:** Continue limited modeling efforts in support of on-farm systems and for groundwater-surface water interactions



Accomplishments

- Approximately 100 to 400 acre-feet of water can be saved annually by lining one mile of canal.
- An aggressive 100 percent effectiveness of the biological control agents against *Arundo donax* (giant cane) is also assumed. Current estimates of the value of potential water savings are confined to the Rio Grande riparian area in which 2007 acreage is estimated to be 60,000.
- Vegetable production with plastic mulch and subsurface drip irrigation accounts for more than 90 percent of all melon production in the Rio Grande Valley and this system can reduce irrigation requirements by more than 40 percent compared to furrow irrigation.
- Seepage and other on-farm water conveyance losses range from 10 percent to 30 percent, which could be eliminated with wide use of polypipe or grated pipe.
- Unimproved delivery canals and conveyance systems often result in significant losses of water, which may reach as much as 60 percent of the total flow in the system.
- Conservation tillage can reduce irrigation requirements initially by 5 percent to 10 percent when compared to conventional tillage and by more over time as soil physical properties are improved.
- If microjet or drip irrigation practices were implemented for every acre of citrus crops in the Lower Rio Grande Valley, somewhere between 28,000-38,000 acre-feet of water would be saved annually.

Collaborators

- Texas Water Resources Institute, Texas A&M AgriLife
- Texas AgriLife Research
- Texas AgriLife Extension Service
- New Mexico Cooperative Extension Service
- New Mexico Agricultural Experiment Station
- NMSU Water Task Force
- USDA Natural Resources Conservation Service
- U.S. Bureau of Reclamation
- U.S. Geological Survey
- Texas Department of Agriculture
- Texas Water Development Board
- North American Development Bank
- Border Environmental Conservation Commission
- International Boundary and Water Commission
- Lower Rio Grande Development Council
- Commodity Organizations
- Irrigation Districts
- Regional Water Planning Groups
- Selected Consultants

Funding Agency

- USDA Cooperative State Research, Education and Extension Service