

Rio Grande Basin Initiative

OUTCOMES

Irrigation district maps available

Cooperative Extension charts water distribution networks

Rehabilitation for outdated and leaky irrigation canals and ditches in the Lower Rio Grande Valley just got a little easier with the release of maps from Geographic Information System (GIS) databases by Texas Cooperative Extension.

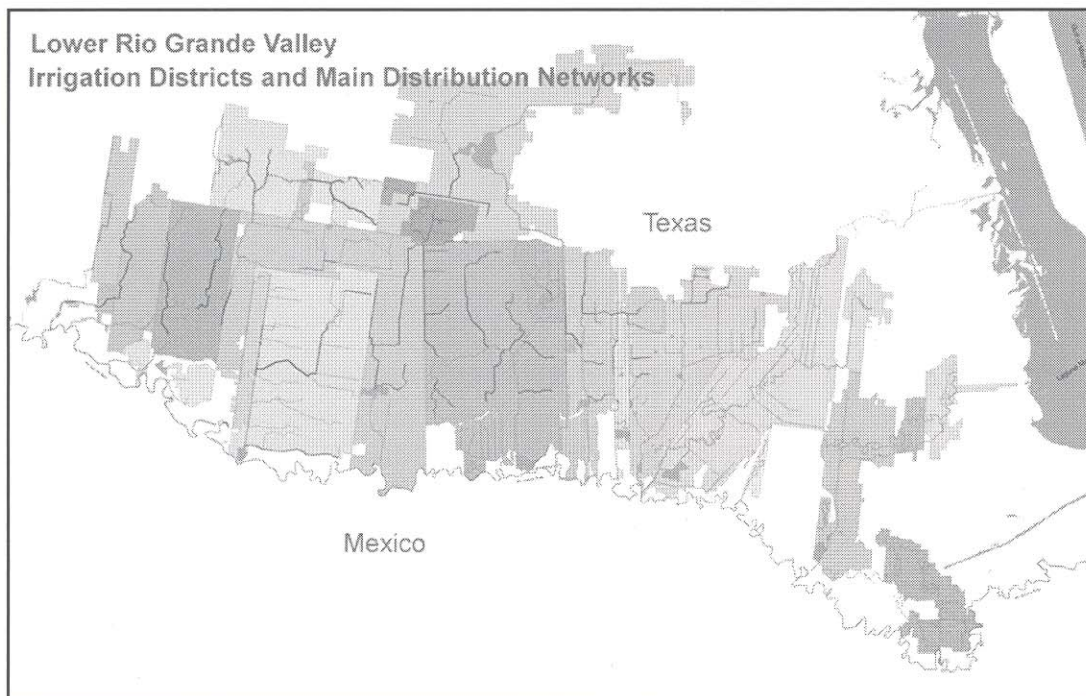
"These are very attractive maps, suitable for framing based on very detailed GIS databases and include the entire water distribution networks, where canals and pipelines are, the current conditions, lining materials, widths, depths, or the diameter of pipelines," said Guy Fipps, Extension agricultural engineer.

"It is one of the main, most important things we have to do before rehabilitation planning begins at the district and regional levels," he said. GIS databases can also be used for creating maps for daily operations and maintenance of districts, solving boundary disputes, and projecting water use patterns, as well as redesigning canals and pipelines needed because of continuing city growth.

Funding for this work is supported in part by the Rio Grande Basin Initiative. The critical nature of the water supply situation and demand from urban and

*See **Maps** on page 4*

Maps are available from the Texas Cooperative Extension Bookstore at <http://tcebookstore.org>



Conveying project outcomes

Project administrator: Communication process is critical

More than 100 project participants met at the Texas A&M Agricultural Research and Extension Center in Weslaco, Texas, for the second annual Rio Grande Basin Initiative Conference.

The three-day conference brought irrigation district managers, commodity group leaders and agency representatives together with researchers and specialists from the Texas A&M University System Agriculture Program and the New Mexico State University College of Agriculture and Home Economics.

B.L. Harris, administrator of the Rio Grande Basin Initiative and associate director of the Texas Water Resources Institute, said the conference succeeded in strengthening collaboration and providing opportunities for linkage

across units and with other agencies.

"The communication process that takes place at the annual conference is critical," he said.

"Water-thirsty saltcedar trees along the Pecos River use as much as 7.7 acre-feet of water per acre per year, or 2.5 million gallons. That's a huge impact statement for us."

Outcomes and accountability of initiative efforts needed to be communicated effectively in order to continue water conservation research and education, Harris said. He pointed out that a team of

Attendees toured Cameron County Irrigation District No. 2, headquartered in San Benito, as part of the field tour at the Rio Grande Basin Initiative Conference.



engineers and economists with the Rio Grande Basin Initiative had documented astounding amounts of water that could be saved by renovating infrastructure of aging irrigation districts in the Lower Rio Grande Valley.

“One analysis documented an expected water savings of 10,508 acre-feet, or 3.4 billion gallons, from the proposed renovation projects in Harlingen Irrigation District Cameron County No. 1,” he said.

“That’s more than 20 percent of the water used annually for agriculture in the district. This is the kind of information and strategies we’re developing that we need to let the public and elected officials know about.”

He went on to point out other scientific studies in the initiative showing farmers could save 25 percent of irrigation water simply by knowing and monitoring their crops’ water requirements and irrigating accordingly.

“Here’s another one,” Harris said. “Water-thirsty saltcedar trees along the Pecos River use as much as 7.7 acre-feet of

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water per acre per year, or 2.5 million gallons. That’s a huge impact statement for us. That tells us that as we put money into saltcedar control, we can save huge amounts of water. It’s important for us to release this type of outcome data that’s based on good, solid, scientific reference



points.”

In opening statements, Ed Hiler, vice chancellor and dean of the Texas A&M University College of Agriculture and Life Sciences and director of the Texas Agricultural Experiment Station, said conservation of urban and agricultural irrigation water is key to sustaining social, economic and environmental development in the Rio Grande Basin of Texas and New Mexico.

Now in its third year, the Rio Grande Basin Initiative has gained momentum and almost daily acquires new colleagues from various agencies and entities already working on related water issues, according to Craig Runyan, director of the New Mexico portion of the Rio Grande Basin Initiative and water quality coordinator with New Mexico Cooperative Extension.

“We’ve got to keep up the momentum,” he said. “Keep up the progress and there’s perhaps no end to what we can do to help achieve real water conservation, particularly in the agricultural area.”

Enrique Weir and Karine Gil of the Texas A&M University Department of Wildlife and Fisheries Sciences share results of their research on rare, threatened and endangered species in the Rio Grande Basin with USDA-CSREES National Program Supervisor Brad Rein.

Drought Watch for Rio Grande

El Paso AREC releases bi-weekly report on water conditions

Texas A&M University, in collaboration with the U.S. Bureau of Reclamation, has begun *Drought Watch*, a bi-weekly summation of Rio Grande River water supply conditions. Funding for the report is also provided in part through the Rio Grande Basin Initiative.

The report is being sent by e-mail to the media, irrigation districts, producers, legislators, environmental groups and concerned citizens. Interested people can sign up for the newsletter by contacting Ari Michelsen, resident director of the Texas A&M Agricultural Research and Extension Center in El Paso, at a-michelsen@tamu.edu.

According to Michelsen, *Drought Watch* developed because of "the need for better community understanding of our region's surface water supply conditions

and the severity of this river drought."

Several organizations, including the Bureau of Reclamation and the Texas Agricultural Experiment Station, have contributed to the report. It gives current information on snow pack, streamflow forecasts, reservoir levels and actual water allocations produced by several organizations, Michelsen said.

"This is part of our effort to provide this information in a more user-friendly format," he added.

The 1,900-mile-long Rio Grande originates in Colorado and supports 5 million people in that state, New Mexico, Texas and Mexico, he said. Agriculture accounts for up to 90 percent of the water withdrawal from the river, and it is the only source of surface water for much of the region.

Maps

Continued from page 1

industrial growth prompted the beginning of the project in 1996.

Irrigation districts use on average 1 million acre-feet of water each year, he said. An acre-foot is the amount of water it would take to cover an acre of land one foot deep with water. It is estimated that about 220,000 acre-feet—which is otherwise lost to leaky canal and pipeline systems in irrigation districts along the Valley—could be recovered by improvements, he said.

This amount of water is about equal to what cities are currently using and would be enough to meet their expected demand in the year 2050, Fipps said.

A few of the Lower Rio Grande Valley's 29 official water districts have GIS technicians on their staffs to generate

this type of information, but most do not, Fipps said.

The last official map of the districts was

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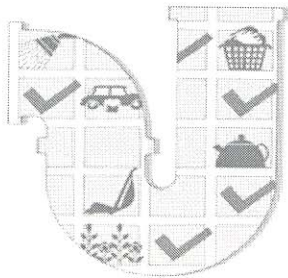
produced in the 1950s and is tremendously outdated, he explained. In 2000, Cooperative Extension generated other maps of the districts, but these did not have the detail of the maps that were recently made available, he said.

Every drop counts

Home water conservation resources available

A new water conservation booklet featuring tips for decreasing water use in the home is available from Janie Harris, housing specialist with Texas Cooperative Extension.

Water Conservation Checklist for the Home is designed to make homeowners more aware of their water use habits. According to the booklet, water use ranges from 66 to 118 gallons per person per day, with urban households using larger amounts.



Included is a multi-page checklist for activities that use a large amount of water in the home, such as plumbing leaks, laundry, personal care, food preparation, dishwashing, meal service, household cleaning, houseplants and landscaping. Also available in poster or handout format is *Top 5 Water Saving Tips*. Tips include fixing leaks, replacing old showerheads and toilets,

purchasing a water-saving washer, changing behaviors, and reducing water use in landscapes. All resources are made available to counties in the Rio Grande Basin through the Rio Grande Basin Initiative.

<http://fcs.tamu.edu>

Rio Grande Basin bibliography focuses on endangered species

The Chihuahuan Desert of New Mexico, Texas and Mexico ranks as the world's most biologically diverse desert ecoregion, supporting a species richness of more than 100 mammals, 250 birds, 100 reptiles and 20 amphibians.

Accordingly, a bibliography of endangered species has been created through the Rio Grande Basin Initiative to help minimize human impacts from water diversion, changing land use, urbanization and the introduction of nonnative species.

Rio Grande/ Rio Bravo Basin: A Bibliography is designed to evaluate the trends associated with the endangerment of species in the area by pinpointing and exploring the causes. Such information can be used in planning irrigation district and other infrastructure renovations in the Lower



Rio Grande Valley and to develop guidelines that minimize adverse impacts.

The bibliography, released through the Texas Water Resources Institute, the Department of Wildlife and Fisheries Sciences, Land Information Systems, and Texas Cooperative Extension, is available in CD format.

<http://landinfo.tamu.edu>

Ward County to host water use series

Texas Cooperative Extension will host a home water use series in Ward County beginning mid-August. Pascual Hernandez, Extension agent in Ward County, said the series will provide an opportunity to learn about home water use, salinity management, irrigation techniques and current water research. He said sources of irrigation water in Ward County are high in salt content and are often unreliable.

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"We're trying to enhance water education in our programming," Hernandez said. "We want to feature what our residents are doing to conserve water or maintain quality, whether it is with farming, gardening, livestock or even in the home."

The weekly series will be held at the Ward County annex and will continue through mid-October. Call Hernandez at 432-943-4112 for more information.

Saltcedar publication available from TCE

A publication explaining the biology, impacts and control strategies of saltcedar is now available from Texas Cooperative Extension.

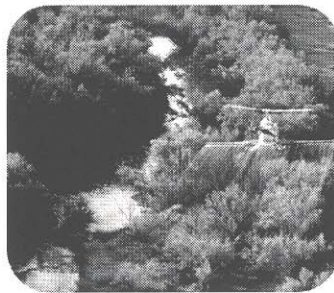
"More than 500,000 acres in Texas are infested with saltcedar, a small tree that poses major problems along rivers in the western half of the state," explained Extension Range Specialist Charles R. Hart in his publication, *Saltcedar: Biology and Management*.

Saltcedar was first used in the U.S. in the early 1900s as a means of erosion control along riverbanks. As dams and controlled river flows were constructed on rivers, saltcedar began to spread more rapidly.

"Saltcedar reduces the diversity of plant and animal life, uses tremendous amounts of water, causes flooding and fire hazards, and has choked out native vegetation," Hart said.

The publication, supported by the Rio Grande Basin Initiative, describes mechanical, biological and chemical control strategies.

<http://tcebookstore.org>



Report describes evolution of irrigation districts in LRGV

A new technical report, *Evolution of Irrigation Districts and Operating Institutions: Texas, Lower Rio Grande Valley*, is now available from the Texas Water Resources Institute. It discusses how the history of settlement and development shaped

current water rights and laws, how the waters of the Rio Grande are divided between the U.S. and Mexico, and how the U.S. and Texas manage their portions. Additionally, the report overviews the 1944



International Water Treaty, and management of Amistad and Falcon international reservoirs by the International Boundary and Water Commission. The overview provides insight on the current set of water allocations, rules and regulations, and some discussion of evolving institutions.

Authors are Megan Stubbs, Edward Rister, Ronald Lacewell, John Ellis, Allen Sturdivant, John Robinson and Linda Fernandez.

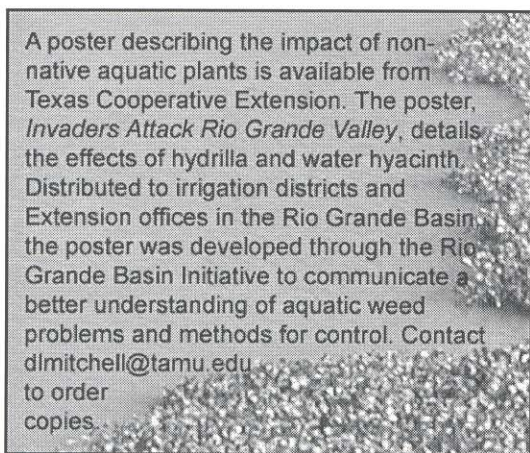
<http://twri.tamu.edu>

Carp stocked for hydrilla control

Aquatic weeds reduce water flow in river, irrigation canals

They clog canals and pumping stations, they reduce water flow, and they increase water evaporation 4- to 5-fold.

Many irrigation canals and other waterways in the Rio Grande Valley are infested with aquatic weeds—namely hydrilla and water hyacinth. In May, specialists with Texas Cooperative Extension initiated a demonstration in Hidalgo County Irrigation District No. 1 that utilizes grass carp for control of hydrilla.



A poster describing the impact of non-native aquatic plants is available from Texas Cooperative Extension. The poster, *Invaders Attack Rio Grande Valley*, details the effects of hydrilla and water hyacinth. Distributed to irrigation districts and Extension offices in the Rio Grande Basin, the poster was developed through the Rio Grande Basin Initiative to communicate a better understanding of aquatic weed problems and methods for control. Contact dmitchell@tamu.edu to order copies.

This demonstration, funded in part through the Rio Grande Basin Initiative, extends work already being conducted by Cooperative Extension and others to control aquatic weeds in Brownsville and Rancho Viejo. The office for Hidalgo County Irrigation District No. 1 is in Edinburg, Texas.

“Hydrilla and water hyacinth are nonnative,” said Extension Fisheries Specialist Michael Masser, who is leading the demonstration. “When they were brought to the United States, they were brought without diseases or natural enemies. As a result, they have infested many natural waters in the U.S., including the Rio Grande Valley.”

In irrigation canals and mains, water hyacinth and hydrilla combine to form living dams, requiring that more water be pumped and wasted to break through the weeds. Masser said the introduction of grass carp to control hydrilla is ideal for irrigation districts, which severely limit the use of pesticides in irrigation water.

Named for their unique ability to consume aquatic plants, grass carp prefer submersed plants like hydrilla. The carp are sterile, eliminating the risk of overpopulation in the canals.

Masser said the Extension team recommended stocking 5,500 grass carp in May—a rate of 40 per vegetated acre.

“This is a high stocking rate,” he said. “We wanted to provide immediate control of the problem in Edinberg, where they had to pump more water than was actually needed in order to break through the weeds.”

The district had already spent more than \$100,000 in mechanical control, using a track hoe to mechanically clear the weeds. Masser said grass carp provide a more economical and longer-lasting solution.

Water hyacinth and hydrilla combine to form living dams, requiring that more water be pumped and wasted to break through the weeds.

Masser and his team recorded 139 surface acres of hydrilla in Hidalgo County Irrigation District No. 1 when they initially stocked the carp. They will monitor the vegetation cover and growth of the grass carp over time to evaluate their effectiveness.



Increasing Irrigation Efficiency in the Rio Grande Basin through Research and Education

Through Extension and research efforts, the Texas A&M University System Agriculture Program and the New Mexico State University College of Agriculture and Home Economics are implementing strategies for meeting present and future water demand in the Rio Grande Basin. These strategies expand the efficient use of available water and create new water supplies. This federally funded initiative is administered by the Texas Water Resources Institute and the New Mexico State University Water Task Force.

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