

OUTCOMES

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Landscaping for water conservation, El Paso, Texas



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Helping the Community

El Paso project educates residents and youth on water issues

by
Danielle Supercinski

The Upper Rio Grande Water Conservation Corps project in El Paso completed its first year of service providing water conservation and water quality education to more than 12,000 homeowners, farmers and youth.

Funded by AmeriCorps, a network of local, state and national service programs, the project had 17 members in 2006-2007 who each devoted 1,700 hours for full-time involvement or 900 hours for part-time involvement. For year one, these volunteers contributed 22,277 hours to the program.

"This project has not only made a difference in the lives of our community residents, but also on the members themselves, who are learning valuable job skills," said Daphne Richards, the project manager and El Paso County Extension agent – horticulture.

Through this project's educational programs, residents have received and used information on conserving water, dealing with water quality (salinity) issues and safely using of pesticides and fertilizers on farms, in landscapes, on sports and athletic fields and in parks. Additional information regarding well water testing for contaminants was also used.

The Upper Rio Grande project team has three focus areas: agriculture-, community- and youth-based water education programs. Each team completed many water-related projects during the first year (see the sidebar for more information on a few selected projects). The agriculture team worked with farmers and local agricultural-related programs, while the community-based team was involved in horticulture, landscapes, sports fields, parks, pesticide-use safety and in-home demonstrations and education. In addition, the youth-based teams worked on programs that will increase knowledge and skills in water, change behaviors associated with water conservation and quality and support 4-H-based water curricula delivery in schools.

"The members are also learning about leadership, conflict resolution, problem solving and other important life skills," Richards said. "They are learning to become future leaders of their communities."

Youth in the community benefit from these projects as well. County Extension agent 4-H leader Jimmy Rodgers conducts several projects focused on youth.



(Left) AmeriCorps members creating and putting together the mosaic before it was installed. The members of the horticulture team were the leaders on the creation of the mural. (Right) The horticulture team members are standing by the installed mosaic mural at a park in the city of Socorro, New Mexico.



AmeriCorps members planted trees in a Socorro city park. They also had a community clean-up at the park that same day.



Members teach the local youth about recycling at the El Paso Solar Energy Association annual picnic.

Some of those projects include after-school programs, camps, youth education programs, educational exhibits and hands-on training. Additional information on these activities is in the sidebar as well. The horticulture team also worked with youth, cooperating on many activities with the 4-H team across project lines. In addition, the horticulture team participated in Habitat for Humanity activities and beautification projects.

More than 11,500 youth and homeowners were contacted through water education, recycling programs held at after-school events, summer camp programs, in-school programs and other special educational events. Agricultural literacy with water environmental topics and service programs were also conducted as part of additional training and educational programs.

Agricultural producers benefit from various workshops and demonstrations hosted by AmeriCorps members with topics such as irrigation efficiency, pecan fertilization, pesticide laws and regulations, weed control, water savings and pest management. From December 2006 through August 2007, more than 1,022 farmers were contacted through these events.

Of the 17 year-one AmeriCorps members of the Upper Rio Grande Water Conservation Corps project, eight members are returning for year two. The three-year grant is scheduled to end on August 31, 2009.

After this, a new grant would need to be submitted in order to continue. Project partners include AmeriCorps, the OneStar Foundation and Texas Cooperative Extension.

In addition, Dr. Ray Bader, El Paso County Extension director, said the Rio Grande Basin Initiative (RGI) has also played a part in this program by enhancing programming efforts of all agents involved in RGI with volunteers doing educational programs addressing the same water issues.

“AmeriCorps is an excellent program from which all involved and served greatly benefit,” said B.L. Harris, Texas Water Resources Institute associate director and an early pioneer of the AmeriCorps program. “The people of El Paso receive excellent education programs delivered by enthusiastic and inspiring young professionals.”

The AmeriCorps members are volunteers, but receive a monthly living stipend for their time; in return, Texas Cooperative Extension gets firsthand experience with super potential future employees, Harris said.

“We are looking forward to making a difference in even more people’s lives in year two,” Richards said. “And (we hope) that many of our current AmeriCorps members will choose to work for Extension once they have completed their degrees.”

*For Project Sidebar
See **AmeriCorps Projects** on page 6*

Urban Plant Stress Tolerance

Researchers collaborate and work to educate consumers

by
Danielle Supercinski

Drought tolerance, salinity tolerance and reduced plant water use are goals of two Rio Grande Basin Initiative (RGBI) researchers working to deliver better information to the public on attractive and stress-tolerant ornamental plants.

“Information on ornamentals that are both attractive and stress-tolerant can be used by nursery and landscape professionals to educate customers and will eventually lead to more beautified, colorful landscapes and gardens,” said Dr. Genhua Niu, Texas Agricultural Experiment Station researcher and assistant professor.

Current research by Niu, at the El Paso Agricultural Research and Extension Center, and Dr. Raul Cabrera, at the Dallas Agricultural Research and Extension Center, also focuses on educating consumers on proper plant selection and how to grow and manage plants on specific sites. They said these are the most important considerations when dealing with stressful water/soil/climatic conditions and municipal ordinances and restrictions.

Niu’s current research is to identify drought-, salinity- and heat-tolerant ornamental plants for

urban landscapes; determine minimum water use; and improve irrigation efficiency.

“My work is focused on urban landscape water conservation, particularly for the El Paso region,” Niu said. “El Paso has much lower rainfall than other areas in the state and drought is a constant problem. Even this year when most parts of Texas got large amounts of rainfall, far West Texas did not receive any additional (rain) to help the drought conditions.”

With the lack of natural rainfall, decreasing water supplies and poor water quality, it is sometimes necessary to find alternate sources of water. According to the El Paso Water Utilities Web site, in 2005, 21 percent of the total municipal reclaimed water was used for irrigation. The remaining 79 percent was used by industry, in-plant use, recharge to aquifer, infiltration projects, grazing and construction. Salinity of well water is rather high because the groundwater is brackish and salts accumulate in the soil. Therefore, the region needs information on salt-tolerant plants and management of soil salinity, which Niu plans to address in future projects.

At the Dallas Center, Cabrera, a doctoral student and a visiting scientist are investigating salinity tolerance and management in roses (greenhouse and garden), crape myrtles, azaleas and other woody plants, as well as studying nutrient uptake, fertilization and physiological disorders in these and other woody ornamentals. Over the last decade, Cabrera’s research has focused on water and fertilization-related issues in nursery, greenhouse and landscape plants. In particular, he has concentrated on use and management of poor water quality and recycling/reuse of effluents in commercial nurseries and greenhouses, he said.

“While we have not worked in many ornamental plant genera, our efforts have been concentrated in some of the most widely-grown and thus economically important plants,” Cabrera said. “We have identified rootstocks and cultivars that are more tolerant to salt stress and soon we will disseminate results and information on some fertilization and



A salinity tolerance study was conducted where plants were irrigated with solutions having different salinity levels.



A drought tolerance study conducted where plants were irrigated with different amounts of water.

irrigation management strategies to cope with the use of poor/marginal irrigation water quality in landscape plants.”

These water quality issues as well as the plants Cabrera has worked on are all relevant to the Rio Grande Basin.

“In my opinion, water quality and quantity problems are here to stay permanently, not only in the Rio Grande Basin, but throughout all urban landscapes in Texas and the southwestern United States,” Cabrera said. “Therefore, learning how to live with them and manage them effectively are the only viable solutions. Our research efforts are targeted to contribute to the identification and validation of some of these solutions.”

Aside from their individual projects, Niu and Cabrera are collaborating on research on water use of a number of ornamental shrubs.

“We are currently working on a multi-year project to determine water use and crop coefficients of selected landscape plants,” Cabrera said. “This year, we are working on woody ornamental shrubs and next year we plan to work on trees.”

In past years, Niu and Cabrera have worked on determining water use and crop coefficients of several ornamental shrubs grown in two systems: containers and lysimeters. They said preliminary results have shown that water use and crop coefficients are primarily influenced by climate and plant biomass, although growth is also influenced by the production system and the species.

“The water use of container-grown plants can be used to predict or estimate the water use of the same species that are grown in a landscape situation,” Cabrera said. “Determination (or estimation) of water uses in landscape-established plants has been a major obstacle in the development of sound irrigation management practices, whereas water use of container-grown plants is easily determined gravimetrically (by weighing).”

More research is needed to estimate plant water use and better control irrigation, Cabrera said.

Previous years’ collaborative research results are published in the Texas Nursery and Landscape Association’s *Green* magazine. Results have also been presented at the Southern Nursery Association’s conference, a regional nursery-landscape research conference.

Niu and Cabrera agree that collaboration is important when conducting research.

“Collaboration is synergistic, complementary and supportive,” Niu said. “The two locations have different climates; El Paso is hot and dry whereas Dallas is hot and humid. Plant water use is especially affected by climate. Therefore, we can broaden and strengthen our research results through collaboration.”



These plants are among the heaviest water users per unit area and tend to be fairly sensitive to poor-quality irrigation waters. Research efforts focus on identification of practices that will allow for use of saline and poor-quality irrigation waters.

Photos courtesy of Drs. Genhua Niu and Raul Cabrera

AmeriCorps Projects

continued from page 3

Agriculture-based Team:

- Installed weather stations in El Paso County
- Assisted with six water quality- and conservation-related on-farm agricultural programs
- Contacted farmers about well water testing, proper fertilization practices and soil-moisture monitoring in pecan orchards
- Prepared El Paso County Extension Office landscape for a community vegetable garden (to be completed in year two)
- Helped establish 11 CoCoRaHS, Community Collaborative Rain, Hail and Snow Network, sites on local farms
- Helped farmers learn about weed control and its connection to water savings in crops

Community-based Team:

- Assisted with establishing three Habitat for Humanity landscapes
- Assisted in maintaining two xeriscape demonstration gardens
- Planted 25 trees and built a mosaic dedication statue in a local park in the city of Socorro, NM
- Organized five community clean-ups
- Set up education booths at community events on various water-related topics
- Began a project to install a water conservation landscape at the home of a little girl who is battling leukemia
- Worked on the Sports Athletic Field Education (SAFE) program
- Distributed pesticide education pamphlets at various events and local nurseries

Youth-based Team:

- Water education activities in after school programs at various Parks & Recreation Centers
- 4-H club-based programs that promote water projects and activities
- In-school water curricula delivered at various elementary schools
- Educational exhibits/demonstrations at Water-Fest, Recycles Day and environmental fairs
- Participated in local canned-food drive

AmeriCorps photos courtesy of Daphne Richards

NMSU Stewardship Program

Local students participate in enrichment opportunity

by

Leeann DeMouche

The Earth Science and Land Stewardship Academy sponsored by New Mexico State University Physical Science Laboratory (PSL) and the Suborbital Center of Excellence (SCE), which is funded by NASA's 21st Century Aerospace program, graduated 20 elementary school students this summer in their week long stewardship program.

Part of the steward program included project investigator Dr. Jill Schroeder's RGBI invasive weed program. During the week-long academy, students visited NMSU's weed research farm, which provided hands-on activities to help them learn about different soils, water and how weeds grow and the problems they cause for local agriculture. Schroeder's RGBI weed project focuses on how to manage vegetation more effectively and sustainably with the goal of saving water, maintaining water quality and reducing the spread of weeds along irrigation canals.

The academy program finished up the week helping students expand their knowledge of New Mexico and the importance of land stewardship. All students who attended the academy had the opportunity to see, touch and investigate what makes New Mexico a unique place.



Dr. Jill Schroeder with some of the stewardship program elementary students behind the RGBI poster from the weed science lab.

Outstanding Programs and Leadership

Torres' efforts lead to receipt of county-based water programming award

by
Craig Runyan



In recognition of his outstanding programs and leadership, Patrick Torres, County Extension director and Agriculture Agent in Santa Fe County, New Mexico, has been presented the 2007 *County-Based Water Programming Award* by the Southern Regional Water Program.

Santa Fe County Extension water programs demonstrate the effectiveness that local programs can have for a community, when planned proactively. Over the past few years, irrigation efficiency and conservation programs implemented as part of Santa Fe County's

Rio Grande Basin Initiative (RGBI) efforts played an important role in helping the city and county to address critical public education needs in the drought stricken area.

Patrick's programs include xeric landscaping, small farm irrigation, turf management and water reuse to name a few. As co-principal investigator on a grant with Christina Turner, Santa Fe 4-H agriculture agent, Torres recently received a \$15,000 grant for development of youth water education materials.

The Southern Region Water Program is administered by the 13 state Land Grant Universities of the U.S. Environmental Protection Agency Regions 4 and 6. With more than 1,700 counties in the regional project, the award is a distinction of county Extension programs.

Faces of RGBI

Engineering team saves water

by
Danielle Supercinski

Engineers have a vital role in RGBI through their work to rehabilitate irrigation district infrastructure, provide irrigation workshops, develop tools for efficient water use, and conduct tests and surveys.

RGBI engineers include: Dr. Guy Fipps, Eric Leigh, Askarali Karimov, Kendall Chilek, Jin Ye and Joe Forrest with Texas Cooperative Extension at College Station and Weslaco, and Dr. Zhuping Sheng, Dr. Yi Liu, Mohammad Jaber, Walter Soto-Ruiz, Laura Castaneda, Estrella Herrera and Marisela Barcenas with Texas Agricultural Experiment Station at El Paso. The majority of the engineers' efforts focus on Tasks 1, 2 and 3 – irrigation district studies, irrigation education and training and institutional incentives for efficient water use. Their efforts and accomplishments can be found at <http://riogrande.tamu.edu> under Featured Articles.

These engineers collaborate with each other to make their RGBI efforts as beneficial as possible to irrigation districts, irrigation dealers, consultants, producers and everyone in the Rio Grande Basin. Thank you, engineers, for all of your efforts!



Guy Fipps

Eric Leigh

Kendall
Chilek

Askarali
Karimov

Jin Ye

Zhuping
Sheng

Yi Liu

Mohammad
Jaber

Walter
Soto-Ruiz

Laura
Castaneda

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

Through Extension and research efforts, the Texas Agricultural Experiment Station and Texas Cooperative Extension and counterparts at New Mexico State University are implementing strategies for meeting present and future water demands 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 with funds from the Cooperative State Research, Education and Extension Service.



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