

OUTCOMES

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Controlling Water-Thirsty Saltcedar

Biological methods using imported leaf beetles are a hot topic

by
Danielle Supercinski

Along the Rio Grande and Pecos River in Texas, saltcedar control methods vary from chemical to mechanical control. Biological control using leaf beetles, *Diorhabda elongata*, is a hot topic throughout these regions and other areas throughout Texas and the United States.

Dr. Mark Muegge, associate professor and Texas Cooperative Extension entomologist at Fort Stockton, has begun preliminary studies using leaf beetles imported from Central Asia and the Mediterranean area as a biological control for saltcedar at specific locations along the Pecos River ecosystem in Texas.

"Both adults and the immature stage, or larva, feed on the leaves and tender bark of saltcedar trees, and if beetle populations are high enough, they can completely defoliate a tree," Muegge said. "Although the saltcedar tree will refoliate, this requires the tree to use the stored energy it has in its roots. Repeated defoliation by the beetles eventually causes stunting, death of limbs and finally tree death."

Death of a saltcedar tree requires two or more years of defoliation by the beetles depending on the size and health of the tree, he said. There is very little risk of these beetles feeding on native plants because it has also been found that the beetle has no alternate source of food than saltcedar, except for another closely related species used as a shade tree in Mexico.

The preliminary studies Muegge is conducting will demonstrate the effectiveness of this method.

Biological control is a less expensive and more natural method to rid streams and lakes of this water-thirsty invader than current chemical and mechanical control

methods. Using the leaf beetles provides a new method that may be used alone or in combination with chemical and/or mechanical treatments.

"Biological control of saltcedar is not a replacement for other control methods such as chemical and mechanical control, but an additional tool that will aid in our efforts to control saltcedar," Muegge said.

Muegge's study is a pilot project as part of the Rio Grande Basin Initiative (RGBI). Other scientists throughout the state are working on similar biological control studies as well.

Dr. Jerry Michels, entomologist at the Agricultural Research and Extension Center at Amarillo, is working on biological control of saltcedar farther north at Lake Meredith on the Canadian River. Dr. Allen Knutson, Extension and research entomologist at Dallas, and Dr. Jack DeLoach, entomologist with the USDA-Agricultural Research Service at Temple, have successfully established field nursery sites for rearing saltcedar beetles in the Upper Colorado River watershed, near Big Spring.

A more detailed description of these projects can be found in Texas Water Resources Institute's Summer 2006 "tx H₂O" newsletter Vol. 2, No. 2, available at <http://twri.tamu.edu/newsletters.php>. For more general information on biological control of saltcedar, visit <http://tcebookstore.org/pubinfo.cfm?pubid=1854> to view the Texas Cooperative Extension brochure.

As part of RGBI efforts, Texas Water Resources

Institute and other partners throughout both New Mexico and Texas are seeking additional federal support to expand this program.



A sustainable approach to suppress saltcedar infestations is using natural enemies - the Crete diorhabda leaf beetle. They start out as larva (left) and mature into an adult (right). Photos courtesy of Mark Muegge.

Cutting Turf Irrigation

Workshops help homeowners keep lawns green with little water

by

Kevin Robinson-Avila

Homeowners learned how to maintain lush green lawns despite drought at two free workshops held in Santa Fe and Albuquerque. Specialists with New Mexico State University's Cooperative Extension Service taught participants how to install subsurface drip systems, choose low-water-use grasses, and cut irrigation time to a minimum by watering only when grass needs moisture and when weather permits, said Bernhard Leinauer, Extension turfgrass specialist.

"If homeowners learn to irrigate efficiently and plant proper grasses, they can save substantial amounts of water without converting their landscapes into rock gardens," Leinauer said. "At these workshops, we taught people how to maintain grass despite drought."

Research shows that even when homeowners replace grass with xeric plants, they don't always save water because many still irrigate inefficiently, Leinauer said. In San Antonio, Texas, for example, municipal authorities surveyed homes in 2003 to determine how much water was saved after years of encouraging people to switch to xeric landscapes. The survey showed only 25 percent of homeowners saved water, about 50 percent used the same amount as before, and 25 percent actually used more water than when they had grass, Leinauer said.

"There was a zero sum gain in water savings," Leinauer said. "People didn't know how much water their turf needed in the first place so they over watered, and they continued to over water even after planting xeric plants."

To address the problem, Extension specialists now emphasize irrigation efficiency as an alternative for homeowners who want grass, Leinauer said.

"We need to revisit our approach to conserving water," he said. "There's been a big push in Albuquerque and Santa Fe to replace traditional backyard turf with xeric plants, but many homeowners would do just as well by keeping their grass and instead learning to irrigate with less water."

To do that, people need to adopt new technology

and watering techniques, said Joran Viers, horticulture agent with the Bernalillo County Extension office.

"By using drip irrigation and learning to water only as much as the grass actually needs, people can still have nice green lawns," Viers said. "We want to teach homeowners to apply these techniques."

Subsurface drip systems use about 30 percent less water than sprinklers, said Leinauer, who showed how to install drip irrigation step-by-step. He taught participants to access NMSU's online weather station to schedule irrigation when there is no rain and little wind. He also discussed low-water-use turf to encourage homeowners to select varieties that are better adapted to dry climates, such as Bermuda and buffalo grasses. The workshop included visits to residences with sprinkler systems for hands-on demonstrations on how to reduce water use even without drip irrigation.

Leinauer's research and these workshops are part of his efforts under the Rio Grande Basin Initiative.



Bernhard Leinauer, turfgrass specialist with NMSU's Cooperative Extension Service, examines grass plots at NMSU's Fabian Garcia Research Center in Las Cruces where he is measuring the water requirements of different turf varieties. Photo courtesy of J. Victor Espinoza.

Special Section

Highlighting Texas and New Mexico county program administrators

by
Danielle Supercinski

Texas Cooperative Extension and New Mexico Cooperative Extension Service have a key role in the Rio Grande Basin Initiative (RGBI). Extension administrators, county agents and specialists all contribute to the overall efforts of RGBI by taking their educational materials and demonstrations to all citizens in the basin.

"A critical component of RGBI is collectively the county educational programs being developed and delivered by Extension agents and specialists at local levels," said Dr. Bill Harris, RGBI project director and Texas Water Resources Institute associate director. "With the goal of expanding adoption of water conservation practices, based on best available science, local programming is most important. Strong administrative support make these programs happen."

In this "Special Section" we would like to recognize the Texas and New Mexico Extension administrators who are in RGBI districts supporting the work of county agents and specialists in their area.



Jeff Bader, Bernalillo County Extension program director in Albuquerque, New Mexico, is involved in water conservation and water quality educational programs.

"The RGBI has funded two of the projects in Bernalillo County with hopefully a third to be funded soon," Bader said. "Two projects involve Xeriscape demonstration gardens which provide demonstration sites for proper irrigation, plant material selection and mulching techniques."

The majority of agricultural work is in horticulture.

"There is a great demand by both commercial and private entities for non-biased, research-based information on plant selection, drip irrigation and landscape design for the Xeriscape garden," he said.

Another project, recently completed by an Extension home economist, supported a larger statewide program in which low flow water appliances and devices were installed in the homes of volunteer families to measure the impact these devices have on water consumption.

"Possibly more important than funded projects is the information that is obtained from RGBI research and education projects that is utilized by faculty for water programming across the state," Bader said. "With water being the most important factor affecting the growth and viability of the Middle Rio Grande Valley of New Mexico, it makes sense for New Mexico State University and its Extension Service to do all it

can to provide sound research and educational programs on water quality and conservation."



Brenda Rue, district Extension administrator at Fort Stockton, Texas, supports and supervises county agents in District 6 which includes El Paso, Culberson, Hudspeth, Crockett, Val Verde, Brewster, Pecos, Presidio, Reeves, Terrell, Ward, Jeff Davis, Crane,

Loving and Winkler counties. RGBI county agents have ongoing efforts in most all of these counties.

"Sixteen counties in the West Region are in the Rio Grande Basin and have utilized over \$40,000 to enhance county programs that addressed water issues in 2005," Rue said. More than 5,000 contacts were made through group educational methods. An additional 200,000 contacts were made through individual contacts and mass mailings, she said.

"Water quantity and quality are essential to sustain our population and provide for growth and development," Rue said. "Because we are a desert area, we must look for innovative ways to capture water for our homes, livestock and wildlife. Our citizens are learning ways to do this through RGBI educational programs."

Renee Sanders, regional program director for family and consumer sciences (FCS) at San Angelo, Texas, advises FCS agents about their RGBI projects. She connects agents to FCS specialists who provide



subject-matter information and training.

Nine counties in District 6 and one county in District 10 are served by FCS agents in the RGBI program. Sanders said five of these FCS agents are presently

conducting in-home water conservation projects in El Paso, Crockett, Val Verde and Ward counties.

“The in-home water conservation projects which have been conducted by FCS agents are educating county residents about ways to conserve water in the home, particularly in the bathroom, with use of water-saving shower heads and commodes,” Sanders said.



Cheryl Mapston, District 10 Extension administrator for family and consumer sciences at Uvalde, Texas, provides supervision of agents involved in the RGBI project and works with agents to develop a program interpretation plan

for communicating RGBI program results to key stakeholders. RGBI programs are active in three of the 21 counties in the district.

Programs conducted over the past few years include irrigation result demonstrations, water well testing, watershed management, in-home water conservation, educational tours, establishment of weather stations and providing information to the media for the general public on water conservation.

“Participation in RGBI has provided agents with top-quality training opportunities and resources necessary to complete projects and educational programs that provide valuable information to producers and clientele to help them make wise decisions on water-use,” Mapston said.



Marvin Ensor, regional program director for agriculture and natural resources (ANR) at San Angelo, Texas, works with agents in RGBI counties during program planning. He also assists agents in developing plans and securing

resources to conduct educational programs.

Water programming in the West Region includes groundwater and wastewater management, watershed management, rainfall harvesting, in-home

water conservation, irrigation efficiency, water quality issues and management and youth water education to name a few. Additionally, the Precision Irrigators Network began during 2005 in seven counties.

“Agents in the RGBI counties provide the educational programs needed to address the water issues,” Ensor said. “The funds received through the RGBI have greatly enhanced our educational efforts and the program impacts on our clientele.”



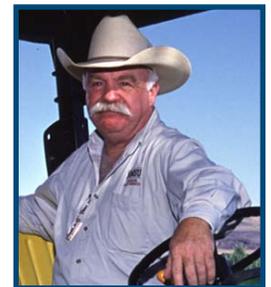
Charlie Siepel, Southwest District department head for New Mexico Cooperative Extension Service, serves as mentor, financial monitor and RGBI project supporter. He covers Socorro, Sierra, Dona Ana, Luna, Lincoln,

Otero, Catron, Grant and Hidalgo counties.

The RGBI allows county faculty to provide demonstrations on water-use as it relates to crop and livestock production and urban utilization. Projects currently under way are addressing irrigation efficiency, rain water storage and use, urban landscape, and residential water-use and conservation.

“RGBI is allowing a basinwide effort to address the critical issues of water utilization from agriculture water use shortfalls to increasing urban water demands,” Siepel said.

Mike English serves as superintendent of the Los Lunas, New Mexico Agricultural Experiment Station. He provides administrative and technical support to the RGBI. English facilitates several RGBI research projects, as well as implements his own water conservation projects.



Terry Lockamy serves as regional program director for ANR for District 12. Lockamy is located at the Texas A&M Agricultural Research and Extension Center at Weslaco, Texas. He is responsible for developing and maintaining quality

ANR programs in the South Region’s 56 counties and provides oversight and support to the RGBI county programs.

Results Are In

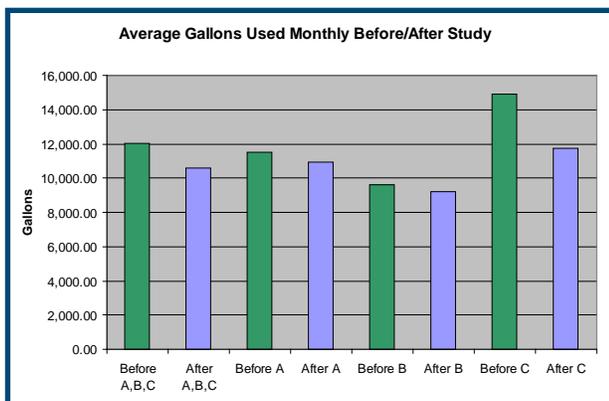
by
Danielle Supercinski

Savings from in-home water conservation project

Water-saving equipment has been available for 14 years for homeowners to conserve water used in their homes. Janie Harris, Texas Cooperative Extension housing and environment specialist, said research has shown that households can save as much as 25 gallons per person per day with water-conserving equipment and changed behaviors.

Twenty-six households throughout nine counties in Texas participated in the 2006 in-home water conservation project led by Harris and other Texas Cooperative Extension agents and specialists. Three households in Webb, Pecos, Starr, Ward, Val Verde, Crockett, Hidalgo, El Paso and Cameron counties participated in the study, which took place during January through April.

Each household received a different level of water conservation training. Household A received education only; Household B received education and recommendations for specific changes; and Household C received education, recommendations and retrofitted toilets, shower heads and faucet aerators. Results showed 5 percent water savings for those in A, 4 percent water savings for B and 21 percent water savings for C. A graph containing the average gallons of water used monthly before and after the study is below.



To read the full stories covering these projects and their results, please visit <http://riogrande.tamu.edu> under the "What's New" section.

Pilot project and economic model analyze cost of producing water

Cities and rural communities throughout Texas are faced with many issues limiting their sustainable potable water supply. However, a pilot project in Cameron County and an economic model developed by Texas Cooperative Extension and Texas Agricultural Experiment Station economists provides a more cost efficient analysis of desalinating brackish water.

Drought, water supply issues, and increasing pressure for limited water supplies with economic and population growth are just a few of the major problems Texans face. An abundance of brackish water, which is more salty than freshwater but not as salty as seawater, tops the list of issues.

Desalination of brackish water is one option to make use of this otherwise unusable water, but it's not that simple. While desalination is capable of increasing the available local water supply, high costs and volume constrain its uses.

A pilot project was developed to analyze the economic and financial life-cycle costs of desalination of brackish groundwater for South Texas using primary construction and ongoing costs for an actual desalination facility. The study is limited to an existing facility near the Gulf of Mexico and the Texas-Mexico border just outside of Brownsville, Texas, termed the Southmost Desalination Facility.

The life-cycle cost of providing an acre-foot of desalinated water is of keen interest. Therefore, the Excel® spreadsheet model DESAL ECONOMICS© has been developed. This model analyzes and provides life-cycle costs (dollars per acre-feet per year) for up to eight individual functional expense areas, as well as for the entire facility. For the Southmost Facility, the cost of producing 1,000 gallons of water per year equated to approximately \$1.70, whereas the charges assessed by municipalities in other areas of Texas can range from \$1.80 to \$4.

Save the Dates

by

Sara Alarcon & Danielle Supercinski

Plans for the 2007 New Mexico technical conference

“River Terrace & Flood Plain Hydrology,” a Rio Grande Basin Initiative technical conference, will be held at the Hotel Encanto de Las Cruces (formally Hilton) February 28, 2007 through March 1, 2007. Conference goals include: assessing the state of the science in river terrace and floodplain hydrology, exploring river flow and water quality linkages, examining integrative measurement and modeling methods, sharing information among researchers, identifying knowledge gaps and future research directions, and producing a special journal issue from submitted papers. Additional conference information is available at <http://nmwater.nmsu.edu>.

2007 Rio Grande Basin Initiatives conference announcement

Based on the majority of responses from the post-conference survey, the 2007 Rio Grande Basin Initiatives Conference will be held at South Padre Island, Texas. The conference is scheduled for May 15, 2007 through May 17, 2007, at the Radisson Resort. Please continue to check the joint conference Web site at <http://riogrande-conference.tamu.edu>. More information will be posted as the conference gets closer.

Please put these dates on your calendar, and we look forward to seeing you there.



Faces of RGBI

Administrative assistant takes care of business

by

Danielle Supercinski

Anyone who has called the Texas Water Resources Institute at some time or another has probably heard her voice answering on the other end of the line. Tamaron Stewart has worked for TWRI for the past 4 years. She has not only answered the phones, but has also taken care of travel, office supply orders, work orders, coordinating meetings, ordering business lunches and keeping the office well-organized.

Tamaron has also had a major hand in helping out with the administrative side of RGBI. When accomplishment reporting time comes around, she has always been willing to jump in and help write summaries and edit the big book of progress and accomplishments for the year. Believe me, this would have been even more of an overwhelming job without all the help she provided!

Past RGBI conference speakers and moderators may also recognize Tamaron's name, as she has been one of the key contacts involved in organizing the conference agenda and getting information to those on the agenda. She has coordinated printing of RGBI materials (including this newsletter) and has played a vital role in assisting with pre-registration, check-in and helping with all other aspects involved at the conference.

Unfortunately for us, as of July 21, Tamaron left the TWRI “family” to begin the first step in her own family – marrying Kyle Hunt and moving to Plano, Texas! Although we will miss Tamaron and all the things she did for us, we are very happy for her and wish her all the best in this new phase in her life.

Tamaron, thank you for all you have done for TWRI and RGBI over these past 4 years. Your organization, assistance, cheerfulness and friendship will be greatly missed!

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.

Rio Grande Basin Initiative Outcomes
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