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New Waves

Texas Water Resources Institute's E-Newsletter
Breaking news about water resources research and education at Texas universities

March 31, 2009

Rio Grande Basin Initiative project featured on HGTV

A demonstration garden cared for by Sandoval County Master Gardeners in New Mexico was recently featured on the Home and Garden Television (HGTV) cable network series *Gardening by the Yard*, hosted by **Paul James**. On March 15, the Rio Ranchos Water-Wise Demonstration Garden was aired on an episode titled *Xeriscaping, Drought-Tolerant Plants, and Wise-Water Practices*.

The Rio Ranchos garden demonstrates drip, sprinkle, spray, and bubble irrigation systems; bark, pecan, wood chip, crusher fine, and gravel mulches; and water harvesting techniques such as dry creek beds, swales, berms, and drain ways leading to catchment areas.

The Rio Ranchos garden is a cooperative effort of the New Mexico State University's Sandoval County Cooperative Extension Services Master Gardener Program; the city of Rio Rancho; the Rio Grande Basin Initiative, a federally funded project administered by the Texas Water Resources Institute and New Mexico State University; and local Rio Rancho businesses and community volunteers.

Gardening by the Yard, a 30-minute television program that first aired in 1996, is designed for people interested in time maintenance skills for garden upkeep of common, backyard, garden problems. James is not only the show's host, but its creator, writer, and senior producer, and he shoots almost the entire show in his own backyard. James focuses on all-natural approaches to gardening.

To learn more about the Rio Ranchos garden, visit the Web site http://aces.nmsu.edu/county/sandoval/mastergardener/water-wise--garden.html.

For information on the television series *Gardening by the Yard*, visit http://www.hgtv.com/gardening-by-the-yard/show/index.html.

AgriLife Research drip irrigation project yields promising results

The Texas AgriLife Research Station near Chillicothe is conducting a study to develop conservation tillage and water management strategies that enhance crop-stand establishment, water-use efficiency, and yield in subsurface drip-irrigated cotton production in the Rolling Plains.

In the first year of the three-year study, **Dr. John Sij**, AgriLife Research agronomist, was able to use subsurface drip irrigation to produce up to four bales of cotton per acre with less water than conventional irrigation methods, even though cotton trials suffered through hail and drought.

"We started out with good stands and then a hail storm in June knocked out 25 percent of the plants," Sij said. "Under drip, the plants came roaring back, and we still made two-and-a-half to three-bale cotton.

"Our yield monitor on our commercial harvester showed areas of production that hit four bales per acre. I think we would have had higher yields if we hadn't had the hail and the lost heat units."

Sij said the advantage of drip irrigation is putting more water on the field and efficiently supplying water directly to the roots of the plants. With the use of a low-pressure pump, electricity cost $1.69 per acre.

Another unexpected savings occurred due to the quality of the water pumped on the cotton crop. Water from the well used is high in nitrates, so the crop essentially received 35 pounds of free nitrogen put out with the irrigation water, Sij said. That's $1 per pound of nitrogen savings last summer.

Sij recommends producers check out the nitrate levels of irrigation water. "While we know we have other nutrients met by fertilization requirements, nitrates coming through the drip irrigation system directly feed the roots of plants, so it is 100 percent efficient," he said.

First year trials also revealed that 100 percent replacement of water lost by evapotranspiration delayed in some cases boll opening and harvesting. Evapotranspiration is the loss of water from the soil by evaporation and by transpiration from plants.

Sij and AgriLife researchers are additionally testing various tillage systems, including tilled bedded rows, reduced-tillage flat-planted rows, no-till flat-planted rows, and no-till rows planted into a terminated wheat cover crop.

Thus far, a no-till flat-planting at a 66 percent to 100 percent evaportranspiration replacement rate is favored.

To read the AgNews story about this project, visit http://agnews.tamu.edu/showstory.php?id=1043.

Lake Granbury Water Quality program advances educational efforts

A team of Texas AgriLife Extension Service educators led by **Dr. Bruce Lesikar**, professor and associate department head in the Department of Biological and Agricultural Engineering, is continuing to educate residents in Hood County about water quality threats related to ongoing, nonpoint source water pollution within the Lake Granbury Watershed. Six training events in Hood County are planned between April 6 and April 17, and additional training is scheduled for June 1-3, 2009.

The goal of the Water Quality Education for Hood County Program is to educate local stakeholders about water quality issues affecting the lake, said Megan Meier, Texas Water Resources Institute (TWRI) project manager. With the use of federal funds from the U. S. Department of Agriculture's Natural Resources Conservation Service, AgriLife Extension and TWRI help landowners, homeowners, businesses, and municipalities reduce nonpoint pollution.

Since January 2007 the team has developed over 20 generalized and watershed-specific fact sheets about various topics including fecal coliform contamination and sources, on-site wastewater treatment, collective wastewater treatment systems, graywater systems, pet waste management, nutrient and

sediment loading, landscape chemicals, and management practices to minimize loadings, including urban and agricultural nonpoint source pollution.

These public meetings, public educational programs, and training events are key objectives of the program. "Education and understanding by homeowners and other lake users are critical in cleaning up pollution in Lake Granbury. Knowing the 'cause and effect' relationships of individual's actions and their affect on lake water quality will lead to responsible changes in personal and community water practices." said **Dr. B.L. Harris**, TWRI acting director.

Upcoming training events for the program include:

- April 6: Storm Water Management in the Home Landscape
- April 7: Water Quality and Rainwater Harvesting Training
- April 14: A county Extension agent will discuss watershed management, bacterial sources, and best management practices on a local television station
- April 15: Health and Maintenance of your Aerobic Treatment System
- April 16: Wastewater Practitioners Training
- April 17: Small Acreage Landowners Symposium
- June 1-3: Rainwater Harvesting Master Gardener Specialist Training by Texas AgriLife Extension Service in Granbury

For specific details on the above mentioned training events visit http://rainwaterharvesting.tamu.edu/trainingprograms.html and http://baen.tamu.edu/extension/.

For more information on the TWRI water quality program for Lake Granbury, Texas visit http://lakegranbury.tamu.edu/index.php.

EPA Water Quality Video Contest

The Environmental Protection Agency (EPA) is sponsoring a contest for educational videos that inspire people to help protect their streams, lakes, wetlands, and coasts. Two winning videos will be chosen: a 30 or 60 second video that is usable as a TV public service announcement and a 1 to 3 minute instructional video.

The goal of the video contest is to educate the public on different water pollution issues and illustrate ways that target audiences such as homeowners, gardeners, farmers, pet owners, communities, and others can improve water quality by changing simple behaviors.

Winners will each receive a $2,500 award and their videos will be featured on the EPA Web site. Submission deadline is Earth Day, April 22, 2009. For more information visit http://www.epa.gov/owow/videocontest.html.

TWRI grant recipient integrates composted biosolids in low quality soil
By Caitlin Churchill

Ronnie Schnell, now earning his doctorate in agronomy from Texas A&M University, recently worked with his advising professors **Dr. Donald Vietor** and **Dr. Clyde Munster** to incorporate composted biosolids in low quality soils to enhance water conservation and provide organic carbon and nutrients that improve vegetation growth and limit sediment loss.

Schnell is a recipient of a 2007–08 Texas Water Resources Institute (TWRI) research grant. With the $5,000 grant, Schnell evaluated the interactions of soil, compost, and chemical amendments for

contrasting soil types and deduced impacts on the fate and transport of nutrients during turfgrass establishment. Schnell's final results indicate that treatment of the chemical compound alum on composted biosolids before land application enables recycling of large, volume-based rates of composted biosolids for improved water capture and storage in soils during turfgrass establishment and maintenance on urban landscapes.

According to Schnell's final report, composted biosolids produced by Texas cities could be a valuable soil amendment for water conservation on drought-prone landscapes. Incorporation of composted biosolids could enhance water infiltration and storage and, therefore, turfgrass persistence. "Improving the ability of urban soils to capture and store water could reduce the amount of irrigation required," said Schnell.

Besides water conservation, Schnell said composted biosolids offer the additional benefits of protecting water quality and the environment. "Cycling of municipal biosolids through turfgrass sod, rather than disposal in landfills, saves taxpayer dollars and conserves valuable sources of carbon and nutrients in an environmentally friendly manner," he said.

After he completes his doctorate, Schnell said he intends to pursue a career in research and education at the university level. His current research interests are in environmental quality and nutrient and carbon cycling for sustainable agronomic cropping systems.

Research conducted by Schnell was funded by TWRI through the U.S. Geological Survey as part of the National Institutes for Water Research annual research program. TWRI is the designated institute for water resources research in Texas.

For more information on Schnell's research, visit the TWRI USGS Research Grants Web page.

Water quality of private wells: A potential concern

More than 20 percent of private domestic wells sampled nationwide contain at least one contaminant at levels of potential health concern, according to a study by the U.S. Geological Survey (USGS).

USGS scientists sampled about 2,100 private wells in 48 states and found that the contaminants most frequently measured at concentrations of potential health concern were inorganic contaminants, including radon and arsenic. These contaminants are mostly derived from the natural geologic materials that make up the aquifers from which well water is drawn. In about four percent of the sampled wells, nitrate was the most common inorganic contaminant at concentrations greater than the federal drinking-water standard for public-water supplies (10 parts per million).

"The results of this study are important because it shows that a large number of people may be unknowingly affected," said **Matt Larsen**, USGS associate director for water. "Greater attention to the quality of drinking water from private wells and continued public education are important steps toward the goal of protecting public health."

Other contaminants found in the private wells were man-made organics, including herbicides, insecticides, solvents, disinfection byproducts, and gasoline chemicals. Few organic contaminants (7 out of 168) exceeded health benchmarks, and were found above health benchmarks in less than one percent of sampled wells.

Contaminants found in private wells usually co-occurred with other contaminants as mixtures rather than alone, which can be a concern because the total combined toxicity of contaminant mixtures can be greater than that of any single contaminant. Mixtures of contaminants at relatively low concentrations were found in the majority of wells, but mixtures with multiple contaminants above health benchmarks

were uncommon (about four percent). The USGS report identifies the need for continued research because relatively little is known about the potential health effects of most mixtures of contaminants, and the additive or synergistic effects on human health of man-made chemical mixtures at low levels are not well understood.

Bacteria, including total coliform bacteria and *Escherichia coli,* were found in as many as one third of a subset of 400 wells. These bacteria are typically not harmful but can be an indicator of fecal contamination. About half of the 2,100 sampled wells had at least one property or contaminant outside recommended ranges for cosmetic or aesthetic purposes, such as total dissolved solids, pH, iron, and manganese.

Private well owners, who generally are responsible for testing the quality of their well water and treating, if necessary, can contact local and state health agencies for guidance and information about well maintenance, water quality and testing options, and in-home water treatment devices. Access the Quality of Water from Domestic Wells in the United States Web site for complete study findings, related links, and recommendations for private well owners at http://water.usgs.gov/nawqa/studies/domestic_wells/.

Portions of this story are from a USGS Newsroom release. For the complete news release visit http://www.usgs.gov/newsroom/article.asp?ID=2173.

Save the date

As part of its Initiative for Watershed Excellence, the River Systems Institute, in collaboration with the Oklahoma Water Resources Research Institute, Texas Riparian Association, and Texas Water Resources Institute, will host *Land, Water, People 2009* on November 16-18, 2009 at the San Marcos Convention Center.

This conference will explore the potential to more effectively manage and protect water resources, on both a local and regional scale, through information, technology, and approaches applied to important interfaces within watershed and community dynamics.

Registration opens May 15, 2009. Further information will be available soon at www.rivers.txstate.edu or contact **Annette Paulin**, conference coordinator, at 512-754-9179.

TWRI Water Resources Training Courses

Floodplain Delineation using GIS	April 28-30, 2009
APEX	May 12-13, 2009
SWAT for Beginners	June 8-9, 2009
Advanced Data Process for ArcSWAT	June 10, 2009

New Waves is an email newsletter of Texas Water Resources Institute, part of Texas A&M University College of Agriculture and Life Sciences, Texas AgriLife Research, and Texas AgriLife Extension Service. **New Waves** publishes timely information about water resources news, results of projects and programs, and new water-related research projects, publications, papers and faculty, at universities in Texas. If you have information for possible inclusion in "New Waves" please email Kathy Wythe at kpwythe@ag.tamu.edu or call 979.845.1862 and include your contact information. All submissions may

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