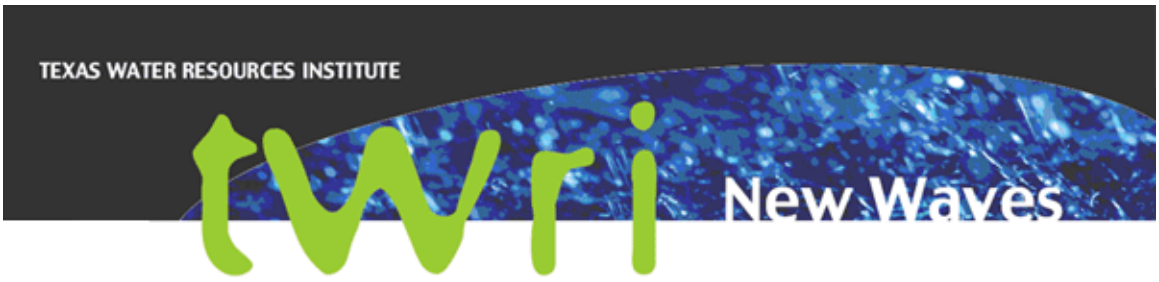

Breaking news about water resources research and education at Texas universities

Feb.13, 2006

1. Irrigation management program increases profits for San Patricio County farmers

A San Patricio County irrigation management program helped increase profits for 20 farmers in 2005. The program instigated to teach best management practices, according to Jeffrey Stapper, Extension agent for agriculture and natural resources in San Patricio County.

Stapper said the value of the program to farmers could be equated to an increase of $20 per acre of irrigated crops.

Stapper said the program established five irrigation research verification trials in 2005 to serve as models and teaching tools for best management practices, established variety tests on three plants to determine the best-suited varieties for local irrigation and implemented a cotton test and growth regulator study to evaluate possible yield enhancing practices for irrigation systems. The program, which involved the local Field Crops Committee, also held seminars and meetings.

"Best management practices used in the verification trials resulted in an average gross value of $161 per acre more than the fields of the county average," Stapper said.

Irrigation of crops in the western part of the coastal bend county has increased 50 percent in the last few years and generates more than $6.5 million annually, Stapper said.

2. Assessment of Buck Creek for bacteria impairment continuing

After 20 months of sampling at 13 sites on Buck Creek in the Texas Panhandle, research appears to confirm that certain segments of the creek may have elevated levels of bacteria, causing sporadic seasonal impairment, according to researchers at the Texas Agricultural Experiment Station (TAES) in Vernon.

This sampling and evaluation is part of the Buck Creek Water Quality Sampling/Assessment Project, a federal Clean Water Act section 319(h) grant funded by the Texas State Soil and Water Conservation Board (TSSWCB) and the Environmental Protection Agency. Texas Water Resources Institute (TWRI) and TAES-Vernon are conducting the project.

Over a previous five-year period, the Red River Authority's sampling of one location (site 11) on the Red River basin creek for fecal coliform and *E. coli* showed the creek sometimes exceeded the bacteria levels allowed by the Texas Surface Water Standards required by the state. Too many *E. coli* or fecal coliforms may indicate the presence of pathogens that can cause disease and would keep the creek from safely being used for recreation.

After completing and evaluating the sampling, the project's researchers hope to get definitive answers on the creek's impairment --whether the entire creek is impaired or only certain areas and whether it is continuous or seasonal, according to Dr. John Sij, a professor of agronomy at the Vernon center.

"During the summer months and after rainfall, the bacteria counts tend to be high," Sij said. "High rainfall events result in high numbers of bacteria, possibly due to fecal material washing into the stream as well as stirring up silt and sediments in the stream bed."

Researchers have also used the computer mapping software, TerraServer, to further evaluate the watershed for the possible sources of contamination.

Phyllis Dyer, research technician for the project, said various sources could cause the bacterial contamination, including human wastes from faulty septic tanks, livestock wastes, and wastes from wildlife such as beaver, deer, wild hogs and birds.

Kevin Wagner, TWRI's manager of the project, said TWRI and TAES are seeking additional funds from TSSWCB to conduct bacterial source tracking to determine the sources of the bacteria and develop a watershed protection plan to restore the creek.

Additional collaborators include the Texas Cooperative Extension, Texas Commission on Environmental Quality; the Childress, Salt Fork, and Donley Soil and Water Conservation Districts; and Red River Authority.

For additional information on the project, visit its Web site at
http://twri.tamu.edu/buckcreek/index.php

3. Student researches real-time runoff estimates for Texas watersheds

In an effort to predict surface runoff and flooding, a Texas A&M University graduate student and her advising professor are using the SWAT (Soil and Water Assessment Tool) model to simulate runoff on an hourly basis in Texas' watersheds.

"With the advent of remote sensing technology, radars can not only be used for wireless internet, or traffic ticketing, but they can also be used to track floods on a real-time basis so that we can alert people in advance," said TAMU graduate student Bakkiyalakshmi Palanisamy.

According to the National Oceanic and Atmospheric Administration, an average of 100 people lose their lives in floods annually in the United States, with flood damage averaging more than $2 billion. The NOAA lists flash floods as the number one weather-related killer in the United States.

The driving force for runoff or soil erosion is rainfall. When the intensity of the rainfall exceeds the infiltration capacity of the soil, surface runoff occurs. Excessive surface runoff results in flooding that can deteriorate land use and land cover, cause soil erosion and damage other natural resources.

"It becomes necessary to predict runoff from a particular area with more accurate, fine resolution inputs such as rainfall estimates from NEXRAD," said Palanisamy, a recipient of a 2004-05 Texas Water Resources Institute-managed research grant, funded by the U.S. Geological Survey.

NEXRAD, or next generation weather radar, is a system of weather radars that estimates rainfall at a very fine spatial and temporal scale or for relatively small areas.

Palanisamy and her advising professor Dr. Raghavan Srinivasan, director of the Spatial Sciences Laboratory at TAMU, selected the Big Sandy Creek and Walnut Creek watersheds located in the northwest part of the Trinity River basin as her study area. She collected hourly precipitation from the National Climatic Data Center and then used the SWAT model to simulate runoff on an hourly basis. In addition, hourly rainfall estimates from NEXRAD at a spatial resolution of $4km^2$ were used in generating runoff estimates.

She compared the real-time stream flow measurements obtained from U.S.G.S. to what she obtained from her simulation.

Results indicated that for hydrologic and water quality modeling, rainfall values from a dense rain gauge network should be used in lieu of widely distributed point rain gauge measurements across the study area.

Palanisamy's research is funded as part of the National Institutes for Water Research annual research program. TWRI is the designated institute for water resources research for Texas.

For more information on Palanisamy's research, visit "USGS Research Grants" at http://twri.tamu.edu.

4. Membrane/separations technology "Hands-On" course scheduled

Texas A&M's Separation Sciences Group at the Food Protein Research and Development Center is sponsoring the 16th annual Membrane & Separations Technology short course, April 2-6 in College Station.

"Fundamentals, New Developments, Applications and Pilot Plant Demonstrations" is designed for food, water, chemical, petroleum and environmental industries personnel.

Industry experts and researchers from across the United States and Germany will give lectures on the basic principles, system designs, case studies, membrane & separations equipment selection, and costs & economics of membrane and separations technologies.

Daily pilot plant demonstrations will give attendees a "hands-on" learning experience with separation technologies equipment, said Carl Vavra, program coordinator of the Separation Sciences Group.
"A creative, learning environment will provide many opportunities for everyone to establish a network for their membrane & separation technologies needs," Vavra said.

For more information, go to www.tamu.edu/separations or contact Vavra at cjvavra@tamu.edu or 979.845.2758.

5. Fellowship Program Supports Graduate Research

The National Water Research Institute (NWRI) is offering fellowships up to $10,000 to master's and doctoral students who are conducting research related to water resources. Deadline for the 2006 fellowship applications is March 1. The institute will award the fellowships July 1.

Graduate research must pertain to NWRIs mission, which is "to create new sources of water through research and technology to protect the freshwater and marine environments."

The institute, located in Fountain Valley, Calif., is a non-profit organization dedicated to promoting and funding research in the fields of water science and technology.

For more information on the fellowships go to http://twri.tamu.edu/nwri_fellowship.php .

6. Lifetime Achievement Award Presented to Extension Economist

Dr. Steve Amosson received the Southern Agricultural Economics Association Lifetime Achievement Award at the organization's annual meeting Feb. 2. Amosson is a Regents Fellow and a professor and economist with Texas Cooperative Extension in Amarillo.

He is co-director of the national Master Marketer Program, director of the "Have Computer Will Travel" project and project leader of the High Plains Water Planning Team. He also has served as project director or principle investigator on more than 60 grants.

For the complete story, see the AgNews story at http://agnews.tamu.edu/dailynews/stories/AGEC/Feb0206a.htm .

7. Entomologist Receives ARS's "Scientist of the Year" Award for Southern Plains

The USDA's Agricultural Research Service (ARS) recently recognized Dr. C. Jack DeLoach, an entomologist with ARSs Grassland Soil and Water Research Laboratory in Temple, as the "Area Senior Research Scientist of 2005" for the Southern Plains area. DeLoach was recognized for his "outstanding scientific investigation and program leadership in biological control of saltcedar and other invasive aquatic and rangeland weeds," according to a ARS news release.

New Publications/ Papers

"Water Resource Economics: The Analysis of Scarcity, Policies, and Projects," Ronald C. Griffin. Professor, Department of Agricultural Economics, Texas A&M; Cambridge, MA: MIT Press, 2006.

The book focuses on the scarcity of water quantity (rather than water quality). The author presents the economic theory of resource allocation, recognizing the peculiarities imposed by water, and expands the theory to encompass time-defined matters such as ground water depletion. He then discusses such subjects as institutional economics, water law, how economics is used in policy and cost-benefit analysis, the roles of water marketing and water pricing, demand and supply estimation, privatization, and modeling with demand and supply functions. For more information on the book, go to http://mitpress.mit.edu/catalog/item/default.asp?ttype=2&tid=10868

"Drinking Water Problems: Arsenic," Bruce J. Lesikar, Rebecca H. Melton, Extension Assistant, Texas Cooperative Extension; Michael F. Hare, Texas Department of Agriculture; Janie Hopkins, Texas Water Development Board; Monty C. Dozier, Texas Cooperative Extension.

High levels of arsenic in drinking water can poison and even kill people. This publication explains the symptoms of arsenic poisoning and common treatment methods for removing arsenic from your water supply. Download publication at http://tcebookstore.org/tmppdfs/8007577-2186.pdf

"Turf Irrigation and Nutrient Management," Guy Fipps, James McAfee, David Smith, Texas Cooperative Extension.

This manual is designed to serve as a reference guide for landscape professionals. It covers all aspects of irrigation and nutrient management of turfgrasses.
Available from the Extension bookstore at http://tcebookstore.org/pubinfo.cfm?pubid=2271

"Diagnosis and Management of Salinity Problems in Irrigated Pecan Productions," TWRI Technical Report 287, S. Miyamoto, Agricultural Research and Extension Center at El Paso

This short article outlines ways to diagnose and manage salt problems associated with irrigation. Download the report at http://twri.tamuedu/reports/2006/tr287.pdf or contact twri@tamu.edu for a paper copy.

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