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TWRI Mills Scholars Program Aids TAMU Graduate Students; Soil and Water Grants Support Research, Extension Efforts

Introduction

During the past two years, the Texas Water Resources Institute (TWRI) has expanded the scope of its programs to support research and extension efforts at universities throughout Texas and within the Texas A&M University (TAMU) System.

The TWRI Mills Scholarship, which is funded by the Mills Cox endowed fund, provides small grants to graduate students at TAMU and Texas A&M University–Galveston. This spring, TWRI awarded 17 Mills Scholarships to support masters and doctoral students.

TWRI also administers are soil and water conservation grants. Through this program, the Institute supports both research and extension efforts by researchers with the Texas Agricultural Experiment Station as well as demonstration, outreach, and education programs by professionals with Texas Cooperative Extension. Last year, TWRI awarded 23 grants through these programs.

In this issue, we'll provide brief overviews of these projects.

Photo Courtesy of Amy Wentz/ TAMU

Amy Wentz of the Rangeland Ecology and Management Department is evaluating whether tillage practices can rehabilitate semiarid rangelands.

The TWRI Mills Scholars Program

TWRI recently awarded 17 grants to support graduate students researching water resources issues at Texas A&M University (TAMU).

These students were funded through the TWRI Mills Scholars Program, which uses an endowment to support graduate student research in water resources at TAMU. Each of these Mills Scholars will receive tuition assistance grants of $500 in the fall of 2002 and $500 in the spring of 2003. More than 45 graduate students from 11 academic departments and Texas A&M University–Galveston applied for this competitive program.

"The Mills Scholarship Program provides a way to increase graduate student and faculty participation in water resources projects throughout Texas A&M University," said TWRI Director C. Allan Jones. "By providing these funds, we can help strengthen water resources studies in such diverse areas as efficient irrigation, pollution prevention, rangeland management, aquatic ecosystems, and many other fields."

This year's program funded five graduate students in Wildlife and Fisheries Sciences, four students in Soil and Crop Sciences, three students in Biological and Agricultural Engineering, and two students in Rangeland Ecology and Management. One graduate student was funded in the Civil Engineering, Entomology, Horticulture, and Forestry departments.

2002–03 TWRI Mills Scholars

Brief summaries of each of the 17 TWRI Mills Scholars funded for 2002–03 are shown below.

Students TWRI Funded for Mills Scholarships for

• Jason Afinowicz (graduate student) and Clyde Munster (researcher), Biological and Agricultural Engineering Department. Afinowicz is studying how the use of geographic information systems (GIS), remote sensing, and hydrologic simulation models can identify sites where brush control will most likely boost water yields. The project involves using Landsat satellite imagery and GIS mapping to identify semi-arid rangelands in Texas that are ideal candidates for brush removal. Afinowicz will carry out field studies of the Honey Creek watershed near San Antonio and will validate and calibrate the Soil Water Assessment Tool (SWAT) computer model.

• Jeremiah Dye (graduate student) and Kevin Heinz (researcher), Entomology Department. Dye's research will compare the effectiveness of two a weevil species (one strain collected from Australia and one from Florida) to control populations of giant and common salvinia- waterweeds that are widespread throughout East Texas. In laboratory experiments, weevils will be placed in tanks that contain water and either of the other species of salvinia. The tanks will be maintained at temperatures that mimic summer or winter conditions in Texas waters. The goal is to compare how well these weevils may control salvinia in Texas rivers and lakes. Dye is carrying out

field studies to compare factors that influence salvinia growth in the field to results of the lab tests.

• Lance Fontaine (graduate student) and William Neill (researcher), Wildlife and Fisheries Sciences Department. Fontaine will study how human activities are changing watershed conditions in coastal bays and estuaries that are vital for redfish and shrimp. In particular, Fontaine will examine the extent to which variations in salinity, temperature, and dissolved oxygen levels may affect the health of redfish and brown shrimp at the estuary of the Nueces River near Corpus Christi Bay. The project involves laboratory and field studies to examine how environmental factors affect the growth, survival, and metabolism of shrimp and redfish, as well as predator-prey relationships.

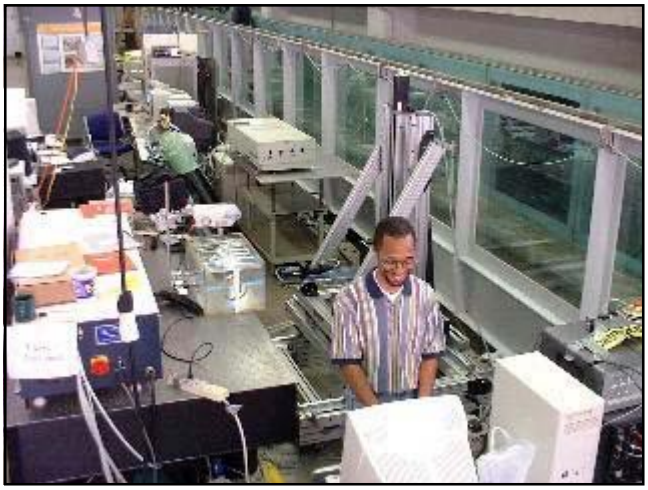

Photo Courtesy of Michael Sterling, TAMU

Michael Sterling of the TAMU Civil Engineering Department is testing dispersants that can clean up coastal pollution spills.

• Jason Krutz (graduate student) and Scott Senseman (researcher), Soil and Crop Sciences Department. Krutz will conduct field studies at the TAMU Blackland Research and Extension Center at Temple to ascertain whether buffalo grass filter strips are effective at removing atrazine and metabolites from rainfall runoff. The studies, which will utilize a rainfall simulator, are important since atrazine is a widely used agricultural chemical and has been found in Texas waters. This work will help determine if Buffalograss filter strips can be an effective best management practice (BMPs) to remove atrazine. Preliminary results suggest that these filter strips can preferentially trap and absorb Metolachlor and other pesticides.

• Michael Sterling (graduate student), and James Bonner (researcher), Civil Engineering Department. Sterling is carrying out laboratory studies to evaluate the effectiveness of dispersants used to clean up or remediate coastal oil spills. The study also involves developing a contaminant transport and exposure model that can predict the likelihood that petroleum hydrocarbons may resurface throughout bay systems, as well as hydrocarbon concentrations that may result when various dispersants are used. The research will provide guidelines about which types of dispersants may work best in site-specific estuarine conditions.

• Libbie Johnson (graduate student) and researchers Daniel Leskovar (Texas Agricultural Experiment Station or TAES) and Frank Dainello (Horticulture Department). Johnson will conduct her research at the TAMU Agricultural Research and Extension Center at Uvalde. The objective is to identify efficient water conservation methods for farmers who grow red bell peppers in southwest Texas. She will examine the extent to which subsurface drip irrigation may save water while producing excellent quality peppers. This information may be very useful for vegetable farmers in water-short areas of Texas, and may help them produce more and better quality peppers while reducing irrigation-related costs.

• Roger Havlak (graduate student) and Richard White (researcher), Soil and Crop Sciences Department. Havlak, who works in the Texas Cooperative Extension (TCE) program at TAMU, will work to develop a methodology to estimate total water use by the different turfgrasses and plants in landscapes. The goal is to develop a model to evaluate water use among various elements of a landscape, as well as overall water use. Havlak will survey homeowners in College Station and other sites about landscape characteristics, and will collect data about the plant and soil types and irrigation systems. Havlak hopes to be able to determine water requirements for individual components of these landscapes and to develop site-specific water use recommendations that encourage conservation. Another aim is to better judge if homeowners who have been taught about water efficient landscape practices actually use less water.

• April Torres Conkey (graduate student) and R. Douglas Slack (researcher), Wildlife and Fisheries Sciences Department. Conkey will study wetlands created throughout the Upper Texas Coast from 1980 to 1995 to mitigate or compensate for the loss of natural wetlands. She will examine if wetland replacement projects, required by the Clean Water Act, comply with their Section 404 Permit plans. The project involves on-site evaluations of selected wetlands as well as creating a database with information about permits issued by the U.S. Army Corps of Engineers Galveston District. Aerial photos will be used to compare how the wetlands have changed over time, and wetlands functions will be assessed using the Corps' Evaluation for Planned Wetlands method. This research will provide insights into how replacement wetlands can be better designed, built, and managed.

• Joshua Peschel (graduate student) and researchers Ronald Lacey and Patricia Haan, Biological and Agricultural Engineering Department, Urs Kreuter, Rangeland Ecology & Management Department, and Richard Conner, Agricultural Economics Department. Peschel and Lacey are working with a National Aeronautics and Space Administration (NASA) project to utilize remotely sensed data to derive land use change. This information will then provide inputs to hydrological models. Currently, input grids of land use and land cover are based on Landsat Thematic Mapper image data, that have limited temporal resolution. Peschel will try to develop a method that creates higher resolution input grids, using Advanced Very High Resolution Radiometer data. The goal is to develop a method that automatically converts remotely-sensed data to create land use and land cover maps. These maps would serve as inputs for the SWAT model, which is being used to assess how brush control may affect the hydrology of rangelands throughout Texas.

• Kimberly Crumpler (graduate student) and Raghavan Srinivasan (researcher). Crumpler, a graduate student in the Forest Sciences Department, will carry out her research for the TAMU Spatial Sciences Laboratory. In this project, Crumpler will develop geospatial information (which includes GIS, websites, and databases) that relate to the conditions of wetlands along the Texas Gulf Coast. The intent is to provide decision makers with information about how changes in coastal land use may affect water quality and water supplies, and to demonstrate the importance of coastal wetlands. The study supports the Texas Coastal Wetlands Center, a project now being developed by TCE and the Texas Sea Grant Program.

Photo courtesy of Lance Fontaine/ TAMU

Lance Fontaine (to right) will investigate how changes in water quality are affecting coastal ecosystems near Corpus Christi (shown here) and other sites.

• Chad Richards (graduate student) and Clyde Munster (researcher), Biological and Agricultural Engineering Department. Richards will participate in a project with Munster and researcher Don Vietor of the Soil and Crop Sciences Department that is funded by the U.S. Geological Survey (USGS). The goal is to grow turfgrasses with composted dairy manure from Central Texas, and to then market these landscape products to urban areas of the State. Richards will carry out field studies at the Texas A&M Research Farm in College Station to quantify nutrient losses that may result from this use of composted manure. He will also conduct GIS analyses and computer modeling simulations to locate the best sites, from a water quality and ecological perspective, to grow turfgrasses with composted materials in urban watersheds.

• April Hennebeck (graduate student) and Mike Masser (researcher), Wildlife and Fisheries Sciences Department. Hennebeck's goal is to gather data about commonly-used strategies to manage private ponds throughout Texas, with the goal of developing best management practices TCE can use to educate the owners of these lakes. Hennebeck will survey the owners of private ponds in Texas and will gather data about the types of management techniques they are using; if they are willing to try innovative methods; their experiences with stocked and native fish species; and problems associated with aquatic plants and animal pests.

• John Pitt (graduate student) and Frank Hons (researcher), Soil and Crop Sciences Department. Pitt works for TCE in the Soil, Water, and Forage Testing Laboratory on the TAMU campus in College Station. The goal of Pitt's research is to assess the fate of phosphorus added as fertilizer to agricultural soils. Some forms of phosphorus become available for plant uptake and are removed from soils, while other forms are trapped in the soil through the formation of immobile mineral compounds. Still other degradable forms of phosphorus can lessen water quality. Pitt will evaluate phosphorus relationships in different soils, and will document changes that occur over time. He will compare various laboratory methods to analyze soils for phosphorus levels related to agricultural production and environmental protection. By learning more about the fate of phosphorus, more accurate recommendations for phosphorus loadings can be developed.

• Amy Wentz (graduate student) and Steve Whisenant (researcher), Rangeland Ecology and Management. This research project deals with modifying rangelands in semiarid areas plagued by crusted soils to better take advantage of limited rainfall. Wentz will conduct field studies at a ranch near Big Lake on the Edwards Plateau. In this study, Wentz will evaluate whether aerating and using a drill to seed sideoats grama, bristlegrass, sprangletop and other native vegetation may increase infiltration on upland slopes. The study will also investigate if contouring furrows may be beneficial. Results will be compared to traditional methods of establishing native grass in furrows.

• Brian Langerhans (graduate student) and Thomas DeWitt (researcher), Wildlife and Fisheries Sciences Department. This project will explore why native populations of gambusia are dramatically declining in several regions of Texas. Langerhans suggests that gambusia numbers are threatened by reductions in springflows, increased competition from non-native predators like mosquitofish, and more widespread predation by largemouth bass and green sunfish. Langerhans will conduct morphological analyses of the eight different native gambusia species found in Texas. He will place gambusia in 200-gallon aquariums (called mesocosms) to determine how multiple predators like dragonfly larvae and largemouth bass affect gambusia survival.

• Nels Hansen (graduate student) and Don Vietor (researcher), Soil and Crop Sciences Department. Hansen is studying with Vietor and researcher Clyde Munster of the Biological and Agricultural Engineering Department. This research is supported by the Texas Advanced Technology Program. Hansen will monitor sediment and nutrient losses in runoff from replicated treatments during natural rain events on an 8.5% slope. Replicated treatments include compost-amended topsoils, erosion control mixes, and surface applications of dairy manure compost before and after seeding and establishment of Bermudagrass vegetation. Hansen is helping study leaching losses of nutrients after composted dairy manure and fertilizer are used to establish Bermudagrass turf. Hansen will evaluate changes of phosphorus and nitrogen levels in composted dairy manure before, during, and after they are applied to roadside areas and turfgrasses.

Soil and Water Conservation TAES Research Grants

In 2001, TWRI selected 23 projects from the Texas Agricultural Experiment Station (TAES) and Texas Cooperative Extension (TCE) for funding through the Soil and Water Conservation grants program. Highlights of these research projects are presented below.

• Brent Auvermann, an agricultural engineer with the TAMU Agricultural Research and Extension Center in Amarillo, is leading an effort to assess water demands for sprinklers used to control dust emissions from High Plains feedyards. Although sprinkler systems are often regarded as the best way to control dust emissions from cattle feedlots, more work needs to be done to estimate how much water needs to be applied and what additional strains on water resources may result if these systems are required. In laboratory studies carried out in greenhouses at Etter, simulated feedlot surfaces will be evaluated to assess how the initial moisture content and manure concentration may affect water needs. Field studies are being conducted at pens equipped with solid set sprinkler systems, in order to track actual water use. Real-time weather conditions are being monitored at the feedyard.

• An interdisciplinary team of research and extension personnel are working to develop strategies to restore and rehabilitate dysfunctional rangeland watersheds throughout West Texas. Project leaders are TAES researcher Darrel Ueckert and TCE specialist Chris Sansone of the TAMU Agricultural Research and Extension Center

in San Angelo. Other participants include Allan McGinty, Dale Rollins, and Tom Fuchs of TCE, researchers Steve Whisenant and Wayne Hamilton of the TAMU Rangeland Ecology and Management Department, and researcher Roger Gold of the TAMU Entomology Department. The project addresses two major concerns: controlling rangeland damage from desert termites, and evaluating the extent to which such tillage practices as ripping, contour furrowing, and drill seeding can modify problem soils to increase infiltration. Field studies are now underway in 10 West Texas counties.

• Scientists from the Blackland Research and Extension Center in Temple and Baylor University are collaborating in an ongoing effort to assess the various effects of small watershed dams on adjacent ecosystems. This project is led by TAES researcher Ranjan Muttiah, researchers Peter Allen and Joseph White of Baylor, and Baylor graduate student Jacquelyn Duke. This project involves thoroughly characterizing a representative small watershed dam located on Cow Bayou in McLennan County in Central Texas, and examining how this structure may affect ground and surface water hydrology as well as riparian vegetation. This work involves assessing sediment buildup in the dam and whether this structure may be at the end of its usable life. Preliminary results suggest that these small dams can provide significant ecological benefits, especially by enhancing riparian vegetation as well as groundwater flows.

• A joint effort between the TAMU Agricultural Research and Extension Center in El Paso, New Mexico State University (NMSU), and the U.S. Bureau of Reclamation is investigating the extent to which water supplies are lost through seepage in the region's agricultural canals. This project was led by TAES researcher Zhuping Sheng and Phillip King of the NMSU Civil Engineering Department. This study involved conducting ponding tests and flow measurements at selected canals in the El Paso County Water Improvement District No. 1 and the Elephant Butte Irrigation District in New Mexico. Data obtained from field tests and measurements were used to estimate seepage losses that might be expected throughout the irrigation season. Preliminary results suggest there is a significant potential to save water by lining these canals.

• Testing and verifying the use of sophisticated water management software that farmers can use on their personal computers is the goal of a research project led by Tom Gerik, Wyatte Harmon, Paul Dyke, and Jimmy Williams of the Blackland Research and Extension Center, Guy Fipps of the TAMU Biological and Agricultural Engineering Department, Robert Lascano of TAES in Lubbock, and Carlos Fernandez of TAES in Corpus Christi. This effort involved evaluating how well "CropMan"–software that helps growers access data on climate, soils, and management practices—simulates water use and crop yields. The project included testing the ability of CropMan to simulate irrigated corn, grain sorghum, and cotton production, as well as developing methods to download data from potential evapotranspiration (PET) networks in the High Plains and South Texas for use with this program.

• The TAMU Agricultural Research and Extension Center at Lubbock carried out improvements and upgrades to equipment used in irrigation studies through a grant provided by this program. The grant helped replace a deep well turbine pump and components of Low-Energy Precision Application (LEPA) irrigation systems. Using this new equipment, TAES researchers James Bordovsky and Eduardo Segarra and TCE professionals Dana Porter and Calvin Trostle are now carrying out studies to determine how the flowering of cotton is affected by various irrigation systems. They are evaluating the extent to which LEPA irrigation of cotton and grain sorghum rotations may optimize water use, and if planting cotton in narrow rows may reduce water losses associated with spray irrigation.

• Developing a coordinated database and website that incorporates data from PET networks from throughout Texas is the aim of an effort led by Tom Marek of TAES in Amarillo, Raghavan Srinivasan of the TAMU Spatial Sciences Laboratory, and Guy Fipps of TCE. Key project tasks involve developing uniform standards for PET and meteorological data and implementing a standardized format for this information. This effort includes integrating PET and climate data from the North Plains, the Coastal Bend, South Texas, and the South Plains. Researcher Terry Howell of the U.S. Department of Agriculture Research Service in Bushland is a key collaborator in this effort.

• Learning more about the processes that are responsible for the accumulation and release of salts within the Pecos and Rio Grande watersheds is the objective of an investigation led by TAES researchers Seiichi Miyamoto and Fares Howari of the TAMU Agricultural Research and Extension Center at El Paso. This project involves working with the International Boundary and Water Commission to measure salinity, groundwater infiltration, and river flows throughout the middle reach of the Rio Grande. Laboratory studies will be carried out using small lysimeters to estimate how saline waters may affect the growth of salt grasses and salt cedars. Greenhouse experiments will investigate whether high-tech analyses of gypsum levels in soils can identify sites that are especially vulnerable to crusting and other damage caused by high levels of salinity.

• Building and testing a portable rainfall simulator that can help evaluate whether brush control projects actually increase water yields is the objective of another grant provided by this program. Lead scientists are researchers Clyde Munster and B. Mohanty of the Biological and Agricultural Engineering Department, Brad Wilcox of Rangeland Ecology and Management, and Keith Owens of the TAMU Agricultural Research and Extension Center at Uvalde. The rainfall simulator will be used in field tests at

Photo by Clyde Munster, TAMU

TAMU researchers and graduate students test the use of this rainfall simulator on the Texas A&M campus.

TAES researcher Fares Howari is studying issues related to salinity problems in the Rio Grande watershed at El Paso (shown here) and other sites.

Uvalde and Sonora, and to instruct TAMU students in College Station. This device can provide controlled information about runoff events during years with droughts or little natural precipitation.

• Using the Internet and remote sensing technologies to display timely information about droughts is the focus on a project now being developed by TAES researcher Raghavan Srinivasan of the TAMU Spatial Sciences Laboratory. Remote sensing and satellite imaging methods are being linked with hydrologic models to produce a website that will display weekly data on soil moisture and drought severity. The website will also provide weekly and monthly drought forecasts.

• By providing leveraging funds, TWRI is assisting work led by researchers Ronald Kaiser and Val Silvy to create graduate programs in water resources at TAMU. This work is primarily funded through the Texas A&M Office of Graduate Studies. In this project, Silvy and Kaiser are meeting with faculty and administrators to identify the components needed to develop and implement master's and doctoral programs in water resources management at the university.

Soil and Water Conservation Extension Projects

The soil and water conservation grants program also funded several projects to professionals with Texas Cooperative Extension (TCE). Highlights of these projects are described below.

• The "AgriPartners" program is a comprehensive effort that fosters efficient water use throughout the Texas High Plains. This effort is led by John Sweeten and Bob Robinson of the TAMU Agricultural Research and Extension Center in Amarillo, and involves Extension specialists and county agents across the region. This collaborative program includes such partners as the Texas Agricultural Experiment Station (TAES), the U.S. Department of Agriculture Research Service (USDA-ARS) in Bushland, West Texas A&M University, and groundwater districts in the region. AgriPartners supports more than 50 demonstration projects in 21 counties. Aspects of this multifaceted project include helping farmers utilize the North Plains Evapotranspiration Network to make informed irrigation decisions, and teaching producers about precision agriculture to apply the optimal amount of irrigation and to minimize pesticide use. AgriPartners also promotes farming strategies that integrate livestock production with the irrigation of small grains; educates farmers about conservation tillage practices; and promotes measures to conserve soils.

• Two demonstration and monitoring projects are being carried out at the Luling Foundation Farm in South Central Texas. The first project is led by Dwight Sexton, Lytle Arche, and Travis Franke of TCE. This program evaluates environmentally sustainable strategies to fertilize pastures. This effort involves evaluating the extent to which poultry litter and the planting of nitrogen fixing legumes may provide enough nutrients to support pasture production. Best management practices are being tested in coastal Bermudagrass plots. The project helps identify long-term strategies to support pasture growth that require fewer chemical inputs. The second project is led by Charles Stichler, Lytle Arche, Travis Franke, Dwight Sexton, Jeff Hanselka, and Billy Kniffen of TCE. The purpose to evaluate conservation tillage systems over a five-year period, and to demonstrate that reduced tillage can be successful for dryland farmers in South Central Texas. The project encompasses such issues as the impact of conservation tillage on soils, crop production, and profitability, when compared to conventional tillage systems now widely used in the region. Field days and other education programs have been used throughout the life of this project.

• Verifying whether a new method to estimate the amount of nitrogen that may be mineralized in soils where cotton and other agricultural crops are grown is the aim of another Extension project. The project leaders are Mark McFarland, Robert Lemon, and Frank Hons of the TAMU Soil and Crop Sciences Department. Cooperators include TCE agents Rick Jahn, Roger Havlak, Jeff Stapper, John Sloan of TAES, and Extension agronomist Randy Boman. Applied research and demonstration projects are being carried out in eight counties. These studies will utilize an innovative soil test developed at TAMU that rapidly predicts quantities of mineralized soil nitrogen. This new method is inexpensive, simple to use, and quick to carry out.

• Reducing the amount of nonpoint source pollution that enters the Trinity River and Galveston Bay from landscapes is the aim of an project by Extension agents Julie Massey, Eddie Byrom, and William Johnson. This effort involves expanding the "Galveston Bay Yards & Neighbors" program into Tarrant County. This program shows homeowners, through demonstration landscapes and education, how to design and maintain low maintenance landscapes that require fewer pesticides, thus protecting water quality by limiting runoff pollution. The effort also included water quality monitoring.

• Determining if drip irrigation may be an effective way to irrigate corners of fields that are not watered by center pivots is the goal of a study by Frank Dainello of the TAMU Horticultural Sciences Department and Larry Stein, Marcel Valdez, and Kenneth White of TCE. In this project, a drip irrigation system was installed and monitored on a farm in the Winter Garden area where grain sorghum, spinach, and onions were grown. Data were gathered on the amount of water used by drip, furrow, and sprinkler irrigation,

as well as grain sorghum yields. The project showed that drip irrigation used more water than through center pivot irrigation, but also produced much higher yields. Results suggest that drip irrigation is a promising method to supplement center pivot systems.

• At a site near Midland College, TCE specialists have teamed up with the college to create a demonstration ranch that teaches people about the benefits of brush control. This project is led by Charles Hart, Sam Field, and Raymond Quigg of TCE; Cleo Savage of Midland College; Phillip Dickerson and Calvin Richardson of the Texas Parks and Wildlife Department (TPWD); and Charles Anderson, Ray Schimcek, and Gary Askins of the USDA Natural Resource Conservation Service. This effort, located at the Holiman Wagon Wheel Ranch, showcases how such practices as herbicide use, land ripping, prescribed burning, and mechanical methods can remove nuisance brush vegetation. Nearby facilities at Midland College provide a facilities for education, training, and seminars.

• Learning about the extent to which removing nuisance brush may increase water yields throughout Texas is the goal of the "Water for Texans" program. This effort is led by Larry White and Barron Rector of TCE. Cooperators include researchers with Southwest Texas State University, private landowners and ranchers, and agency personnel with TPWD, the City of Austin, and the San Antonio Water System. This effort involves gathering data from more than 20 sites in 11 counties. At each site, the amount of runoff is measured from rangelands where brush has been cleared and sites that have not been treated. This program provides data about the amount of increased water yields that might be expected from brush control, as well as the cost of these programs.

• Protecting groundwater quality from contamination by pesticides, fecal coliform bacteria, and other sources is the emphasis of a program led by Monty Dozier of TCE and Dennis Hoffman of the Blackland Research and Extension Center. This effort teaches agricultural producers how to employ best management practices to reduce contamination from atrazine and other pesticides. The study also involves evaluating how well grass filter strips can trap atrazine runoff as well as taking water quality samples from individual wells throughout Texas to determine fecal coliform levels.

Summary

Both these efforts described in this newsletter provide additional resources to facilitate graduate student education, research, and Extension work. TWRI will continue efforts to use its resources to strengthen these programs, thereby addressing critical water resources issues.

For More Information

Details about these projects are available from the TWRI website at http://twri.tamu.edu or by e-mailing us at twri@twri.tamu.edu. TWRI recently selected projects for soil and water conservation grants for 2002-03, and will announce those projects in the near future. You can also keep up with water resources news by subscribing to our free "TWRI WaterTalk" e-mail list server. Contact Ric Jensen at rjensen@tamu.edu to learn about this service.

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