

IRRIGATION TECHNOLOGY CENTER

Newsletter

Texas A&M University System



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The Drought Simulator

The Irrigation Technology Center (ITC) completed the construction of its first research facility in San Antonio on July 23. The Drought Simulator is a premier, 5,000 square foot roof structure that is capable of mechanically deploying and retracting along a 350 foot rail system, and is one of the largest and fastest deploying rainout shelters in the country.

Dr. Guy Fipps, ITC Director, noted that this facility will be used for years to come to determine plant and crop water requirements and drought recovery capacity. The Drought Simulator is currently being used in a project evaluating the 60-day drought survival and recovery of 25 turfgrasses (See article on page two).

For the turfgrass study, the Simulator was in operation mode from July 23 until September 20 and deployed six times due to rain events. Deployment is triggered when either one of the two rain gages records 0.02 inches of rain or when both record 0.01 inches. The simulator auto-

matically retracts 30 minutes after rainfall ceases.

Currently, the drive system is being upgraded which will reduce the deployment time of two minutes by 75%. A cable drive system was chosen for the Simulator over a direct drive system. While more complicated, the cable system reduces hazards from lines and machinery. The control algorithms were designed by ITC's System Analyst, Dave Flahive. Chris Braden, ITC Associate, was in charge of construction. He says "The Drought Simulator project was an exciting and challenging experience that involved many hours of hard work and cooperation as a team."

Funding for construction of the Simulator was provided by the San Antonio Water System and by the Rio Grande Basin Initiative (<http://riogrande.tamu.edu>). For more information and pictures, including the deployment status and history, please visit <http://itc.tamu.edu/rainout.php>.



Drought Simulator - June 2006

Legislature Approves New A&M Campus in San Antonio

During the last summer's special session, the Texas Legislature approved issuing tuition revenue bonds to begin construction of a new Texas A&M University System campus in San Antonio. This is a significant development as plans call for the ITC to be co-located with the new university, and, over time to be incorporated

into it's academic programs.

Texas A&M University System officials are currently working with the City of San Antonio on reviewing proposed sites for locating both the university and the ITC in south San Antonio. A final decision on the site is expected by early spring of 2007.

Sixty-day Turfgrass Drought Recovery Study

ITC's new Drought Simulator is currently being used in a two-year study to determine the capability of 25 turfgrasses to recover from a 60-day drought. The study is being funded by the San Antonio Water System (SAWS) and the Turfgrass Producers of Texas (TPT). Under a recent ordinance passed by San Antonio, beginning in 2007, only grasses capable of surviving a 60-day drought can be used in new construction in the city.

Dr. David Chalmers, Extension Turfgrass Specialist at Texas A&M University heads up the research team conducting the study. The grasses were sodded in replicated 4' x 4' plots and include various varieties of Bermuda, St. Augustine; and Zoysia. Although all types of buffalograss have already been approved

without testing, one buffalograss was planted for comparison purposes. TPT members supplied the sod for the study.

Turfgrass quality is being quantified by such factors as density, leaf firing due to moisture stress, and color as percent green turf cover, and includes the analysis of digital imagery. Preliminary data from the first-year study will be available in January 2007.

The study is in its first year, and the test plots are now in the 60-day drought recovery phase of the study. The second-year turf plots were sodded on September 22 to allow them to be fully established before drought conditions are imposed in July 2007. For more info, see <http://itc.tamu.edu/rainout.php>.



28 days with no water



39 days with no water



46 days with no water



28 days into recovery

Texas ETo Data Updated

The TexasET Network and Website (<http://TexasET.tamu.edu>) was established in 1995; and for the last 11 years has reported ETo (evapotranspiration) and weather data from a network of agricultural weather stations. On-line tools allow users to use the ETo data to determine the irrigation requirements of landscapes and crops.

The website also has tables that give the long-term ETo and rainfall monthly averages for 19 cities in Texas. This data is routinely used for setting irrigation schedules, conducting water balances, and in regional water planning; and it has been included in several water demand models used in the state. The importance of the

accuracy of this data has increased in recent years as Texas develops plans to meet the ever increasing water demands of the state.

Texas Cooperative Extension specialists recently updated this data using several methods that do not require measured solar radiation and by comparing the various estimates produced with the 11-year records in the TexasET archives.

The previous estimates of ETo for Texas were found to be too high, a potential significant finding considering the water supply situation in the state and the expense of developing new water supplies.

Custom ET E-mails Now Available

TexasET Website users can now sign up to receive customized emails with ETo, irrigation recommendations and other information. Users specify how often they'd like to receive the emails and what information is included.

To receive irrigation recommendations, users must enter information concerning their site and plant or crop when setting up their profiles on the website.

Application Rate Calculator Available

Last year, the ITC, at the request of the Texas Commission on Environmental Quality, developed software to help with the establishment of wastewater application rates in the State. The software, "Application Rate Calculator" performs a monthly water balance over a one-year period.

Besides being useful for the design of wastewater applica-

tion systems and other situations where no runoff or deep percolation is desired, it will be of interest to anyone needing to do monthly water balances that include irrigation, rainfall, and deep percolation. The software is available free of charge and may be downloaded at <http://itc.tamu.edu>.

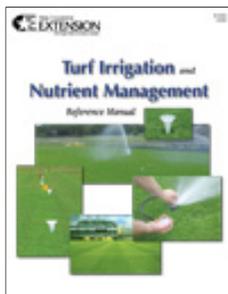
Recent Publications

The following publications may be ordered at <http://tcebookstore.org>



B-6162 Center Pivot Workbook

This training manual is based on our popular "Center Pivot Irrigation" publication (B-6096) which has been widely used by both irrigators and dealers to select and manage pivots. The workbook is divided into 15 sections that cover all topics related to the selection and management of center pivots, including types of drive systems, telescoping, water applicators and chemigation. Each section have review problems to test one's understanding of the topic. A center pivot buyer's checklist is also included. The workbook can be used for independent study or in group trainings. (35 pp., 18 illustration, 11 tables) \$10.25 a copy.



B-6165 Turf Irrigation and Nutrient Management Reference Manual

This manual is designed to serve as a reference guide for landscape professionals. It covers all aspects of irrigation and nutrient management of turfgrasses. There are sections on predicting turf water requirements, accounting for rainfall, determining irrigation frequency, determining station runtimes, determining precipitation rate, taking soil samples, determining chemical and fertilizer requirements, and applying fertilizers. (28 pp., 5 illustrations, 10 tables) \$6 a copy.

Water Measurement and Automation Workshop

Water district personnel will be interested in ITC's Water Measurement and Automation Workshop scheduled for early February 2007. The workshop will cover water measurement structures commonly used in canal systems, as well as water measurement equipment and devices for both open channel and pipeline applications, and will provide an overview of automation equipment and control systems, and software for management of data. More details on the workshop will be posted on the ITC Website in December.

Braden Joins ITC Staff

In September of 2005, Dr. Chris Braden joined the ITC as an Extension Associate and now coordinates all ITC activities in the San Antonio and Winter Garden areas of South Texas. Chris obtained his BS from Texas Tech University and his graduate degrees from Texas A&M University in College Station in Soil and Crop Sciences. Chris is familiar with irrigation, growing ups on an irrigated farm in arid West Texas. Chris's headquarters is at the Bexar County Extension Office which is located in Northwest San Antonio. He may be reached at (210) 467-6575 or by email at cbraden@ag.tamu.edu.



Fipps Returns from 9 Months of Service in Afghanistan

Guy Fipps, ITC Director recently returned from a temporary assignment with the US Department of State (DOS) in Afghanistan. Fipps served as the Senior Advisor for Water at the US Embassy in Kabul. His temporary appointment with DOS carried all requirements and benefits of DOS employment. As Senior Advisor, he carried a diplomatic passport, reported to the US Ambassador, and was required to live in and work in the heavily fortified embassy compound in Kabul.



Fipps in Helmand Province, Afghanistan

In addition to conducting strategic analysis and planning in the water sector, Fipps advised the Afghan government and provided technical assistance to the various NGOs and USAID on water projects, as well to the US military on their civil works programs. "The US

military last year spent \$250 million on civil works and development projects" says Fipps, "They see these efforts as vital to the mission of bringing stability to Afghanistan."

Fipps visited 14 provinces while in Afghanistan and stayed at military bases due to security concerns, where he worked with military Civil Affairs officers on evaluating proposed and on-going projects. "I actually enjoyed my work with the military," said Fipps, "It's a rather unique experience to be taken out to look at an irrigation project escorted by 3 to 4 humvees and guarded by 10 or more armed soldiers." Fipps says we should be proud of our young men and women, serving in Afghanistan. "They're very dedicated and committed to the mission in spite of the tough and dangerous conditions they have to deal with".

Fipps feels he successfully completed the assignment of strategic planning in the water sector. "During the first few years after the fall of the Taliban," Fipps says, "USAID funding took a 'shot-gun' approach. My approach was to identify the components of the water sector which, if not addressed, would threaten internal or external stability." Fipps also introduced polypipe into Afghanistan and designed the water supply and irrigation systems for Kabul University's new agriculture teaching farm.

Fipps was recruited for the position by the Pentagon's Afghan Reachback Office. "Leaving my home and job for this assignment was a tough decision and caused hardships for my family, co-workers, students and employees" Fipps says, "but how can you say no?"