

## Conservation Matters - November 2012

### New *txH<sub>2</sub>O* issue examines research ensuring water supplies



The Texas Water Resources Institute has published its Fall 2012 issue of *txH<sub>2</sub>O*. This issue of the magazine spotlights water quantity projects in various stages of the research process: research and development, testing and evaluation, and technology transfer. Read about a Texas A&M University research team that is examining soil moisture in the vadose zone, a stakeholder group that reached a consensus resolution to balance protection of endangered species and water use in the Edwards Aquifer region, and the Water Conservation and Technology Center director sharing his vision for the center created to address water supply issues in the state.

Other stories report on desalination technology, a conservation partnership on the Trinity River, and successful projects in the Texas Panhandle, Rolling Plains and East Texas. Read the [issue](#) for more information, and [subscribe](#) to receive future issues.

### 2013 Water Resources National Competitive Grant announced

The [Texas Water Resources Institute](#) (TWRI) announces the Request for Proposals for the FY 2013 National Competitive Grant Program by the U.S. Geological Survey in cooperation with the [National Institutes for Water Resources](#) (NIWR).

Proposals must be filed online at [niwr.net](#) by 3:00 p.m. on **Feb. 21**. The proposals will then be approved for submission to the National Competitive Grants Program by TWRI by **March 7**.

Proposals are requested on the topics of improving and enhancing the nation's water supply, including evaluation of innovative approaches to water treatment, infrastructure design, retrofitting, maintenance, management, and replacement; evaluation of the dynamics of extreme hydrological events and associated costs; development of methods for better estimation of the physical and economic supply of water; alternative approaches and governance mechanisms for integrated management of ground and surface waters; and the evaluation and assessment of conservation practices. Proposals are sought in not only the physical dimensions of supply, but also the role of economics and institutions in water supply and in coping with extreme hydrologic conditions. Further information on these priority research issues is in the [RFP](#).

Proposals may be for projects of 1 to 3 years in duration (discrete 12-month budget periods required) and may request up to \$250,000 in federal funds. Proposals require a 1:1 match, thus successful applicants must match each dollar of the federal grant with one dollar from non-federal sources. Federal funds may not be used to pay for indirect costs, but matching funds can be used for indirect costs. To fulfill part of the matching requirement, the applicant's negotiated indirect cost rate may be applied to both federal and non-federal direct costs. The indirect cost rate may not be applied to tuition and equipment costs.

More information is available at [twri.tamu.edu/usgs-104g](#), and a copy of the RFP is also available at [niwr.net/competitive\\_grants/RFP](#). Additional information about proposal content, format, review process and registration with the NIWR system is available in the RFP.

### Consumer food prices remain relatively stable despite drought

*By Danielle Kalisek*



Most of Texas is still in some degree of drought. That, coupled with the drought in the Midwest United States, has caused crop production and livestock to be effected, but how does this translate to consumers and ranchers?

So far in 2012, grocery price increases have been moderate. However, further drought could lead to multi-year effects on livestock and some crops, bringing increased prices to consumers, said [Texas A&M AgriLife](#)

[Extension Service](#) specialists.

"It's been really interesting given the horrible Texas drought of 2011; as we went into 2012 we certainly didn't think our crop prospects were very good, but they've done amazingly well," said **Dr. Mark Welch**, AgriLife Extension economist in grain marketing and policy in the [Department of Agricultural Economics](#) at Texas A&M University.

"We've had above average wheat yields, with the wheat crop harvested primarily in June, and our corn crop has come in well above average. In fact, early estimates from USDA are that this could be a record high average corn yield for the state of Texas, contrary to what's happening elsewhere in the country."

Timely rainfall enabled Texas grain production to respond well and have generally a very good crop for 2012, he said. Drought elsewhere has led to record high corn prices and high prices for wheat, creating a profitable situation for Texas grain producers.

At the same time, record level corn-selling prices led calf prices to decline sharply at the auctions, said **Dr. David Anderson**, AgriLife Extension economist for livestock marketing also in Agricultural Economics at Texas A&M.

"We still have cattle prices higher than they were a year ago, but they are a heck of a lot lower than they were just a few months ago," he said. "They went down because the cost of feed to feed the cattle went up, and that's typically what happens."

Welch said it is a little early to know what will happen on the price of consumer products.

Dairy and meat products might have price impacts sooner than other products, Welch said. "In most of our processed food items, particularly those that are grain based, the price spike we are seeing only started in June, so we've only had a few months of this run up in prices. It's relatively short-lived, but if it continues we'd expect some impact to the consumer at the grocery store or meals away from home."

One consideration is that in food consumption of grain products, the value of the grain in the final product is relatively small when compared to the other costs associated with food production, he said.

"The value of wheat in an average price of a loaf of bread is about 11 cents, so about 7 percent of the value of bread is wheat," Welch said. "It's all the other costs—transportation, shipping, processing, advertising, marketing—associated with getting a loaf of bread to the grocery store that increases the price."

"Given those numbers, you can double the price of wheat and have really a relatively minor impact on the final price of the food product."

2008 was the last time an increase in grain prices was similar to the current situation, and there were strong concerns of food inflation at that time, Welch said. But during that increase, energy prices were soaring to record high levels. Several studies, he said, have documented the energy component of

manufacturing and processing systems is more important than the raw grain product that goes into that food item.

"If these high prices do persist and particularly if we see higher energy prices over the next months, then we could see compounding effects, and we could see higher food inflation at that point," Welch said. "But right now it's so early that we really haven't seen it to this point."

On the livestock side, the drought particularly affects cattle and other range livestock, Anderson said.

"Last year being the driest year on record, we had the largest one-year decline in beef cow herds on record," he said. "If we move to the drought this year, it is so much more widespread through the Plains and into the Corn Belt. The effects we are getting are skyrocketing feed costs and those costs then increase the cost of producing all our meats—beef, pork, chicken, turkey, dairy. It really leads to higher costs across the board."

Reduced meat production is expected to be seen because of this, and seeing that reduction takes time, more so for some than others, Anderson said. For instance, it takes more time on the cattle side than it does with broilers, because it takes less time to raise chickens.

"In a drought like this what typically happens is we're forced to sell a lot of cows because at some point because you just can't afford to feed them anymore," Anderson said. "The effects of this drought will be reduced meat production next year and reduced milk production and eggs and everything else until prices of those products rise enough to offset the higher costs."

Anderson explained that because of the nature of producing meat, it's actually been in the past few months that feed costs have skyrocketed to the current record levels. Historically, corn prices were already high, but now prices are at record high levels.

"Once those feed costs go up, livestock producers have to adjust their production to those higher costs," he said. "The beef we are going to produce this year and next year, those animals are already alive. Calves were born in the spring, they will go to feedlots and 18 months from the time they are born they will be finished steer/heifers coming out of the feedlot for beef."

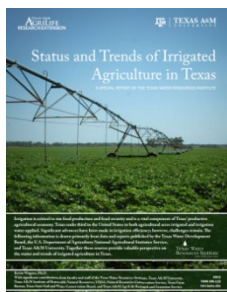
"Those animals are already alive, and we're going to produce that beef. It's the time after that where the drought's high costs forces us to reduce our beef cow herds, and it's after that that our beef (supply) really declines even more."

High beef prices have become common in recent years, Anderson said.

"We already have had historically very high prices for all of our meats at the retail level, and it's because over the last five years, we've been cutting meat production in the United States because of high feed costs and increasing exports," Anderson said. "We've been transitioning since late 2006 to a much higher cost environment to produce meat."

"I expect that next year we are going to see higher meat prices than we are this year because of the effects of the drought, particularly the drought in the Corn Belt and then our drought here (in Texas) that is continuing as well as the drought in the Great Plains that effects a lot of beef cows."

**New publication sheds light on agricultural water use in Texas**



Texas A&M AgriLife Research and Texas A&M AgriLife Extension Service experts recently released a report, [\*Status and Trends of Irrigated Agriculture in Texas\*](#), highlighting the current status of irrigation in Texas.

"Irrigation is critical to our food production and food security and is a vital component of Texas' productive agricultural economy," said **Dr. Kevin Wagner**, associate director of the [Texas Water Resources Institute](#) and lead author of the special report.

"Decision-makers need the facts on just how much water agriculture is using as well as how much food and fiber it's producing with that water," he said.

Wagner said because of drought conditions and water supply concerns, Texans are looking to improve water conservation and management strategies across the board.

The content in the report was drawn primarily from data and reports published by Texas A&M University, AgriLife Research, AgriLife Extension, the Texas Water Development Board and the U.S. Department of Agriculture National Agricultural Statistics Service.

"The report aims to be a concise survey of the most current body of knowledge on irrigated agriculture in Texas," Wagner said.

"Over the past several decades, significant advances have been made in irrigation efficiency, as many irrigators now use high-efficiency advanced irrigation technologies, such as low-pressure center pivot sprinkler systems or subsurface drip irrigation," said **Dr. Dana Porter**, AgriLife Extension agricultural engineering specialist in Lubbock, who contributed to the report.

"However, challenges remain and there are opportunities for continued improvements in water use efficiency through application of situation-appropriate efficient irrigation technologies and best management practices, including irrigation scheduling, and through use of drought-tolerant crop varieties and integrated crop and pest management practices."

Highlights from the report include:

- While statewide agricultural irrigation application rates have stayed relatively constant since the mid-1970s, agricultural yields have increased significantly as improvements in irrigation technology and management, crop management and crop genetics have been developed and implemented.
- Texas agricultural irrigation averages less than 18 inches per acre annually. In comparison, a College Station study found average households supplemented rainfall by applying 22 inches annually to lawns.
- The statewide economic value directly derived from irrigated agriculture was \$4.7 billion in 2007.
- Regional impacts of irrigated agriculture vary greatly, and in regions such as the High Plains, the economic impact is significant. In the Texas High Plains alone, the total regional economic impact of converting all irrigated acres to non-irrigated dryland farming would be an annual net loss of more than \$1.6 billion of gross output, more than \$616 million of value added and nearly 7,300 jobs.
- Irrigated agriculture is a part of the broader food and fiber sector, which accounts for 9 percent of the state's economy.
- Although both surface water and groundwater are used for agricultural irrigation, the source of most agricultural irrigation water is groundwater. In 2000, 86 percent of the irrigated acres in the state used groundwater.
- Irrigation efficiency has gone from 60 percent to 88–95 percent in much of the state today, allowing Texas to get much more value and agricultural output from its water.

- As of 2008, center pivot sprinklers are used on nearly 80 percent of Texas' irrigated acres, and 87 percent of those acres are using highly efficient low-pressure center pivot sprinklers.

The full report and a corresponding slide presentation are available online at [twri.tamu.edu/publications/educational-materials/2012/em-115](http://twri.tamu.edu/publications/educational-materials/2012/em-115).

## **Tourism industry feels drought impacts, state parks bounce-back from 2011**

*By Kathryn Boutwell*



It's no secret that Texas is prone to drought. With water levels as low as 48 feet below normal in some Texas lakes, activities such as boating, fishing, water skiing and even camping become more difficult, or impossible—boats don't float in dry lakes, and fish don't bite if there isn't any water. The impact of drought is seen not only in lakes, but also in local economies as tourism revenues decline.

"Few industries are more vulnerable to the ravages of severe drought and water shortages than the travel industry," according to [Texas Travel Industry Association](#) documents from a 2012 public forum.

"The horrible record heat and drought drove down state park revenue, creating a large financial need of \$4.6 million to help keep state parks open in 2011," said **Tom Harvey**, media communications director for the [Texas Parks and Wildlife Department](#) (TPWD).

"Revenues from park visitors and license sales, especially fresh water fishing licenses, fell sharply," he said.

In a 2012 email to park supporters, **Carter Smith**, TPWD's executive director, made a public appeal for funds, stating, "Drought and a drop in visitation have led to a critical situation for state parks."

"Drought definitely impacts water-related tourism," Harvey said.

Currently, Lake Travis near Austin is at about 632 feet, 30 feet below its historical average depth of 664 feet, according to the Lower Colorado River Authority website. On Lake Travis, seven of the 11 parks are operated by Travis County. At these parks, only one of the 15 boat ramps is open due to low water levels.

This inconvenience has a great effect on tourism and revenue, according to the Lake Travis Community Coalition.

A coalition report released in 2011 suggested that when lake levels drop below 660 feet, parks and surrounding businesses can expect to see less visitors, less tourist spending and decreased revenue. In drought years, parks could see the number of visitors decrease by more than 125,000, according to the report, when compared to years with normal lake levels. The report said that local governments could lose more than \$20 million in total revenue because of fewer tourists.

"The worst impacts of the drought were felt in 2011," Harvey said. "The good news is that state park visitations, park revenue and license sales have come back strongly this year."

State parks have made more money this spring and summer than they did last spring and summer, and it's not just because of few visitors last year and a normal number this year, he said.

"Park visitation, so far, has increased not only from last year, but also from previous years," Harvey said. Fresh water fishing, which is dependent on good water resources, saw a large decline in license sales in 2011. Licenses for 2012–2013 went on sale Aug. 15, and compared to last year, "sales of hunting and fishing licenses are up about 25 percent," Harvey said.

TPWD's recent success could be an indicator that things are improving for the tourism industry in Texas.

### **Marshall recognized at Texas Section Society for Range Management**

**Mike Marshall**, extension assistant for the [Texas A&M Institute of Renewable Natural Resources](#) (IRNR), recently won an award for best presentation by a young professional at the [Texas Section Society for Range Management](#) (SRM) conference in Fredricksburg, Texas, **Oct. 2–6**.

His presentation, titled "Relationship between habitat quality and ESDs: a novel approach to managing endangered species," discussed recent happenings within IRNR's [Fort Hood project](#) regarding endangered species conservation.

Marshall's talk focused on using ecological sites as indicators of habitat quality, thinning of understory as a potential management tool for improving golden-cheeked warbler habitat, and the importance of "cross-pollinating" the fields of range science and wildlife research. He will also be presenting similar data at the national SRM conference in Oklahoma City in February 2013 as part of a workshop on ecological site descriptions.

### **TPWD develops new CWD protocols for mule deer**



Wildlife officials are asking mule deer hunters and landowners in far West Texas to familiarize themselves with new protocols developed as part of the Texas Parks and Wildlife Department (TPWD) [Chronic Wasting Disease](#) (CWD) response plan. The plan includes mandatory check stations for harvested mule deer taken inside the [CWD Containment Zone](#), which covers portions of Culberson, Hudspeth and El Paso counties.

The response plan is being implemented after tissue samples from two mule deer in Far West Texas [tested positive for CWD](#). These are the first cases of CWD detected in Texas deer, according to TPWD.

[CWD](#) is in a group of diseases called transmissible spongiform encephalopathies (TSEs). Other diseases in this group include scrapie in sheep, BSE or mad cow disease in cattle, and Creutzfeldt-Jakob disease in humans. CWD is a progressive, fatal disease resulting in altered behavior because of microscopic brain changes.

An animal may carry the disease without outward indication, but later signs include listlessness, head lowering, weight loss, repetitive walking and a lack of responsiveness. CWD is not known to affect humans.

There is no vaccine or cure for CWD. Steps to minimize the risk of disease spread include restriction of movement and mandatory hunter checks of deer, elk or other susceptible species within the CWD Containment Zone.

Read the full [TPWD news release](#) for more information and for instructions on procedures for harvesting deer inside the Containment Zone.

## Dwindling water supplies prompt recommendations for growers



[Texas A&M AgriLife Research](#) has released a set of recommendations for South Texas growers facing an extended drought and dwindling water supplies, according to an agency water engineer.

“A relentless drought, record high temperatures and depleted water reserves for the past two years in South Texas require us to take a closer look at how we manage water under water-limiting conditions,” said **Dr. Juan Enciso**, a water engineer at the Texas A&M AgriLife Research and

Extension Center at Weslaco.

While the state has suffered multi-billion dollar agricultural losses due to drought, the Lower Rio Grande Valley of Texas has been especially hard-hit, and local irrigation districts are facing projected water shortages, Enciso said.

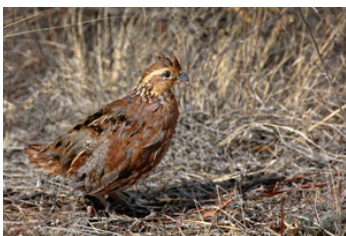
“Before growers start planning for what they’re going to plant next year, they need to contact the manager of the irrigation district they are in,” said **Wayne Halbert**, manager of the Harlingen Irrigation District. “Each irrigation district has individual allocations of water, policies of how water is allocated and water duties, meaning water available to farmers varies by district.”

AgriLife Research has provided 16 management recommendations to help growers address this period of limited water supplies, Enciso said.

The recommendations are available at [weslaco.tamu.edu](http://weslaco.tamu.edu) and include leveling land while fields are dry, installing flow meters and rain gauges to manage water use, reducing irrigated areas to give priority to perennial crops such as citrus and sugarcane, planting more drought-resistant crops, and considering which crops have high- and low-yield response, profitability and risk to water stress, Enciso said. The list is also available by emailing him at [j-enciso@tamu.edu](mailto:j-enciso@tamu.edu).

Read the full [AgriLife TODAY article](#) for more information.

## Texas Tech experts monitor drought’s effects on quail counts



Three years into a five-year project aimed at stemming the decline of quail in Texas, researchers with a conservation alliance based at Texas Tech University are finding that last year’s blistering drought didn’t help that rescue effort.

“Even though we’ve seen improvement in this year’s reproductive efforts, it’s important to look at reality,” said **Dr. Brad Dabbert**, [Quail-Tech Alliance](#) research project director and associate professor in Texas

Tech’s [Department of Natural Resources Management](#). “We’re coming off one of the worst droughts on record and we’re seeing a corresponding reproductive failure. While environmental conditions improved during winter and spring, we can’t expect populations to rebound in a single year.”

Starting in 2009, Quail-Tech Alliance and Texas Tech designated a 38-county research area in west central and northwest Texas, an area that encompasses more than 22 million acres or roughly 10 times the size of Yellowstone National Park. Within each of the counties, one ranch is designated as an anchor ranch to serve as a field research or demonstration site.

Among the historic ranches on the list attempting to save the northern bobwhite quail, are Guthrie's 6666 Ranch and Pitchfork Ranch, Vernon's W. T. Waggoner Ranch, Collingsworth County's Mill Iron Ranch and Archer County's Circle A Ranch.

While the Lone Star state's historic drought inhibited reproduction over most of the Rolling Plains last summer—exasperating bird deaths over the winter—researchers are encouraged to see many birds in reproductive condition this nesting season.

"It's amazing what a little timely rain can do," Dabbert said. "We've had reports of broods in many areas of the Rolling Plains."

Read the full [Texas Tech Today article](#) for more information.

### **Turf study monitors runoff, establish fertilizer management practices**



Improperly applied fertilizer on newly placed sod may result in nutrient runoff into the water supply, but just when is the best time to apply fertilizer and what kind is the best for new turf?

A team of scientists from Texas A&M AgriLife Research is aiming to answer those questions. All with the [Department of Soil and Crop Sciences at Texas A&M University](#), the group includes: **Dr. Jacqui Aitkenhead-Peterson**, assistant professor of urban nutrient and water management; **Dr. Ben**

**Wherley**, assistant professor of turfgrass science and ecology; **Dr. Richard White**, professor of turfgrass physiology and management; and **Jim Thomas**, senior research associate.

"We are looking at the establishment of turf and what nutrients are coming off of that turf in the water runoff after irrigation or rain events," Peterson said.

The study, sponsored by The Scotts Miracle-Gro Company, is being conducted at the Texas A&M Urban Ecology Field Laboratory on F&B Road, in College Station. The runoff facility used in the study took a year to construct and consists of 24 individual plots, each 13 feet wide by 27 feet long on native soil that has not been disturbed until planting, all on a 3.5 percent slope. The plots are isolated with vertical plastic barriers between them so that water applied either infiltrates into the ground or runs down the hill where it can be sampled for nutrient content.

"We have the capability of irrigating where we can force a 'rainfall event' but the equipment is always on to also record any naturally occurring events," Peterson said.

The study site was planted on **Aug. 8** and the first runoff event measured occurred the following day, they said. The plots are planted to St. Augustine grass, which is most commonly used in new construction in Central Texas, Thomas said. They will test and compare runoff from plots with no fertilizer to those receiving several different nitrogen sources, applied either immediately or weeks after sod has been laid and rooted in, Thomas said.

"This will be the largest runoff facility of its kind in Texas, if not in the country," Peterson said. "We hope to have a lot of long-term projects looking at management practices, water conservation and nutrient conservation."

Read the full [AgriLife TODAY article](#) for more information.



## New Extension publications

[Feral Hog Population Growth, Density and Harvest in Texas](#), **Jared Timmons, Billy Higginbotham, Roel Lopez, James Cathey, Janell Mellish, Jonathan Griffin, Aaron Sumrall, Kevin Skow**, Texas A&M AgriLife Extension Service, **SP-472, 2012**

## New TWRI publications

[Water Infiltration and Permeability of Selected Urban Soils as Affected by Salinity and Sodicty](#), **S. Miyamoto**, Texas Water Resources Institute TR- 432

[Water Rights Analysis Package \(WRAP\) Daily Modeling System](#), **R. Wurbs, R. Hoffpauir**, Texas Water Resources Institute TR-430

[Conference proceedings for the 2012 Bacterial Source Tracking – State of the Science Conference](#), **L. Gregory, C. Smith, L. Warrick**, Texas Water Resources Institute TR-427

[Application of Expanded WRAP Modeling Capabilities to the Brazos WAM](#), **R. Wurbs, R. Hoffpauir, S. Schnier**, Texas Water Resources Institute TR-389

[Water Rights Analysis Package \(WRAP\) Programming Manual](#), **R. Wurbs, R. Hoffpauir**, Texas Water Resources Institute TR-388

[Water Rights Analysis Package \(WRAP\) Modeling System Users Manual](#), 9th ed., **R. Wurbs**, Texas Water Resources Institute TR-256

[Water Rights Analysis Package \(WRAP\) Modeling System Reference Manual](#), 9th ed., **R. Wurbs**, Texas Water Resources Institute TR-255

## Natural Resources Training Courses

<a href="#">Cooperative Conservation in the Trinity River Basin, Corsicana</a>	<b>Dec. 12</b>
<a href="#">Introduction to ArcGIS 10</a>	<b>Jan. 15–16</b>
<a href="#">Texas Watershed Coordinator Roundtable</a>	<b>Jan. 22</b>
<a href="#">Introduction to Modeling</a>	<b>Jan. 23–24</b>

---

*Conservation Matters* is a monthly e-mail newsletter of the [Texas Water Resources Institute](#) (TWRI) and the [Texas A&M Institute of Renewable Natural Resources](#) (IRNR). TWRI and IRNR work together to foster and communicate research and educational outreach programs focused on water and natural resources science and management issues in Texas and beyond. TWRI and IRNR are part of [Texas AgriLife Research](#), the [Texas AgriLife Extension Service](#) and the [College of Agriculture and Life Sciences](#) at [Texas A&M University](#).

*Conservation Matters* publishes timely information about water and natural resources news, results of projects and programs, and new water-related and natural resources-related research and education projects, publications, papers and faculty, at universities and organizations in Texas.

If you have information for possible inclusion in *Conservation Matters* please contact **Leslie Lee** at [lhlee@ag.tamu.edu](mailto:lhlee@ag.tamu.edu) or 979.862.7139. All submissions may be edited for grammar and style.

If you have difficulty with any links or text, please visit the online version of *Conservation Matters* at <http://twri.tamu.edu/publications>.

To subscribe, unsubscribe or manage your personal membership options to the *Conservation Matters* mailing list visit <http://twri.tamu.edu/publications/subscribe>.