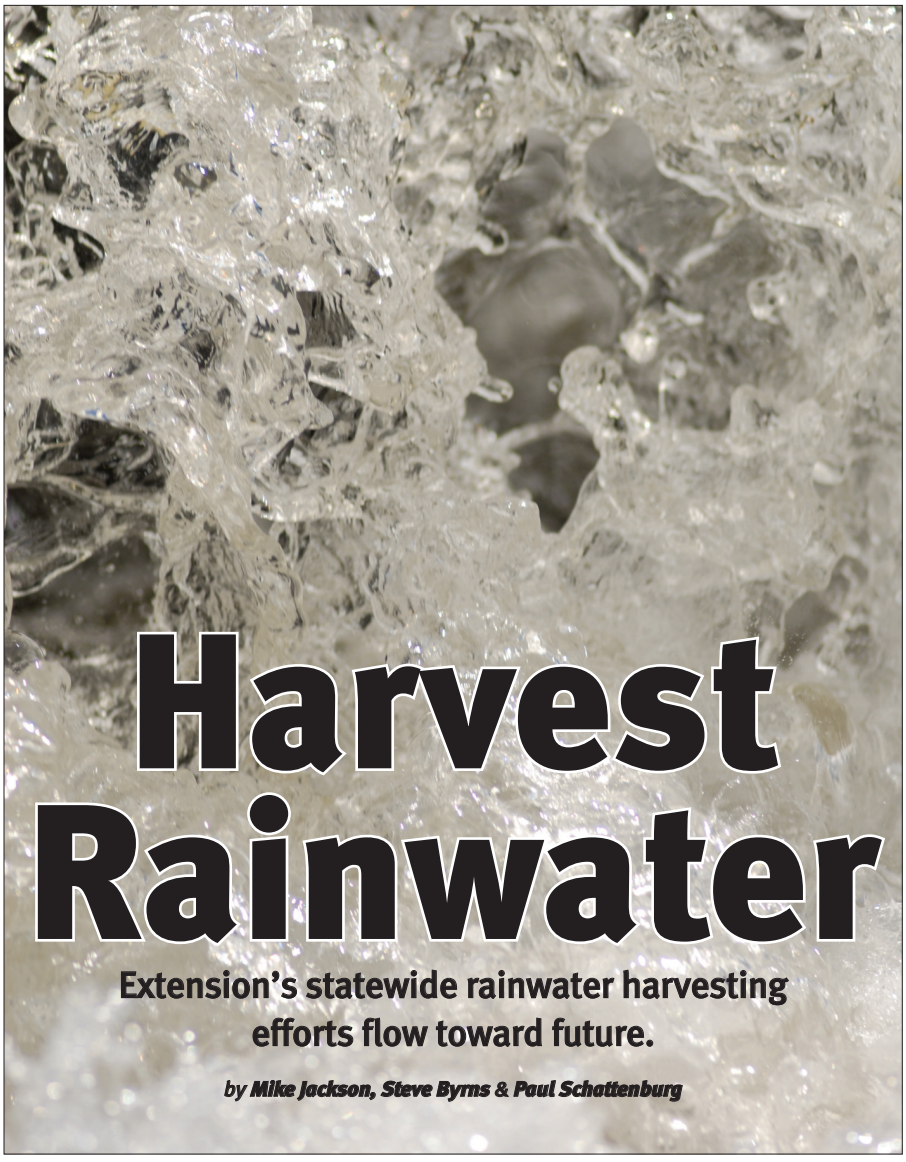

Harvest Rainwater

Extension's statewide rainwater harvesting efforts flow toward future.

*by **Mike Jackson, Steve Byrns & Paul Schattenburg***

PHOTO BY ERIC GRANT

As surface and groundwater resources become more limited, rainwater harvesting will keep springing up as part of a long-term solution to water woes, say Texas Cooperative Extension experts.

"Rainwater harvesting reduces demand on the available freshwater supply," says Bruce Lesikar, Extension agricultural engineer. "It also reduces the quantity of contaminants that enter our streams and rivers, providing high-quality water for landscaping and other needs."

Lesikar, who along with other Extension personnel throughout Texas educates people on the benefits of rainwater harvesting, says taking steps now to help meet the nation's future freshwater needs is vital.

"Though Texas had a wet year in 2007, the recent drought, as well as other droughts in the past, has increased the concern over how to conserve and extend water resources," he says. "As with many other states, the surface and groundwater supply in Texas won't be sufficient to meet future demand. And states with fewer existing water resources have an even more urgent need to develop alternative water supplies."

Capture, divert, store

Rainwater harvesting is a tried-and-true method of capturing, diverting and storing rainwater that has been around for centuries, Lesikar says.

Rainwater is being harvested all over the world, adds Billy Kniffen, Extension educator for agriculture and natural resources for Menard County and one of the state's top experts.

"There are water-harvesting systems all over Australia and Hawaii, and many Caribbean countries collect rainwater (and treat it) for drinking," he says. "Australia is a [world] leader in technology for capturing rainwater, but Texas is a leader in the U.S."

Residential systems have been the focus of much recent interest, Lesikar adds. But rainwater-harvesting systems also can be used in commercial or government buildings, schools, libraries and community centers, as well as for improving wildlife habitat and other aspects of rangeland management.

Home rainwater-harvesting systems can be as simple as capturing water from the roof and channeling it through a downspout into a collection barrel. Systems also can be as elaborate as 10,000-gallon-plus systems for long-term water storage for both non-potable and potable (drinkable) usage.

A basic, no-frills 50-gallon (gal.) home rainwater harvesting system generally costs about $50 in materials, Kniffen says. These materials, which typically include gutters, piping, fittings and collection barrels, are available at most home-improvement centers.

More elaborate water-harvesting systems can cost several thousand dollars, he says. The expense depends on roof size, landscape area, amount of water storage desired, whether the water will be for potable or non-potable purposes, and other factors.

Rainwater harvesting is not necessarily an economically feasible alternative to potable water use, and it could take a very long time if ever for a system to pay for itself, Kniffen says. But it is "the right thing to do," he says, and it provides a source of good-quality water, prevents erosion and helps ensure a freshwater supply for the future.

Kniffen, who practices what he teaches, installed a rainwater-harvesting system at his 1,700-square-foot (sq. ft.) home in Menard in 2002. The 5,500-sq.-ft. combined surface area of his home, patio and barn is used to capture about 16,500 gal. of water in several storage tanks. The water is filtered and treated for both potable and non-potable use, and serves as his family's sole source of water.

He collects about 0.6 inches (in.) of water per each square foot of collection for each inch of rain, which is typical for rainwater harvesting systems, he says.

Kniffen has helped plan and install rainwater-harvesting systems throughout the state. These include a 30,000-gal. collection system for a multiuse community building, a 10,000-gal. system at a livestock show barn, a 3,000-gal. tank for a vineyard, a 2,000-gal. system at a courthouse and a 2,500-gal. system at a library. The library also has a "rain garden," an artificial depression planted with native vegetation that collects and stores storm-water runoff until it can be absorbed into the soil.

Education

Extension has trained dozens of employees and program volunteers to provide educational outreach and technical or hands-on assistance with rainwater

harvesting to residents of Texas and beyond.

"Master Gardeners like myself have been trained and certified to teach rainwater harvesting to our interns during classroom instruction and in the community," says Lou Kellogg of San Antonio, a Bexar County Master Gardener. "We help educate people about the benefits of rainwater harvesting, plus any related incentives, such as tax credits and rebates."

Along with Master Gardeners, Master Naturalists receive instruction and training on rainwater harvesting as part of a statewide Rainwater Steward Program. The Master Naturalists program is a joint effort of Extension and the Texas Parks and Wildlife Department.

Dale Rollins, an Extension wildlife specialist at San Angelo, has investigated the benefits of water harvesting on rangelands. In his studies, he uses man-made depressions called spreader dams to capture runoff to determine the effect of rainwater harvesting on scaled and bobwhite quail.

"We've created what I call 'quail oases' on ranches in Pecos and Fisher counties," he says. "These yielded about 25 times more vegetation than immediately adjacent rangelands and produced five times more insects, which are a critical component of a quail chick's diet."

Examples of Texas Extension rainwater-harvesting efforts

Austin. Travis County Master Gardeners helped build a 7,000-gallon (gal.) rainwater-harvesting demonstration system at Zilker Botanical Garden with funding from the Austin Water Utility Water Conservation Programs. The botanical garden is visited by about a half-million people annually.

Fort Worth. Extension helped design and build a three-part system at a government office complex. One system collects rain from a warehouse roof and stores it in two 1,500-gal. tanks. The second system captures air-conditioner condensation and channels it into a 65-gal. tank. A third, simpler system collects water from a shed roof and funnels it into two 50-gal. barrels. All the water is used to irrigate a nearby public garden.

Houston. Extension is developing demonstration landscapes in the Houston area as part of its WaterSmart Program. One of these will be an educational system with a rain garden scheduled to be installed at the University of Houston at Clear Lake next year.

"We're also looking at rainwater harvesting techniques to create more habitat space for wildlife and for ecosystem-specific landscapes," Christina LaChance, program coordinator, says.

Menard. Rainwater is collected from two downspouts, each on separate sides of the library building and stored in a 2,500-gal. galvanized storage tank. The collected water is used to water native grass plots. The library also has a rain garden.

Edinburg. Rainwater is collected from the roof of the Hidalgo County Extension office and channeled into different storage tanks, including a 1,000-gal. galvanized tank, 585-gal. polyethylene tank, and 1,000- and 2,000-gal. fiberglass tanks. Collected water is used to irrigate surrounding gardens.

Extension educational programs on rainwater harvesting in urban and rural communities represent part of a long-term water solution, Lesikar said. As the demand for fresh water grows, the Extension efforts will also grow.

"Access to adequate fresh water isn't just an urban issue or a Texas issue; it's a national and a worldwide issue," he says. "We've got to start now to be prepared for the future."

For more information, go to *http://rainwaterharvesting.tamu.edu/index.html.*