

Catching the rain for irrigation

Interest in rainwater harvesting systems to supplement landscape irrigation is growing, but there's much to learn before jumping into the business.

BY **RON HALL** EDITOR-AT-LARGE

E DUCATING YOUR clients about rainwater harvesting systems can provide customers an alternative, free source for irrigation water in the face of increasing water restrictions. And who doesn't like free?

OK, so you've been around long enough to realize that even free usually isn't really free. Yes, there is a cost to using rainwater: the expense of installing a rainwater system, which can be considerable. Add the cost of the system's maintenance, usually minimal. But even these expenses, which vary based on a system's design, size and sophistication, may be a sound investment for many property owners when they consider and tally the expense of replacing dead or dying trees and ornamentals because of watering restrictions.

Landscapes, including expensive specimen trees, get severely stressed and often die because of lack of water

whenever a region suffers a severe drought and restrictive watering rules take effect.

As most of us know, local governments and water authorities don't view landscape irrigation as a critical use of potable water, especially on large residential or commercial landscapes where turfgrass is not actively used for sports or recreation.

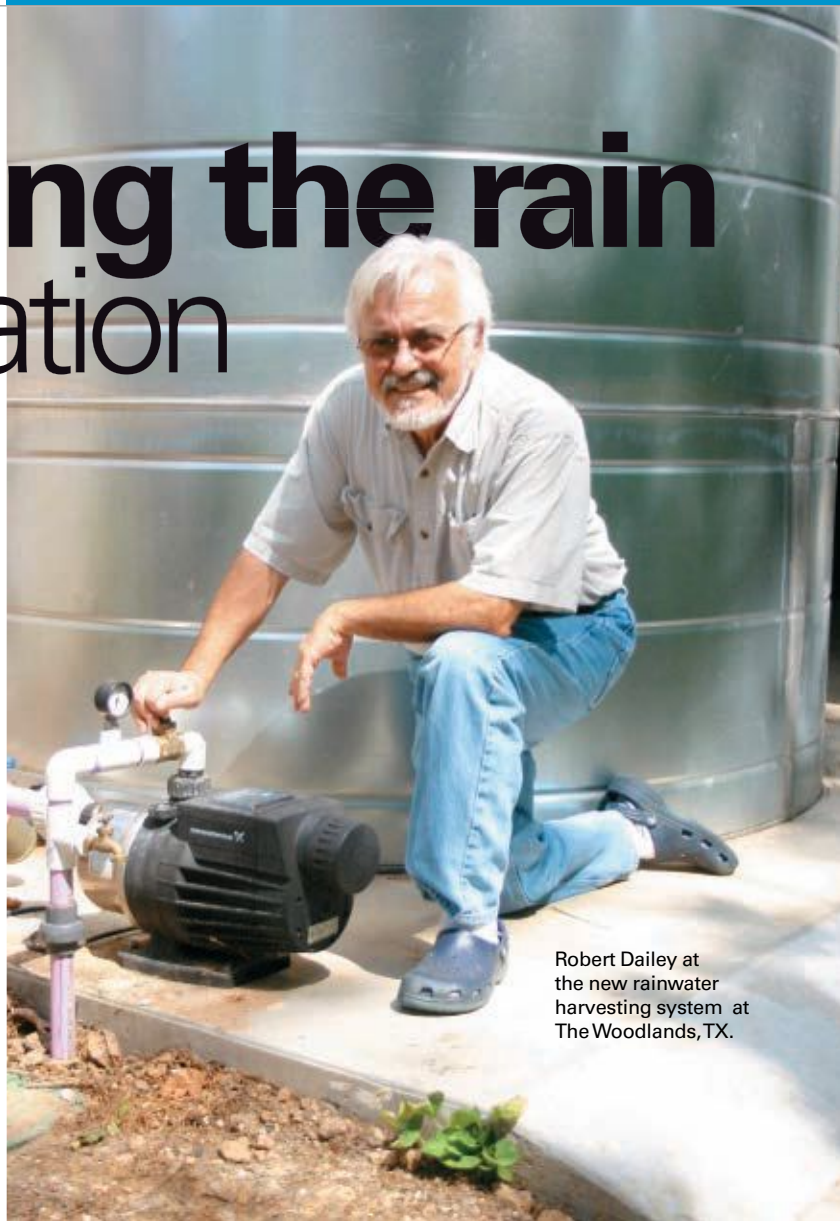
Look before leaping

Is harvesting rainwater a good business opportunity for a landscape company? Every owner will have to decide

that realizing that interest in these systems soars when a region is suffering drought, but demand can dry almost overnight when rains return.

Property owners in regions of the country with persistent water shortages or where potable water is costly are more likely to want them.

The concept of these systems is simple, starting with a design that captures rainwater or snowmelt running off from impervious surfaces such as roofs. The water flows by gravity from a roof, via gutters and downspouts, into a storage tank or underground cistern.



Robert Dailey at the new rainwater harvesting system at The Woodlands, TX.

Captured rain supplements
traditional sources of water

**DETERMINE THE
STORAGE CAPAC-
ITY OF A SYSTEM
BY THE LENGTH
OF DRY SPELLS IN
A REGION**

— **Tim Pope**, President,
American Rainwater Catchment
Systems Association

The stored water is delivered to irrigation lines by a small pump and is directed to landscape plants. Filters keep debris from flowing into the tank and through the irrigation lines. Keep in mind that because this water has flowed over roofs and other imperious surfaces, it's probably passed over bird waste and other harmful substances. It probably shouldn't be used for anything other than irrigation.

Systems are available in a range of sizes and levels of sophistication — from a simple \$50 rain barrel available at most big box stores, to large, above-ground, gravity-fed storage-tank systems or underground cisterns, which deliver stored rainwater to a landscape via 1/2-hp to 1-hp electric pumps.

A supplemental source

The amount of irrigation water a rainwater catchment system can provide depends on the size of the area used to collect the rainwater and the design of the system. A rule of thumb is 1 in.

of rain falling on a 1,000-sq.-ft. roof yields 600 gal. of water.

While that may sound like a lot of water, it's not — at least when it comes to watering turfgrass, says Tim Pope, president of the American Rainwater Catchment Systems Association (ARCSA). Installing a system big enough to irrigate turfgrass is rarely, if ever, worth the cost of a system, he says.

Even a professionally designed and installed system is regarded as a supplemental or emergency source of irrigation water, mostly to preserve the health of valuable trees, shrubs and other ornamentals, he says.

Determine the storage capacity of the system largely by the length of dry spells in a region, Pope says. The longer the period between rains, the larger the capacity for storage.

In other words, a system installed in Atlanta, which typically receives frequent rains, would require less storage than a system installed for a similarly sized landscaped property in Tucson, where rain is much less frequent.

Pope lives and works out of his home in Friday Harbor, WA, where he has installed about 200 rainwater harvesting systems on the islands in the Puget Sound north of Seattle. Even though capturing rainwater for home use is technically illegal in Washington, Pope says he hasn't been prosecuted.

In spite of the Seattle area's reputation for being wet, it actually receives less total precipitation annually than any U.S. region east of the Mississippi River. In fact, the availability of fresh water in many of the communities on the Puget Sound and around Seattle is scarce, the reason why Seattle has a master water permit that allows residents of most neighborhoods to collect some rainwater.

A similar easing of rain collection by homeowners was approved in

Colorado as well this past spring. But it remains forbidden in Utah, which continues to honor 19th Century water rights laws that dictate that all flowing water in western states is already dedicated to someone's use.

Even so, interest in rainwater harvesting is exploding, Pope says, citing the growth of ARCSA, which was founded in 1994 in Austin, TX. For example, the association counted 120 members in 2007. This year, there are more than 700 members, including landscape architects, public officials, utilities, regulators and property developers.

Popular in newer communities

Installations are happening at all levels — residential, commercial, community — and since 2008 across entire real-estate developments in New Mexico.

In fact, nowhere in the United States is rainwater catchment systems promoted as vigorously as in Santa Fe County, Bernalillo County and Albuquerque where residents with 2500 sq. ft. or more of property must install an active rainwater catchment system comprised of cisterns. All commercial developments are required to collect all roof drainage into cisterns to be reused for landscape irrigation.

Another striking example of support for capturing and using rainwater for irrigation took place in 2008 in Tucson, AZ, with the passage of a municipal rainwater-harvesting ordinance for commercial projects. Under the law, developers building new corporate or commercial structures must supply half their landscape water needs from harvested rainwater. The law takes effect June 1, 2010.

Tucson, of course, is in the Sonoran Desert and receives just 12 in. of rainfall a year on average. With a metropolitan population of just more than 1 million people and growing, the region depends on the Colorado River and groundwater, which it care-

NOW THIS IS A RAINWATER CATCHMENT SYSTEM!

AUSTIN, TX — The Lady Bird Johnson Wildflower Center's 14-year-old rainwater harvesting system is an integral part of its architecture, and demonstrates the importance of connecting human culture with the natural world. The collection system conserves water and serves as a public education tool.

The Center collects water from 17,000 sq. ft. of roof, and can store more than 40,000 gal. in five on-site cisterns. The collected rainwater provides about 10% of the center's yearly water needs for irrigation of gardens and landscaping. About 10,600 gal. of water is collected per inch of rain. With an average rainfall of 30 in. per year, this rooftop system can collect about 300,000 gal. of rainwater annually.

The cisterns, one plastic and the others galvanized metal, are linked to the municipal water supply with backflow devices to prevent contamination of potable water. The center has the option to turn to city water, which would bypass the collection system and go right into the irrigation system.

The center was started in 1982 by former First Lady Claudia "Lady Bird" Johnson and actress Helen Hayes, who formed an organization to protect and preserve North America's native plants and landscapes.

First as the National Wildflower Research Center and later as the Lady Bird Johnson Wildflower Center, the facility exists to introduce people to the beauty and diversity of wildflowers and other native plants. Every day, the center brings life to Johnson's vision in its public gardens, woodlands and meadows, as well as in research. In 2006, the center became an organized research unit of the University of Texas at Austin. For more information on the center, visit Wildflower.org.

The Lady Bird Johnson Wildflower Center supplies 10% of its irrigation needs with captured rain.



fully monitors to supply its needs.

Sometimes rainwater harvesting systems serve dual functions — irrigation and also education.

This past summer, the Community Associations of The Woodlands, TX, a master-planned region of about 90,000 people located 28 miles north of Houston, installed a 2,500-gal., rainwater-harvesting tank to collect the rainwater from the office roof at its parks, recreation and environmental services building. The water provides irrigation to more than 1,000 sq. ft. of

demonstration gardens on-site. On Sept. 26, the Community Associations invited the public to see the system and learn about rainwater harvesting methods for homes and businesses.

If you're interested to learn more about capturing and using rainwater to irrigate gardens, visit ARCSA.org or download the 88-page "The Texas Manual on Rainwater Harvesting" at www.twdb.state.tx.us/publications/reports/RainwaterHarvestingManual_3rdedition.pdf. There are several books about the subject, too. **LM**