



Harvesting Rainwater for the Landscape

Have you ever noticed how plants appear greener and brighter after a good rain? It's not just because the dust and dirt get washed off. Rainwater is a clean, salt-free source of water that contains many beneficial ingredients for plants. Rain can contain sulfur, potash, several other minerals and even microorganisms, all of which provide a boost to plant growth. During summer thundershowers there can even be an added bonus when lightening converts atmospheric nitrogen into a nitrogen solution for plants.

Because rainfall is so beneficial, as well as a precious resource, property owners should capture as much rainwater as possible before it runs off into the street. Historically, Native Americans and early settlers relied on harvested rainwater for drinking, landscape watering and agricultural uses. Today, even with a small property, rooftops and driveways make prime catchment areas. The rooftop of a 1500 square-foot home can collect almost 500 gallons from ½-inch of rain, making water harvesting well worth the effort (see Table).

Phoenix Average Monthly Rain	
From Ed Phillips' <i>Arizona Almanac</i>	
Month	Inches
JAN	0.6
FEB	0.7
MAR	0.9
APR	0.2
MAY	0.1
JUN	0.1
JUL	0.9
AUG	1.0
SEP	0.9
OCT	0.7
NOV	0.7
DEC	1.0
Total	7.8 inches
Equals 7,300 gallons of water/year harvested from a 1500 sq. ft. roof	



This simple cistern was made with corrugated steel drainpipe and can hold up to 400 gallons. Photo by Scott Calhoun.

Arizona has tax credits for water harvesting systems. Visit www.azdor.gov/TaxCredits/WaterConservationSystems.aspx.

Directing Rainfall

Water harvesting is the term used to describe how rainwater is collected and channeled. Water harvesting systems range from simple to complex. In a simple (passive) system the rainwater is used immediately. Most property owners can design simple water harvesting systems to meet the needs of their existing site. However, designing water harvesting during new construction allows you to be more elaborate. A more sophisticated (active) system may include cisterns (a water storage tank), pumps and a delivery system.

Water Harvesting Components

A good design usually consists of a *catchment area*, a *means of distribution*, which operates by gravity, and a *landscape holding area* or *water storage area*. The best *catchment areas* have a smooth hard surface, such as a rooftop or driveway. The *distribution system* connects the catchment area to the landscape holding or water storage areas. Examples include gutters, channels, and swales. The *landscape holding areas* store water in the soil for direct use by the

plants. They are commonly concave depressions that will retain water, increasing water penetration in the area. Berms or terracing can be used to enhance water storage in the landscape holding areas. *Water storage areas* can be created in a variety of ways. Large garbage cans or a 55-gallon drum can provide a simple storage system. Place them on a raised platform under a rain gutter downspout. Install some sort of opening and valve at the bottom of the container so you can access water as needed. If designed properly you may even be able to gravity feed water through a drip irrigation system without a pump. A great example of a larger cistern (holding 400 gallons or greater) can be seen in the photo. Created from a corrugated steel drainpipe, Civano Nursery in Tucson installs these for their customers.



Incorporate some of the suggested design tips into your landscape, and you'll soon be taking advantage of this wonderful resource. Test the system during rain events, and make design adjustments as needed. Invest in a rain gauge, they usually cost less than \$5 (nursery staff may laugh at you, and call it a dust gauge). Afterwards, remember that each time the landscape receives more than one-half inch of rain, at least one irrigation cycle can be skipped.

Water Harvesting Design Tips

1. Create several water catchment areas in your landscape. Don't try to create one large retention area as they do in neighborhood common areas.
2. Place plants at a slightly higher grade than the surrounding basins. This will keep the plant stem or tree trunk from staying too moist.
3. Create a channel under your roof drip line and direct water to a planted landscape area.
4. Through the use of gutters and a downspout or even a chain, you can catch rainwater that runs off your roof and channel it to your landscape or collect it into a barrel or garbage can to use at a later time (it's also great for your houseplants).
5. Mimic nature by creating a desert wash in the landscape that distributes the water to the planted areas (not the street). Work with at least three sizes of native rock that fits the scale of your landscape. Place larger rocks randomly towards the center of the wash.
6. Use landscape and paving materials that allow water to penetrate into the soil and to the plant roots. **DO NOT USE PLASTIC** under the granite. Materials such as decomposed granite and open or permeable paving blocks work well.
7. Use screens or other devices to keep mosquitoes from accessing water storage areas.

For more details find the following resources on the internet.

Simple Techniques for Backyard Water Harvesting, University of Arizona Arid Lands Studies has created an online instruction module, '09 at http://wsp.arizona.edu/education/water_harvesting
Harvesting Rainwater for Landscape Use, University of Arizona Cooperative Extension and Arizona Department of Water Resources, 2004. A PDF of the booklet can be found at: <http://ag.arizona.edu/pubs/water/az1344.pdf>

Texas Guide to Rainwater Harvesting, Texas Development Board in Cooperation with the Center for Maximum Potential Building Systems, 2005. Find at: http://www.twdb.state.tx.us/publications/reports/RainwaterHarvestingManual_3rdedition.pdf

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