**Rainwater Harvesting 101**

The recent dry years has raised interest in alternative water sources. One simple way to increase water supply on a small scale is rainwater harvesting. Simply put, rainwater harvesting is the process of capturing and storing stormwater runoff for later use. Harvested rainwater can be used for watering livestock, flushing toilets, washing cars, or even drinking water if properly treated. This untreated water may even be healthier for plants than tap water.

There are six main parts of a rainwater harvesting system: conveyance system, storage, overflow pipe, outlet pipe, delivery system, and first-flush diverter (optional). When planning your system, it is important to understand the role of these parts. Checking local plumbing, building, neighborhood, and environmental codes is also a good idea.

The conveyance system is typically just the gutter system on a building. Storage systems might include rain barrels and cisterns (a cistern being larger than a rain barrel). A one-inch rainfall on a typical home’s roof can produce a great deal of water (about 60 gallons for each 100 ft$^2$ of roof), so the limiting factors in these systems are often space, cost, and aesthetics of a large container. A full storage vessel is very heavy, so be sure to support it well. Also, cover any openings with screening so that mosquitoes cannot breed in the tank.

An overflow pipe is used to divert water away from building and storage tank foundations after the tank is full. An outlet pipe and delivery system will move the water to the point of use. If topography allows, a gravity system may be used and is less expensive than a pump.

The final, and often overlooked, consideration for rainfall harvesting systems is water quality. Dust, bird droppings, sticks, and other potential contaminants can build up on your rooftop between rains and cause sediment build-up in the system. Gutter screen, a roof washer, and a device called a first flush diverter can be helpful to remove some of these contaminants from the first part of the runoff. Besides improving water quality, these devices can reduce sediment in the system. Current research at Oklahoma State University indicates that many factors can impact the first-flush volume including rainfall intensity, days since the last rainfall, and roofing material.

Overall, a rainfall harvesting system can be fun and relatively easy to build. For more information on rainfall harvesting, please visit the OSU Low Impact Development web site at lid.okstate.edu.

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