

# Conserving Water

## A Few Things to Know About Rainfall Harvesting



Rainfall harvesting is the concept of gathering, storing, and utilizing rainfall. This method is most commonly used for irrigation, potable, and non - potable uses, in which, dates back centuries ago. Thanks to scientific and environmental research many regions of the world are relying on these rainfall harvesting systems that, supply their primary source of clean water. Research has suggested that; filtration, solar UV rays, and a clean storage area allow clean rainwater to be possible for various uses. While there are many different reasons “why” to harvest rainwater (*discussed later in article*) one main reason is the ecological benefit that it derived from doing so.

These harvesting systems can be very basic to satisfy economical constraints / budgets or quite complex so that such a system can be used for commercial or industrial use. Whichever type is implemented they all relate back to the same concept.

Traditionally, rainwater is collected from the roof or ground and the amount that it collects is based on: the dimension of the area for collection, the overall layout of the system, and the amount of rainfall. It is best to design a system that has a holding capacity larger than the amount of rain being harvested at any given time, this way; every bit of rain can be captured from its designated source and stored for later use. While deciding on a particular design, consider the fact that; later in time you may want to add an additional downspout(s) to the system if the system is not harvesting enough to meet your usage demand during adequate rainfalls. Below is a chart that shows non-potable use and how such a system can save you money. **Please note:** *Rainfall harvesting systems cannot be connected directly into dwellings city water plumbing. To avoid possible backflow into the local municipality water supply, these systems must be installed as its own system. Existing plumbing may be used as long as both are not connected as one unit.*

Quicktip rainfall calculator:

A = (catchment area of building)

R = (inches of rain)

G = (total amount of collected rainwater)


$$(A) \times (R) \times (600 \text{ gallons}) / 1000 = (G)$$


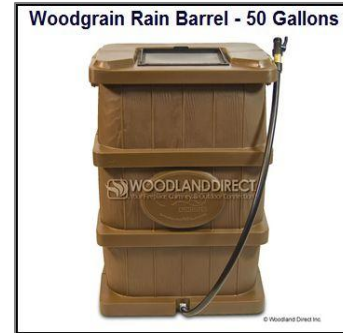
Table 7: Water Saving Appliance Comparison

Appliance	Standard	Water saving style	% Water Savings
Dishwasher	16 gallons/load	7.5 gallons/load	53%
Faucet	5 gallons/ minute	2.5 gallons/minute	50%
Toilet	5 – 7 gallons/flush	1 – 1.6 gallons/flush	68% – 85%
Shower head	12 gallons/minute	2.5 gallons/minute	80%
Washing machine	27 – 54 gallons	16 – 20 gallons	25% – 70%

**Storage of water:** While there many different styles of tanks you can use it really depends how you plan to use the rainwater. For example; you may want to merely harvest a few

Table 6: Recommended tank size (gallons)

		Roof area sq. ft.				
		1,000	2,000	3,000	4,000	5,000
Rainfall per yr in.	35	1,500	3,000	5,000	10,000	10,000
	40	2,500	5,000	5,000	10,000	10,000
	45	2,500	5,000	10,000	10,000	10,000
	50	2,500	5,000	10,000	10,000	10,000
	55	3,000	5,000	10,000	10,000	10,000



gallons for watering the flower pots on the porch or to top off the Jacuzzi, pool, or water feature (*due to evaporation or overspray*). For those who want the complete package, it is possible have a fully automated system that not only allows a watering pail to be filled but, it will also keep lawn and landscaping irrigated as well.

Some tanks are meant to sit above ground. Pictured (*above right*) is a fifty gallon rain barrel that is perfect for top offs or filling watering pails. These are also designed to better blend into its surrounding. Various designs are available. Other tanks are designed to be buried due to size. The unit (*on left*) is designed, so, if you need to expand the holding capacity of rain water you simply re- excavate and install an additional unit. If you are planning to harvest rainwater for sprinkler



irrigation of lawn I would recommend a capacity 50% more than needed to ensure sprinkler system is not ran dry which might possibly damage higher end pumps and valves. Lawn irrigation requires a lot more water than other uses. Many people who currently have an existing sprinkler system tend not to use very often because of the cost associated in doing so.

Additional features can also be added to the rainfall harvesting system such as: water level sensor, automatic safety such of sensor, and digital programming. By using water level sensors this it allows you to monitor how much water you have at any given time. This is displayed on a control panel or tied into a dwellings computer network if available. The automatic safety shut off valve sensor automatically shuts down pumps (*if on*) in the event water capacity reaches a certain level. This allows a safety net for a complete unattended use of system. It will not allow digital programming to engage system if water level is below the safe level. With digital programming, this gives freedom to be able to set various times and days for the unit to automatically come on and off. This can be convenient for the on the go type of person.

**Pumping the water:** Traditional methods of pumping rain water have been: gravity, mechanical (*hand pump*), or the use of an electric pump. While these are very convenient ways to get the water where you need it, this also has a down side. Gravity and mechanical method are time consuming and just don't provide the pressure needed for pumping long distances. The electric pump solves this problem but for the remote areas with no electric source this may prove costly to install and use. The new approach to pumping rain water is the SRP or better known as the **solar rain**



**pump** (pictured on preceding page bottom right). This has been around for a short time but a very new concept to many regions. The SRP comes in various five different versions to meet the occasion. The first two are quite simple to operate; the manual unit simply has an on / off switch whereas, the other has a



timer that is set and automatically shuts off. The third SRP model includes a handheld remote for convenience of not tromping through the landscape. The third seems quite practical because; it includes a digital programming option that allows for times and days of the week to be set to automatically turn SRP on and off (left). Lastly, is the hybrid SRP. This one has a sensor that sends a signal to turn on the pump when rainwater is present in the downspout. All SRP units are portable, quickly disconnected, ability to be attached to a regular garden hose, and versatile with any rain barrel or holding tanks you have.

All **Solar Rain Pump** units run off power from a *photovoltaic solar panel*. There are various sizes of panels available depending on the usage of system. Most panels produce a 5 watt trickle charge that continues to produce even when overcast. Larger panels are available if a larger power supply is need. Earlier panels required direct sunlight to produce power, but newer panel models allow more flexibility on where they can be mounted and are very budget friendly. There is a red indicator light at the connection to the SRP to show it is re charging the system. This type of pumping is a great “eco-friendly” way of getting the rain water “when” and “where” you need it.

Rain fall harvesting technology continues to develop new and improved methods to harvest water in an “eco-friendly” manner. Unlike centuries ago when rain water was free of pollutants, chemicals, and other pathogens; today’s rain water can still be harvested for many different uses. So, the next time it rains keep these ***Facts about Rainfall Harvesting*** in mind:

- The water is free; the only cost is for collection and use
- Reduces flow to storm water drains and reduces non-point source pollution
- The zero hardness of rainwater helps prevent scale and rust stains
- Watering and irrigating can be done with during time of restrictions
- Loaded with nutrients therefore making it superior to landscaping
- Provides a source when groundwater is unacceptable or not readily available
- Lowers demand on local reservoirs, costs, and aids flood prone areas

While there are many different reasons “why” to harvest rain water it is definitely another chapter in the eco - friendly approach to making a green community. . Nature provides us with an abundance of this precious resource, it is up to us to keep it clean and use it wisely.

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