

Harvesting Rainwater Using Rain Barrels

Animating Principles

Water harvesting and the use of rain barrels are driven by several animating principles:

1. **Stewardship of the Earth:** Water, being a precious resource, should be managed wisely for the benefit of all life on this planet.
2. **Justice:** Harvesting and conserving water reduces demand of municipal water to ensure equitable distribution of clean and safe water.
3. **Moderation:** Moderation in the way we use and consume water reduces waste.
4. **Service to Others:** Teaching others about water conservation and using water harvesting for their gardens.

Benefits From Using Rain Barrels

1. **Water Conservation:** Helps in conserving water and reducing utility bills.
2. **Reduces Runoff:** Reduces the risk of flooding and erosion thereby preventing harmful pollutants from reaching waterways.
3. **Natural Water Source:** Rainwater is free from chlorine and other chemicals, making it ideal for plants.

Rain Barrels Can Also Help Mitigate Climate Change

Water harvesting and rain barrels **when adopted widely**, can be an essential part of urban planning and water management strategies that address the challenges posed by climate change:

1. **Reduction in Water Demand:** Using stored rainwater can decrease the demand on municipal water supplies for watering plants.
2. **Decrease in Energy Consumption:** Reducing the demand for treated water can decrease energy required for treating and pumping water.
3. **Reduced Runoff and Flooding:** Stormwater runoff may be reduced thereby reducing severity of flooding from extreme weather events.
4. **Temperature Moderation:** Stored rainwater can be used for irrigating expanded green spaces that help reduce urban heat island effects.
5. **Reduction in Polluted Runoff:** Capturing rainfall and releasing it slowly can reduce polluted runoff from roads entering local waterways.
6. **Behavioral Change:** Installing and using rain barrels can raise awareness about water conservation and foster more sustainable behaviors and practices in communities.

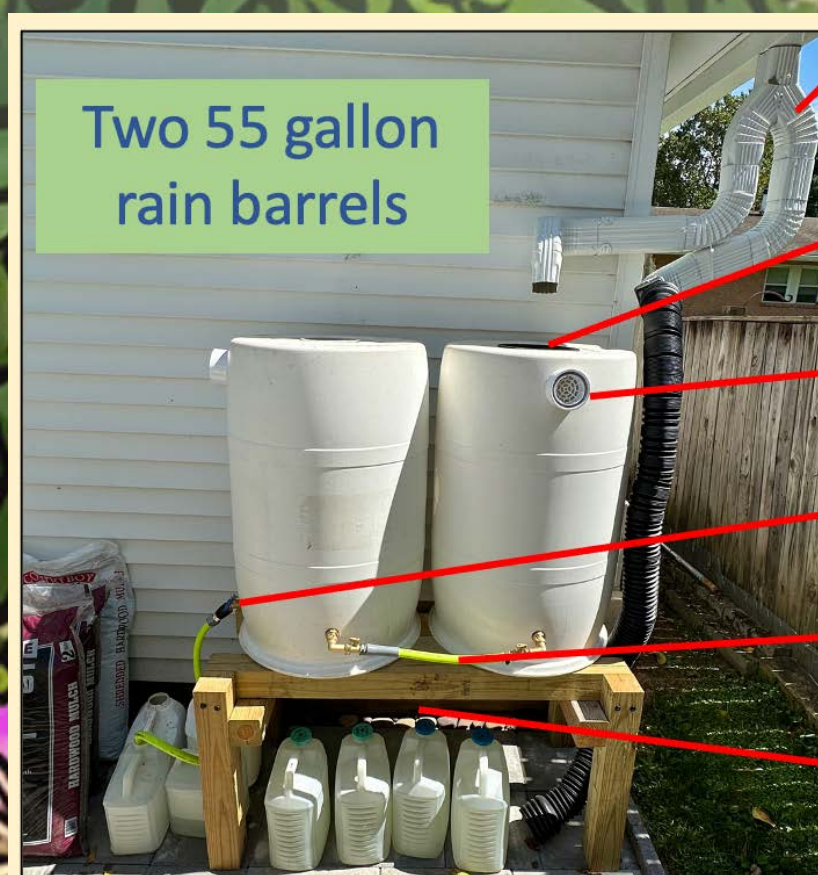
Estimating Rainwater Harvesting

Determine the size of the runoff drainage area and calculate the size of the rain barrel(s) needed: $\text{Volume (V)} = \text{Roof area for downspout} \times 0.083 \text{ ft (1 inch of rain)} \times 7.5 \text{ gals/cubic ft} \times 0.90 \text{ (to account for system losses)}$.

Source: Rainscapes.org

Using this formula, the volume of rainwater from a 1-inch rainfall on half the shed roof (10 ft x 28 ft = 280 sq ft) is: $\text{Volume (V)} = 280 \text{ sq ft (roof area)} \times 0.083 \text{ ft (1 inch of rain)} \times 7.5 \text{ gals/cubic ft} = 157 \text{ gal}$.

Based on this calculation, two 55-gallon rain barrels would fill to capacity from 0.7 inch of rainfall.



Two 55 gallon rain barrels

Y-downspout to divert water to either rain barrel or to the ground during the Winter

Filters to prevent leaf debris from entering barrel

Overflow ports

Valve for rainwater use

Connection to equalize water level between tanks

Valves underneath to drain each tank in the Winter