



FACT SHEET 6.6

RAIN BARRELS AND CISTERNS

Structures on hobby farms can generate a large amount of stormwater runoff that if not managed can cause erosion and collect and carry pollutants into nearby waters. Management efforts should first focus on minimizing the runoff from these sources.

One way is to infiltrate runoff back into the ground by directing it into a dry well, infiltration trench or raingarden. If infiltration is not an option or if you prefer to store and reuse water, then rain barrels and cisterns, simple devices that collect and store roof runoff through gutters and downspouts, could be your answer.

Water stored in rain barrels and cisterns can be used for:

- Irrigation of flower gardens, lawns and indoor plants
- Wash water for vehicles and farm equipment
- Moisten compost piles

RAIN BARRELS VS. CISTERNS

A rain barrel is a large barrel typically ranging from 60-100 gallons in capacity that captures rainwater from your roof to reduce stormwater runoff and store water for future use.

Cisterns serve the same purpose but are typically larger, permanently installed tanks that range in size from 100-10,000 gallons in capacity. Unlike rain barrels that sit aboveground, cisterns can be installed partially or fully underground if desired.



DID YOU KNOW?

The roof of a small shed could generate 15 gallons of water during a small rain event (1/4" of rain) and up to 60 gallons during a larger 1" rain event. A larger barn or garage could generate 2-4 times that amount – 30-60 gallons of water for a smaller storm and 120-240 gallons of water for a larger storm. That's a lot of water!



HOW LARGE SHOULD MY RAIN BARREL OR CISTERN BE?

Even small roof areas can generate an amazing amount of stormwater runoff and you'll find that unless you empty your collection system often, you'll need multiple rain barrels or a large cistern to collect everything. The following calculations (using a 10'x10' roof example) can be used to determine how large a system you would need to collect a 1" storm.

Determine Area of Roof

Roof Length (ft) x Roof Width (ft) = Drainage Area (ft²)
Example: 10 ft x 10 ft = 100 ft² Drainage Area

Determine Volume of Stormwater Generated by Roof

Drainage Area (ft²) determined above x 1 inch storm ÷ 12 inches per foot = Stormwater Volume (ft³)
Example: 100 ft² x 1 in ÷ 12 in/ft = 8.33 ft³ stormwater volume

Convert to Gallons (Measurement for Most Rain Barrels/Cisterns)

Stormwater Volume (ft³) determined above x 7.48 gallons = Stormwater Volume (gallons)
Example: 8.33 ft³ x 7.48 gal. = 62.3 gal. stormwater volume

In this example, one 60-gallon rain barrel can almost hold the runoff volume of a one-inch rain event.

AS YOU CAN SEE IT ADDS UP FAST! ALTHOUGH IT WOULD BE NICE TO COLLECT AND REUSE ALL OF YOUR ROOF AREA RUNOFF, YOU DON'T HAVE TO. ANY AMOUNT OF RUNOFF REUSED WILL HELP REDUCE THE CHANCES OF STORMWATER RUNOFF IMPACTING NEARBY SURFACE WATER QUALITY. START SMALL AND STAY SMALL OR START SMALL AND ADD TO YOUR COLLECTION SYSTEM LATER ON. EITHER WAY, YOUR EFFORTS ARE HELPING TO PROTECT NEARBY SURFACE WATER QUALITY AND REDUCING YOUR WATER COSTS.

RECYCLE

Even though most rain barrels do not provide the pressurized flow of a regular hose, if slightly elevated they can produce enough pressure to work a soaker hose irrigation system.

CAUTION!

Roof runoff collected by rain barrels and cisterns is non-potable (not safe for consumption) and can contain pollutants. Humans and animals should not consume it, nor should it be applied to edible crops.

RAIN BARREL INSTALLATION TIPS:

- Install your rain barrel on level ground. Consider raising it slightly on blocks to allow space for a watering can beneath the spigot if needed.
- Make sure your gutter downspout is aligned with the rain barrel intake. Flow diverters can be used to accomplish this.
- Be sure your rain barrel intake area is covered with a screen to catch leaves, twigs and any other debris that might collect in your gutters. This screen will also help prevent mosquitoes from breeding in your collected water.
- Direct any overflow away from the building foundation and into another rain barrel or a vegetated area where it can infiltrate into the ground.

MAINTAINING AND MANAGING YOUR RAIN BARREL

- ✓ Use it often! Emptying your rain barrel creates storage space for the next storm and keeps your rain barrel water supply fresh.
- ✓ Check the structure periodically for leaks.
- ✓ Make sure your gutter downspout is aligned with the inlet and screen.
- ✓ Clean the screen of leaves and other debris to avoid clogging.
- ✓ Inspect your overflow area for erosion and stabilize if necessary.
- ✓ Empty your rain barrel and store it inside during the winter months so water doesn't freeze inside it. If stored outside be sure it's empty and stored upside down to keep it clean and free of ice, snow, water and animals! Be sure to return your gutter downspout to its regular position.

CONSIDER LINKING YOUR RAIN BARRELS TOGETHER. A 1" RAIN EVENT WILL FILL A TYPICAL 60-GALLON RAIN BARREL COLLECTING WATER FROM A SMALL 10'X10' SHED. CONSIDER LINKING SEVERAL RAIN BARRELS TOGETHER TO FORM A CHAIN OR USE SEVERAL RAIN BARRELS AT DIFFERENT DOWNSPOUTS TO STORE MORE WATER FOR FUTURE USE.

CISTERNS

Similar but generally larger than rain barrels, cisterns can be installed above or below ground. Some models even contain a water pump. It is recommended that the manufacturers' instructions for installation be carefully followed for your specific cistern design. The following is a link listing various water cistern manufacturers: www.rainharvest.com/by-manufacturer.asp.

HELPFUL LINKS

www.mass.gov/eea/agencies/massdep/water/watersheds/rain-barrels-and-other-water-conservation-tools.html#Whatarerainbarrels
<http://soaknh.org/wp-content/uploads/2016/06/Rain-Barrel.pdf>