

Building an Inexpensive Rain Barrel From a Trash Can



Collecting rainwater is a great way to conserve a valuable resource, help minimize storm runoff, save a little money and provide a healthy source of water for your garden. You can get started by building this simple rain barrel from inexpensive materials.

Materials you'll need:

- 35-55 gallon trash can. Be sure the lid fits tightly. A dark, opaque color is less likely to encourage algae growth.
- One 3/4-inch hose bib
- One 1x3/4" threaded PVC bushing
- Four O-rings to fit tightly over the hose bib threads and to fit over the bushing threads (such as #18 O-rings, 1-3/16" OD x 15/16" ID x 1/8")
- One locknut (3/4") to fit the hose bib threads. You may find it in the electrical supply section of the hardware or home supply store.
- One locknut (1.0") to fit over the bushing threads.
- Two metal washers (3/4") to fit over the hose bib threads. You may find these in the electrical section.
- Two metal washers (1.0") to fit over the bushing threads.
- Window screen mesh. Non-metallic is easiest to handle.
- Waterproof glue
- Teflon pipe thread seal tape
- Flexible downspout extension or downspout elbows to direct the rain into the barrel from the downspout, plus self-tapping sheet metal screws to install the extension or elbows.
- Cinder blocks or other material to form a sturdy raised platform for the rain barrel. This is optional, but raising the barrel will make it easier to fill a container from the hose bib and give you more pressure for drip irrigation.



Tips: Before you leave the store, be sure that the O-rings, washers and nuts fit the hose bib and bushing. State sales taxes are waived for rainwater collection supplies, but an exemption form must be presented when you buy the supplies. See

http://www.window.state.tx.us/taxinfo/taxpubs/tx96_237_3_02.html#waterequip .

Tools you'll need:

- Drill and paddle drill bits to cut holes for the bushing and hose bib. Be sure to compare the bits to the hose bib and bushing threads to determine the right size.
- Hacksaw
- Scissors or utility knife
- Wrench to fit the nuts
- Screwdriver
- Gloves and safety glasses
- Level

To Build It:

1. With the drill and paddle bit, cut a hole for the hose bib on the side of the can, a few inches from the bottom.
2. Drill a hole a few inches from the top of the can for the threaded bushing. This will be the overflow outlet, used to direct excess water away from the building, so it should **not** be on the side of the can that will be near the house.
3. Wrap Teflon pipe thread seal tape around the threads of the hose bib. Place one of the metal washers over the hose bib threads, followed by one of the O-rings. Gently push the hose bib threads through the hole near the bottom of the can as far as possible.
4. On the inside of the can, place another O-ring over the threads, pushing it as close to the wall of the can as possible, followed by another metal washer. Thread on the nut after that and tighten with the wrench. You may need long arms or two people to complete this task if the can you are using is large.
5. Place one of the metal washers over the bushing threads, followed by one of the O-rings. Push the bushing threads through the hole at the top of the can as far as possible. On the inside of the can, place another O-ring over the threads, pushing it as close to the wall of the can as possible, followed by another metal washer. Thread on the nut after that and tighten with the wrench.
6. With the scissors, cut a circle of screen that is 1/2 to 1" larger in diameter than the inside of the overflow outlet. Glue the screen all around to the metal washer on the inside of the outlet, covering the hole in the bushing. The screen will prevent mosquitoes from entering the outlet.
7. Depending on the site you have for the barrel and how close it will be to the downspout, there are several ways to construct an opening for the rain. It's important to use screen to cover any hole you cut, so that mosquitoes can't get in.
 - One simple design is to cut a hole in the lid of the trash can, then cut a piece of screen about 1" larger than the hole on all sides, and glue the screen over the hole on the underside of the lid. You can also use 1/2" screws and nuts to secure the screen at intervals around the hole. The larger the hole you cut, the more light will be admitted, which encourages algae growth, but be sure that the hole is large enough and positioned so that rain will easily enter the barrel.
 - If you are using a flexible downspout extension, you can create an inlet for the extension in the can lid, using two sturdy medium-sized plastic nursery pots, large enough so that you can insert the extension. Cut the bottom of both pots off, taking about an inch more off one cup. (See picture top right.) Then cut a circle of screen about 2' to 2-1/2" larger in diameter than the hole in the bottom of the taller pot. Spread glue around the outside of the bottom rim of the taller pot, and then place the screen over the missing bottom, and fold it down into the glue. Slide the shorter pot over the bottom of the taller pot and the screen and glue, securing the screen over the bottom of the taller pot. (See picture bottom right.) Finally, cut a circular hole in the trash can lid about 1/4" smaller than the diameter of the top rim of the pots.



Insert the pots into the hole in the lid. Place the rain barrel where you want it and insert the downspout extension into the pot in the barrel lid. (See picture right.)



Let all glue dry before exposing it to water. Be sure that the site for the rain barrel is flat, or level it with sturdy materials such as bricks or cinder blocks. Water weighs roughly 8 pounds per gallon, so you won't be able to move the barrel when it is full, and on sloping ground it might tip.

Use a hacksaw to cut the downspout short enough so that you can use a flexible downspout or elbows to direct the water into the rain barrel. You can attach a piece of hose to the overflow outlet. If the barrel will be accessible to children, it's a good idea to use screws to firmly attach the lid to the barrel.

Before the first rain, fill the barrel with water to just above the hose bib to check for leaks. Check the rain barrel regularly to be sure that it's stable, not leaking and not clogged with debris.

How much water can you collect?

The 30-year normal precipitation for Denton County, from the National Weather Service, is shown below:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Normal Precip.(in.)	1.94	2.55	2.82	3.30	5.41	3.29	2.53	2.26	3.35	4.81	2.87	2.66	37.79

One inch of rain will provide about 0.6 gallons of water per square foot of "catchment surface". For example, if the house is 2000 square feet, with 4 downspouts that drain equal areas of the roof, each "catchment surface" will be 1/4 of the roof, or 500 sq. ft. So a rain barrel at one of the downspouts could collect

$$500 \text{ sq. ft.} \times 0.6 \text{ gal./sq. ft.} = 300 \text{ gallons per inch of rain.}$$

That's more than your barrel will hold, so you might decide to attach additional rain barrels to the overflow outlet of the first one. If you'd like to collect more, you can also purchase larger rain barrels or rainwater harvesting systems at many online retailers.

Rain collected in your rain barrel can be used to water container plants or a garden or fill a pond, but **it's not for human consumption**. Drip irrigation systems can be connected to the barrel to water plants or supply water for wildlife.

Resources:

For more information, see the following sites:

- Texas Agrilife Extension Rainwater Harvesting page:
<http://rainwaterharvesting.tamu.edu/index.html>
- Texas Agrilife Extension Rainwater Harvesting publication:
http://agrilifebookstore.org/publications_details.cfm?whichpublication=1979 Available to order or view online as PDF.
- Texas Agrilife Extension Raingardens page:
<http://rainwaterharvesting.tamu.edu/raingardens.html> Texas Agrilife Extension Raingardens publication is available to order or view as PDF from a link on that page.
- The Texas Manual on Rainwater Harvesting, published by the Texas Water Development Board:
http://www.twdb.state.tx.us/publications/reports/RainwaterHarvestingManual_3rdedition.pdf

This presentation was created by Sue Hudiburgh of the Denton County Master Gardener Association. For more information about the Denton County Master Gardener Association or to ask gardening questions, see <http://www.dcmga.com> or call 940-349-2892.



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