Rain Water Harvesting – A 55 Gallon Barrel Design

Cado Daily

Rain water is terrific. It is free of minerals that cause build-up in the soil, plants love it and there isn't any delivery fee! The design on the backside of this sheet is for a multiple 55 gallon barrel system. There are many different designs, but this one can give you an idea of what to think about if you design your own system. The barrels won't have all the holes you need, so you will have to have to cut them. 55 gallon plastic barrels are available from feed stores, bakeries, car washes, etc. MAKE SURE YOUR CONTAINERS DIDN'T CONTAIN SOMETHING TOXIC or OLD COOKING OIL (the oil is impossible to clean out). Ready-made barrels are available from dealers, catalogues, gutter companies, hardware stores, farmers markets, etc

In constructing any container system, keep a few things in mind: 1) You need to know how much water you can collect (see formula below) 2) Air has to exit the container when it is filling with water 3) The outlet for the water should be as big or bigger than the inlet so the water doesn't backup – however, the bigger the components, the more expensive the system. For this 55 gallon barrel design, the outlets are 3/4" for economy 4) Elevate the barrels for easy hose bibb access (watering can, etc) 5) Plan for overflow. Direct the overflow away from your container as wet ground near or under it may compromise it's stability (water weighs 8.34 lbs/gallon, so each full 55 gallon container will weigh 458 lbs) and direct it to a useful area 6) It is good to have a separate valve for each container so if you need to work on the system, you don't have to drain all your water 7) Flexible connections between barrels will reduce leakage if the barrels shift.

This barrel system is designed to add barrels if you want. You can take the design to your favorite hardware store and ask for their assistance in picking out the parts. If you use 3/4" components to attach the barrels together, here's what to do: 1) Drill a hole near the bottom of the barrel for a 3/4" bulkhead fitting (you can drill a bunch of little holes all the way around the outline and punch it out). Attach the fitting and a screw in the "pipe thread to a hose thread" nipple 2) Screw on the hose turn-off valve 3) Screw on an irrigation part called a "female hose beginning compression fitting" 4) Push in a piece of irrigation poly tubing the diameter of the compression fitting (usually 5/8" or 3/4"). Repeat for other side and attach barrels together. Glue or caulk a screen over barrel top holes to keep out mosquitoes. To make the overflow, drill out a 1- 1/2" hole near the top and put the threaded fitting of a 90° ABS elbow into the hole. Put an "o– ring" washer on the inside threads. Screw a collar on the inside threads and snug the 90° onto the barrel. Add pipe length. Screen open end for mosquito control.

Put the barrels on cement blocks for easier access to the connections and to get a little more pressure. Drip and soaker hoses need about 15-20 psi to work. If you rely on gravity feed, you will not have enough pressure to use a soaker hose, and for drip you'll need to do some creative thinking. You may try a drip product called "T-Tape" which works on 2-10 psi. However, just running through a hose works wonderfully.

Pressure Formula: For each foot in elevation, you get .433 psi. Another way to figure it, for 1 psi, you need to have 2.31 feet in height.

How Much Rainwater Can I Collect? (In general 1,000 sq.ft = 600 gallons in a 1" rain!)

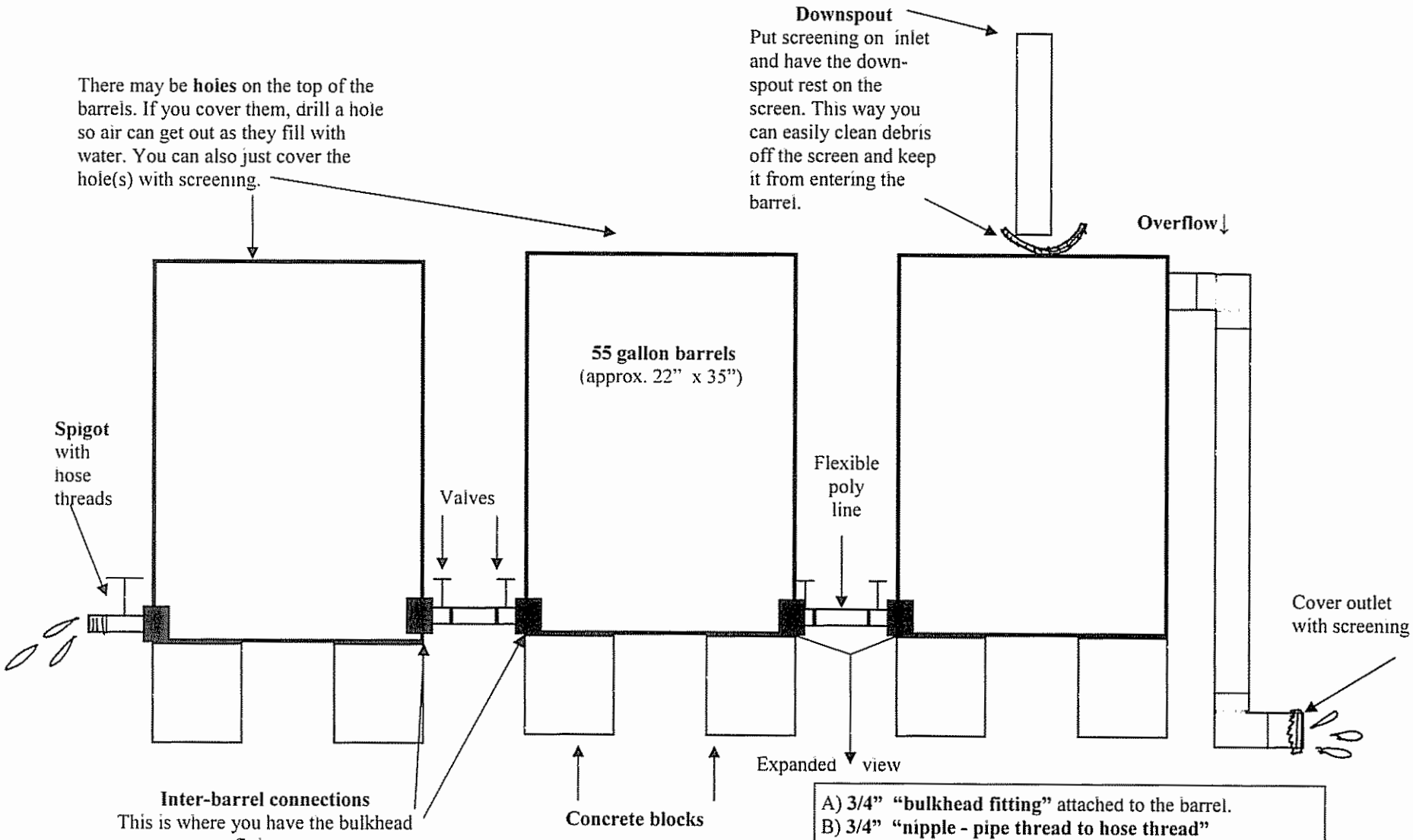
More specifically:

- Measure the square footage of your collection area (ex. 20' x 50' = 1000 sq ft)
- Multiply the collection area by rainfall in inches (ex. 1000 sq. ft. x 15 inches/year = 15,000)
- Multiply that number by 0.623 (this is how many gallons there are in one square foot, one inch deep in water).

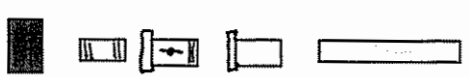
15,000 x 0.623 = 9,345 gallons of rainwater/year

To check the level of water in containers, just take your attached hose and raise it until the water stops running out. This is the water level.

55 Gallon Rain Water Barrel Design



A) **3/4" "bulkhead fitting"** attached to the barrel.
B) **3/4" "nipple - pipe thread to hose thread"**
C) **"Hose turn -off valve"**
D) **"Female hose beginning swivel compression connection"** pushed on to a
E) **"5/8" irrigation line".** Repeat A-D on other side of irrigation line.



Parts are available in hardware store plumbing departments .
The cost is approximately $20 for A-E.
The bulkhead fittings are the most costly at about $10 each.
If you are creative, you can figure out a less expensive alternative.

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