



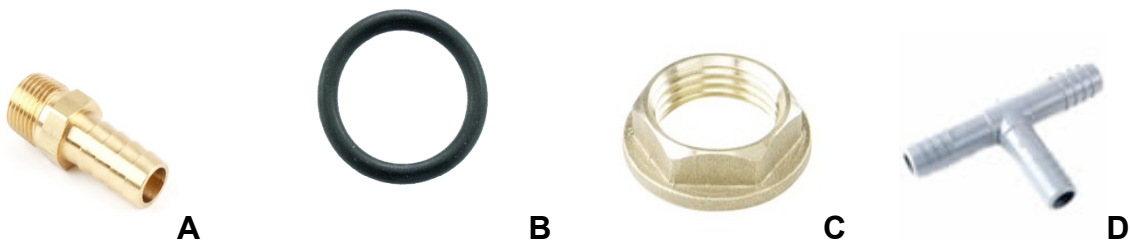
## Bucket System for Drip Irrigation

The project is an irrigation system for a small garden, probably in a single-family type of setting. There is a small filter used to help prevent clogging of the lines.

### Building a Bucket Irrigation System

First off, here is a material list for the items we'll need for construction:

1. 20 Gallon Bucket
2. Drill with 20mm bit
3. 20 mm Male Brass Hose Adapter, with 10mm Barb (A)
4. Fine metal mesh to use as filter
5. Rubber O Ring, 20 mm inside diameter inside, 22mm diameter outside (B)
6. 20 mm nut to fit on Brass Hose Adapter listed above (C)
7. 10 mm "T" barbed adapter (D)
8. 10 mm inside diameter clear tubing (20 Meters)
9. 2 small pieces of string
10. Drip Emitters
11. Platform to hold the bucket 1 M above garden



- Drill a hole in the bottom of the bucket with the drill and bit.
- Slide one "O" ring (B) over the base of the Brass Hose Adapter (A) so that it sits at the base of the threads.

- **Insert Male Brass Hose Adapter through hole from bottom of bucket, the barb pointing down.**
- **Slide other “O” ring (B) over base of threads showing through bottom of bucket. You should now have one “O” ring on each side of the bucket.**
- **Tighten nut ( C) onto base of Hose Adapter (A). Do not over tighten.**
- **Cut a 1-meter length of tubing, slide over barb on bottom of bucket.**
- **Attach “T” Barbed Adapter (D) to other end of tubing.**
- **Cut remaining tubing into two halves, attach each side to “T” Barbed Adapter (D). Lay tubing out on ground along garden plants to be watered.**
- **Using a sharp nail, puncture tubing where plants are, and push drip emitter into hole. DO NOT PUNCTURE TUBING THROUGH BOTH SIDES.**
- **Make a 180 degree bend in the tubing about 10 cm from the far end. Tie the tubing back to itself to hold the bend in place, this will stop water from running out of tubing.**
- **Push a small piece of mesh screen onto the opening of the brass adapter in the bottom of the bucket to act as a small filter.**

**The system is now ready for use.**

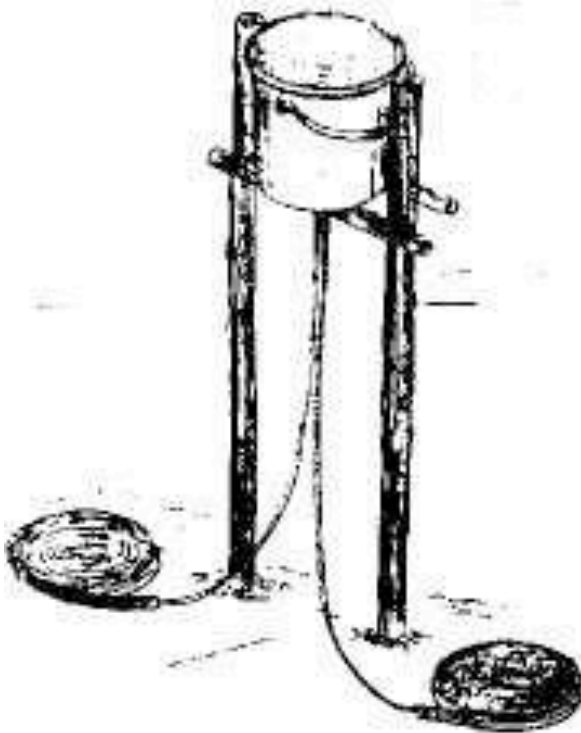
**Use by supporting bucket on a platform and fill with water.**

**Though there is a screen present in the system, the system can (and will) clog easily if the cleanest water available is not used. Please make sure to use clean water!**

**Make sure that tubing is placed properly along where plants are, and that drip emitters are over plant roots.**

**Fill bucket, preferably in early morning or late evening, with water. This will minimize evaporation.**

**The system will drip water on plant roots, making the most impact with the least amount of water.**



1. Drip Works USA <http://www.dripworksusa.com/>

This website has many useful tools, including a flow yield calculator and many different supplies to build a system.

2. Rain Bird: Commercial and Residential Irrigation  
<http://www.rainbird.com/>

Good source for supplies, many images and a knowledgebase for troubleshooting problems and design ideas.

3. C.R. Wilson and D. Whiting, "Drip Irrigation for Home Gardens". Colorado State University Cooperative Extension fact sheet no. 7.239. Colorado State University  
<http://www.ext.colostate.edu/PUBS/Garden/07239.html>

Good website with practical information on building a simple home irrigation system. Also includes information to calculate flow rate and basic layout techniques. Focuses upon sprinkler systems, but there is useful information that applies to a simple gravity type of system as well.

4. Palau-Salvador, Sanchis, Gonzales-Altozano, and Arvizia-Valverde. "Real local losses estimation for on-line emitters using empirical and numerical procedures". Journal of Irrigation and Drainage Engineering. Nov-Dec 2006, Vol 132. PP. 522-530

This paper gives information of calculating flow rates and losses experienced at different drip emitters that are further away from the source of the water. This will help to determine how long a drip line can be and the expected losses we'll see for water to plants that are further away from the source bucket.

5. Chapin Bucket System <http://www.hydrosources.com/w3clp008.htm>

Source for photo at end of project.

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