



DRIP LINE IRRIGATION

A DIY IRRIGATION SYSTEM FOR YOUR HOME GARDEN



Drip Irrigation for the Home Garden

I learned about drip irrigation in a greenhouse management class as a way to water hanging baskets in large commercial greenhouses. Thinking about this system, it dawned on me that it didn't have to be just used in greenhouses or small farms.

My mother loves her gardens. She has potted vegetables, a raised veggie garden, and landscaping winding around the entire property. With all of these plants, it was taking around 2-3 hours every morning to properly water them all. Plants were wilting and dying, so I wanted to try and create a system using drip emitters to water her garden for her.

What is Drip Irrigation?



Drip irrigation involves placing tubing with emitters on the ground beside the plants or dropping down into hanging baskets in a greenhouse setting.

The emitters slowly drip water into the soil at the root zone. Because moisture levels are kept at an optimal range, plant productivity and quality improve.

Benefits of Drip Irrigation:

- Prevents disease by minimizing water contact with the leaves, stems, and fruit of plants.
- Allows the spaces between plants to remain dry, improving access and reducing weed growth.
- Saves Time, Money, and Water!
- Decreases labor.
- Increases effectiveness on uneven ground.
- Reduces leaching of water and nutrients below the root zone.

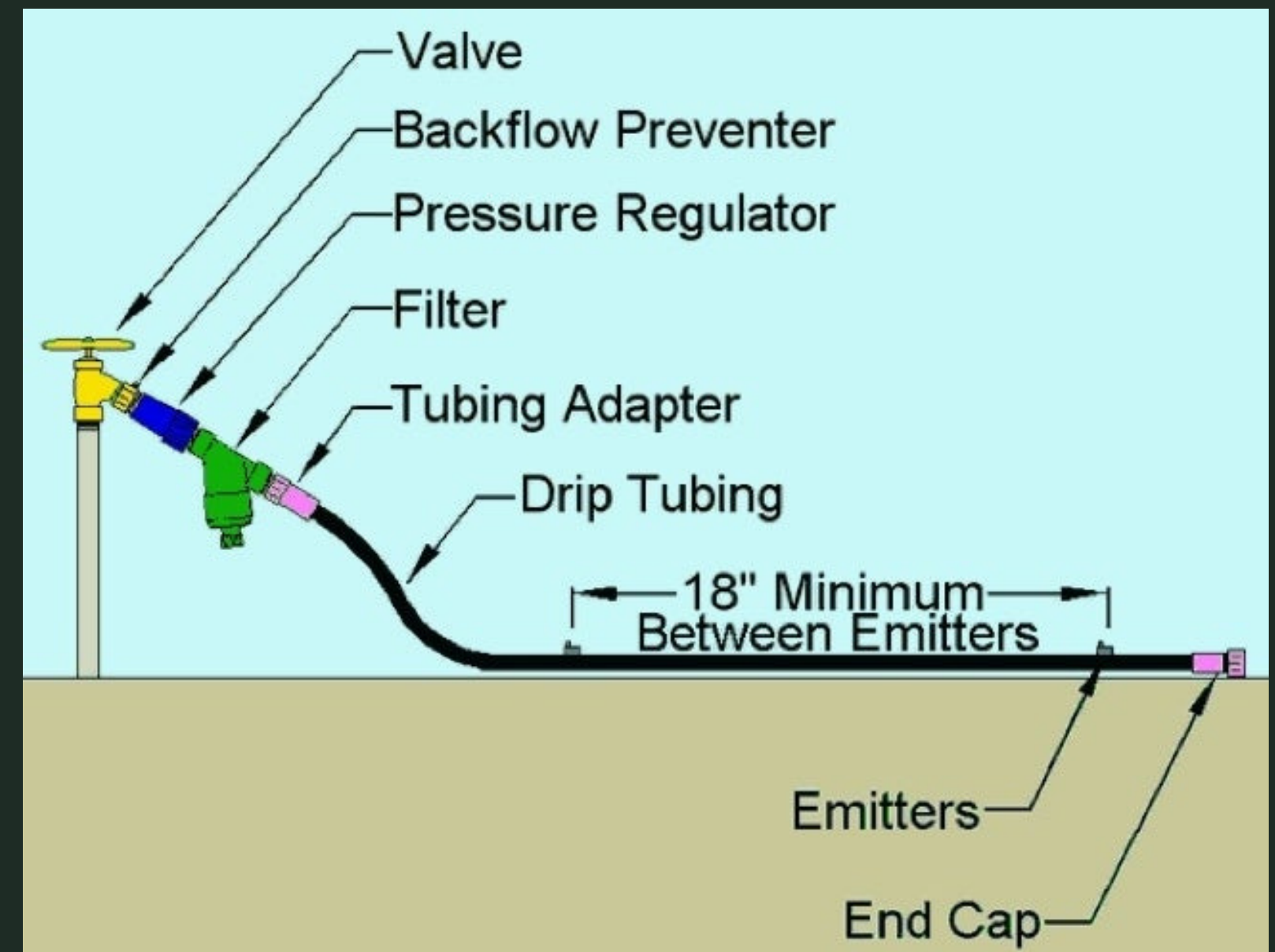


Parts of a Drip System

Each drip system can vary and some may not need all of the parts discussed. Choose what you need based on the type of system you want and your water source.

Supplies not included in the image:

- Timer
- Fertilizer Injector
- Hose Clamps
- Emitter Punch
- 1/4 in. Poly Tubing
- Hose Split



Valve / Hose Bib



Whether your water source is from the grid or a well, a hose bib, is necessary to hook up this system. If you are connected to your town's water, you most likely have a valve coming off of your house and you won't have to add as many parts. If you have a well, make sure you have a hose bib or talk to an experienced plumber to add one to your yard. Then you will need to install a backflow prevention device to protect your well water from any contamination

We will discuss backflow prevention in a few slides.



Timer

When I was creating this system for my mother, I wanted to make sure that it would work for her busy lifestyle. I decided to buy a hose end digital timer to set a time that the watering would start and stop. This also allowed me to know how much water the plants would be getting when I added the emitters. The timer has been my favorite part of this system.

While a timer is optional, I do recommend it so that watering can begin even before you get up in the morning.

My Choice:

Orbit 1 Output Port Digital Hose End Timer from Lowes

You can also choose a timer that has two outputs or more if you don't want to use a split but have two mainlines going separate ways.



Photos from Lowes.com

Split Water Shutoff (or Hose Splitter)

This is an optional portion of the system but really helps when you want to have multiple main lines going separate ways.

My Choice:
Glamour Dual Flex Connect Shut-Off Hose Adapter from Home Depot



Photos from Lowes.com

Backflow Preventer



Backflow preventers help break any vacuum that may occur when water is not flowing through the system. Breaking this vacuum makes sure that any water (or more worrisome, fertilizer) does not travel back to the hose bib and back to the water source.

Note: This is NOT optional if you have a well as your water source!

My Choice:

Raindrip Anti-Siphon Backflow Preventer 3/4 in. from Agway



Photos from Lowes.com

Pressure Regulator

You may have to do some math for this one! A pressure regulator is not optional for a drip line system if you want your system to work properly, avoid blown off emitters, and keep the system from becoming damaged.

My Choice:

Agrifim Nylon Pipe Thread Drip Irrigation Filter / Regulator Combination from Lowes

You can either have separate pieces, but I personally would go with the combo if you want to save on money and pieces between the valve and mainline.

Note: The combo regulator/filter is usually for a low flow system. Make sure when you calculate your systems flow pressure and if it is considered low, you can use the combo. Otherwise, buy them separately and get a regulator that works for your pressure.



Photos from Lowes.com and Homedepot.com

Filter



Use a filter to reduce clogging by filtering out any water debris.

This is especially helpful when the water source is a well. This does NOT mean that if you are connected to the grid that you don't need a filter.

No matter how clean your water is, a filter is cheap insurance against any debris entering your irrigation system. Even small particles can lead to clogging or damage to your drip emitters.

My Choice:

Orbit Polypropylene NPT Drip Irrigation Filter from Lowes



Photos from Lowes.com

Fertilizer Injector

This is an optional part of your system that I recommend for gardeners that want to feed their garden without the hassle of fertilizing it themselves. I liked adding mine because it was a slow release mixed fertilizer tank that I added to only when it got low. If you have a bigger garden or would like to not add fertilizer as often, Drip Depot sells larger tanks.

My Choice:

E-Z Flo 3/4 Gal Fertilizing System from Dripdepot.com



Photos from Dripdepot.com

Tubing Adaptor / Connection

If you have a timer or are already connected to the grid, you most likely will need a female adapter to connect the mainline poly tubing to the valve assembly. There are many kinds to choose from at your local stores just make sure you have one that is a 1/2 in. female adapter.

My Choice:

Mister Landscaper 1/2 Barb-Locking Collar Drip Irrigation Female Adapter from Lowes



Photos from Lowes.com

Mainline Polyethylene Tubing 1/2 in.



The mainline poly tubing is the distribution tubing that brings water from your hose bib assembly to the rest of your garden. Emitters of your choice are then "punched" into the sides facing the plants you intend to water.

You can also use this mainline to create tree circles which can water around a tree rather than have multiple emitters going out to the tree.

Note: Make sure when you are punching the emitters into the sides that they all line up so that when the poly tubing is laying down the emitters are not sticking up into the air or into the ground. The emitters should be parallel to the soil!

My Choice:

Rain Bird 1/2 in. X 100 ft. Drip Irrigation Distribution Tubing from Lowes



Photos from Lowes.com and Dripdepot.com

Drip Emitters



Dripper Buying Guide

Drip Irrigation Emitter - Buying Guide There are many choices to make when it comes to drip irrigation drippers (sometimes called emitters). To choose the best one for...

 Drip Depot DIY Irrigation Support

Lots to choose from! Emitters are what makes this system work but you need to know what kind of emitters you want first.

With so many different kinds to choose from, it's best to research what you think would work best for your garden.

I personally went with emitters from Drip Depot. They offer a variety of adjustable, compensating, and fixed emitters.

You will also need to think about how many GPH you would like from your emitters. Keep system pressure in the back of your mind when you are choosing.

My Choice:

Netafim Woodpecker JR PC Compensating 0.5 GPH Emitter from Drip Depot



Photos from Lowes.com

Distribution Polyethylene Line 1/4 in.



This one is totally optional depending on the emitters you have chosen. I personally used this to have the water flow directly from my emitters to my individual plants. This works best if you have a perennial garden, shrubs and trees, or a set amount of plants you plant each year.

If you choose not to use this you most likely won't want emitters either. At that point, you are making a soaker system not a drip irrigation system.

My Choice:

Rainbird 1/4 in. X 50 ft. Drip Irrigation Distribution Tubing from Lowes



Photos from Lowes.com

End Caps



These are what the name implies, end caps to your system. These are added to the end of the mainline poly tubing wherever the end of your garden line is.

If you come to the end of your poly tubing mainline and you need to keep going, use a connector to add more poly mainline and use an end cap when you have reached your desired length.

My Choice:

Raindrip 5/8 in Compression Drip Irrigation End Cap from Lowes



Photos from Lowes.com

Other Tools Needed:



Hose Clamps 1/2 in -1 1/4 in

Emitter Hole Punch



1/4 in. Goof Plugs



Photos from Lowes.com

What It Should Look Like:



Photo from Drip Depot

I felt that this picture shows the order of assembly the best. The only change or addition I would add, is the E-Z Flo Fertilizer Injector in between the Pressure Regulator and the Female Hose Thread Adapter.



Planning Your System:

1

Scout Your
Site

Ever heard of the saying "Measure Twice Cut Once"? Don't make the mistake I made. Scout your site and measure. Do you really need 500ft of mainline poly or will 100 ft work just fine? Once you measure and you map out your assembly you are ready to go and get your supplies.

2

Measure Your
Lines

3

Decide What You
Need



Estimated Pricing

My Choice Pricing

A drip irrigation system costs \$2,150 per acre on average, with a typical range of \$1,800 to \$2,500. For a small home garden, it may cost as little as \$50 to install. The size of your yard, quality of materials and difficulty of the project factor into the final cost.

My property gardens took up about 200 ft of mainline tubing, 200 emitters, and 150 ft. of 1/4 distribution tubing.



Timer	Orbit 1 Output Port Digital Hose End Timer	\$32.98	150 Emitters 2 End Caps 3 Hose Clamps Total: \$231.85
Hose Splitter	Glamour Dual Flex Connect Shut-Off Hose Adapter	\$14.98	
Backflow Preventer	Raindrip Anti-Siphon Backflow Preventer 3/4	\$8.99	
Pressure Regulator	Agrifim Nylon Pipe Thread Drip Irrigation Filter/ Regulator	\$19.88	
Filter	Orbit Polypropylene NPT Drip Irrigation Filter	\$10.98	
Fertilizer Injector	E-Z Flo 3/4 Gal Fertilizing System	\$64.90	
Tubing Adapter	Mister Landscaper 1/2 Barb Locking Collar Female Adapter	\$2.23	
Mainline Tubing	Rainbird 1/2 in. X 100 ft. Distribution Tubing	\$14.28	
Drip Emitters	Netafim Woodpecker JR PC Compensating 0.5 GPH	\$0.27 ea	
Distribution Tubing	Rainbird 1/4 in. X 50 ft. Drip Irrigation Tubing	\$5.98	
End Caps	Raindrip 5/8 in. Compression Drip Irrigation End Cap	\$1.17 ea	
Emitter Punch	Mister Landscaper Drip Irrigation Hole Punch	\$5.98	
Goof Plugs	Raindrip 20 pack Drip Irrigation Goof Plugs	\$2.28	
Hose Clamps	Ideal-Tridon Stainless Steel Adjustable Clamp	\$1.85 ea	



How to Maintain Your System:



Filter: Checked Once a Month

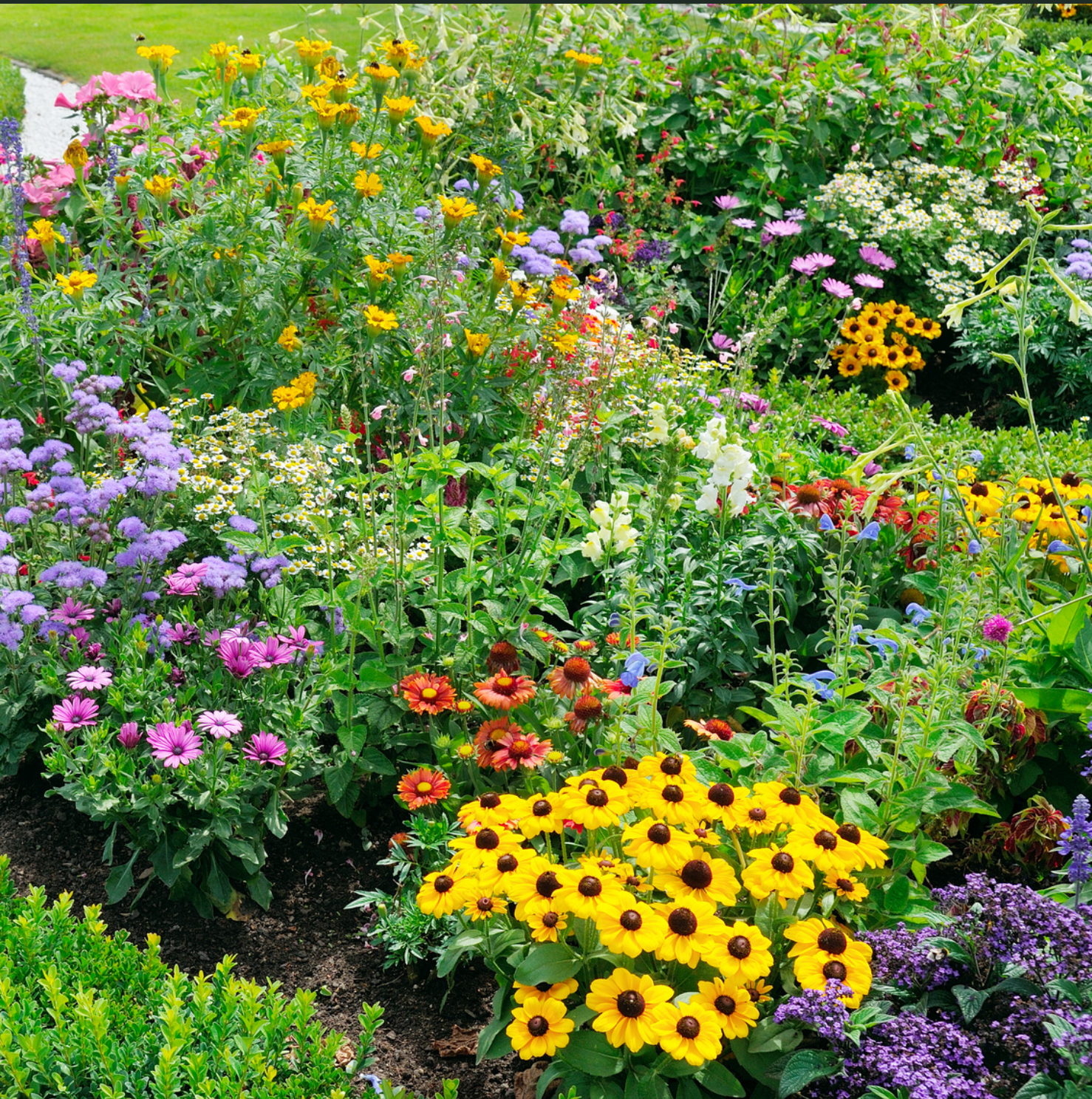
Emitters: Check Once a Week for Clogging (This will be easy to notice if you walk along your system) Soak clogged emitters in vinegar or an emitter cleaner.

In the Fall:

Clear out the lines and disassemble the timer, backflow preventer, pressure regulator, filter, and fertilizing injector. You can leave the adapter, mainline tubing and emitters as long as you flush out the system. I also have taken my end caps off incase of any water left over in the system.

Resources You Can Use When Prepping Your System:

CCE Oneida Guide: <https://s3.amazonaws.com/assets.cce.cornell.edu/attachments/22724/Drip-Irrigation-for-Home-Gardens.pdf?1493926453>
CCE Rockland Water Wise: <http://rocklandcce.org/resources/water-wise-gardening>



Lowes Drip Irrigation Site:



Drip Irrigation at Lowes.com

Find drip irrigation at Lowe's today. Shop drip irrigation and a variety of lawn & garden products online at Lowes.com.



Cobleskill Agway:



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Want To Know More?



<http://cceschoharie-otsego.org>



jmh452@cornell.edu
leoner005@cobleskill.edu



+1 518-234-4303

