

Spray to Drip Irrigation 101

Irrigation Terms

Backflow

Any flow of non-drinkable water from an irrigation system that siphons back into a drinkable/clean water supply, the direction of flow being the reverse from that intended.

Backflow Prevention

A vacuum breaker, check valve, or other backflow prevention device installed on an irrigation system to prevent contaminated water from flowing back into the drinkable or clean water supply.

Burying Tubing

Drip irrigation can be buried underground/covered by mulch. Keep in mind that burrowing rodents, such as gophers, can chew through tubing seeking water. Burying it underground may make it more difficult to locate a leak.

Once you have the trench dug and the tubing/tape laid out, you may want to have the system pressurized before burying so the risk of tubing collapse is reduced. Installing an air vent vacuum relief valve is recommended in subsurface systems. Also, winterizing is still necessary if you live in areas where temperatures drop below freezing.

Drip Irrigation

An irrigation method that minimizes the use of water by slowly emitting a precise amount to the root zone of plants. This is the most efficient irrigation we suggest. It consists of running a backbone/mainline (often ½") with spaghetti hoses (often ¼") running off the mainline to each individual plant.

Emitter

A dispensing device in a drip irrigation system that regulates the flow of water released to the soil at the plant's roots. There are many different types of emitters:

Dripper or Button Dripper

The most common emitter type. These emit water at a specific rate, usually between ½ and 2 gallons per hour (gph). Drippers are commonly used to water individual plants, and are what we refer to throughout this guide. They are attached either at the end or beginning of spaghetti tubing to help water get delivered directly to the plant's roots.

Bubbler Dripper

A dripper that produces a gentle umbrella pattern for rapid watering near the root zone.

Micro Sprinklers

Emitters which spray water out to a larger diameter than typical drippers. Usually spray 360 degrees, but some are adjustable. Micro sprinklers can be used to water clusted plants or lawn, but will not put the water directly at the roots.

Fittings

An array of coupling and closure devices that connect the drip system. This includes connectors, "T" or tees, elbows, goof plugs, or end caps. Fittings may be of several types, including compression, barbed, and locking.

Hydro-Zone

Describes a group of plants that have similar watering needs. If a plant within a hydro-zone needs more water than another, it can be given an additional emitter or an emitter with larger flow.

Irrigation Zones

A subdivision of a drip irrigation system controlled by a single irrigation valve. Useful for watering groups of plants on the same schedule or dividing a drip irrigation system into sections if overall watering demand exceeds the available flow.

Mainline

The tubing that is the "backbone" of the drip irrigation system. It comes in a variety of materials and sizes, but is often soft polyethylene material with ½" or ¾" diameter. We usually use ½" and will as a reference for the rest of this document.

Microtubes (Spaghetti Tubing)

The flexible tubing used to link emitters or sprayers to the mainline. Plastic stakes are frequently used to hold the tubes and emitters attached to the end of the tubing in place. Microtubes can come in many sizes, but we usually use 1/4" and will as a reference for the rest of this document.

Pressure Regulators

Because drip systems are designed to run under low pressure, high pressure in drip systems may cause a leak, or popping off of emitters or fittings and even irregular flow from your emitters.

Choosing/Installation

Each type of emitter has an optimal pressure range. It is recommended to use 25 PSI regulators in most drip systems as most are designed to work optimally at 25 PSI. This may vary system to system, so it is extremely important to check the requirements of your system and equipment.

Basic Steps for Converting Spray Irrigation to Drip Irrigation

What Your Drip Irrigation Will Look Like with Dripper Emitters

A drip irrigation system consists of running a backbone/mainline (½") with spaghetti hoses (¼") running off the mainline to each individual plant. The following can be configured two different ways: 1) the spaghetti tubes will have a dripper emitter at the end of each tube where the water will be dripping out onto the plant or 2) the dripper emitter will be inserted into the mainline, with spaghetti tubing coming out of the other end of the emitter and feeding directly to the plant. This setup uses a dripper emitter as this is the most common and efficient, but you could use other types as well (see above). Here is how to convert your irrigation from spray to drip:

STEP 1: Remove the existing spray cap

Remove the internal components of the existing spray head.

STEP 2: Replace with conversion kit drip head

Replace the old spray head internal components with the new, drip head.

STEP 3: Attach Fittings

Attach "T" or elbow fitting to the new drip head. This fitting is where you will attach tubing.

STEP 4: Measure Tubing and Cut to Size

Measure how long you need your mainline tubing $(1/2^{"})$ and cut it to size.

STEP 5: Attach Mainline Tubing and Cap Other End

Attach the mainline tubing $(1/2^{"})$ to the "T" or elbow fitting on the drip head. The other end of the mainline tubing that is not connected to the drip head can be capped off.

STEP 6: Add Spaghetti Tubing to Mainline

Punch holes in the mainline tubing where you would like the spaghetti tubing to connect. This smaller tubing is what will run directly to the roots of each plant. Once you punch a hole, add a fitting into the newly punched hole. Then attach the ¼" tubing to the fitting.

STEP 7: Add Emitter to Spaghetti Tubing

Attach a dripper emitter to the end of the spaghetti tubing. This is how water will be dispensed to the plant's roots.

STEP 8: Cap off remaining spray heads in your conversion zone.

Be sure to cap off remaining spray heads! This ensures all water is going into the drip system and is being used efficiently.

Additional Resources

DripWorks: <u>https://www.dripworks.com/</u> (Click on "Resources" tab) Drip Depot: <u>https://www.dripdepot.com/</u> (Click on "Learn" tab) Rain Bird: <u>https://www.rainbird.com/</u> "The Basics of Drip Irrigation" - <u>https://www.rainbird.com/homeowners/drip-irrigation-basics</u> CSU Extension: <u>https://extension.colostate.edu/</u>

"Drip Irrigation for Home Gardens 4.702" - <u>https://extension.colostate.edu/topic-areas/yard-garden/drip-irrigation-home-gardens-4-702/</u>

Photos and Diagrams Taken from DripDepot.com

Find more additional diagrams, videos, and FAQs at <u>https://help.dripdepot.com/support/home</u> (Click on "Irrigation System Graphic Illustrations" for diagrams)

