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# Smart Watering; DIY Drip Irrigation

Presented By:

Walton County Master Gardener

Meghan Pasken

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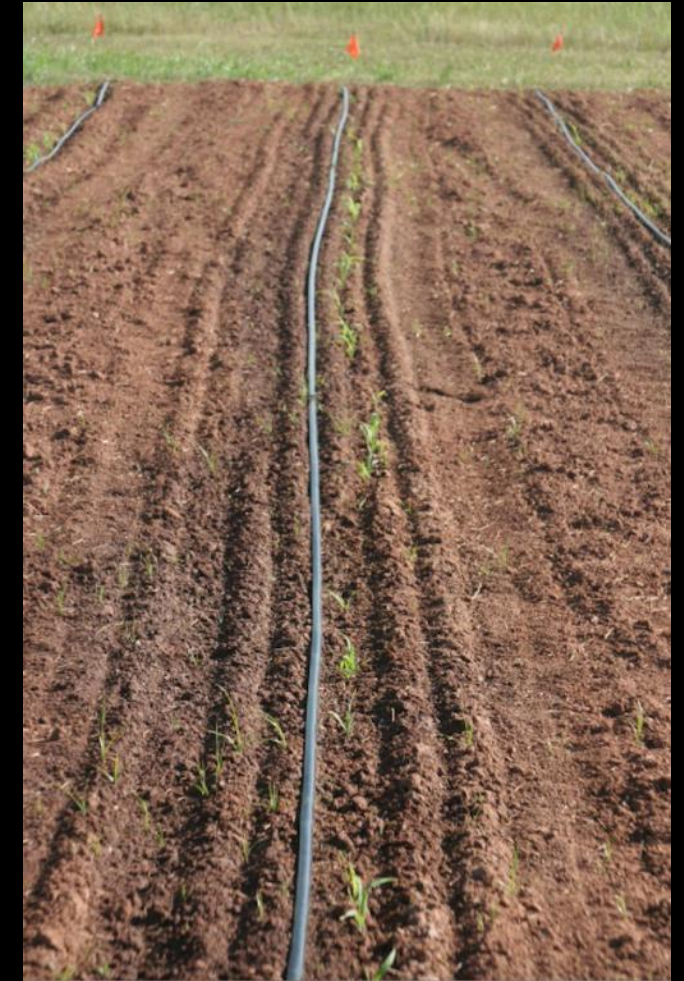
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# What is Drip Irrigation?

- The frequent, slow application of water to soil through **emitters**
- **Emitters** are built into or attached to plastic water delivery lines that carry water to each plant's root zone
- It can be used for growing vegetables, ornamental and fruit trees, shrubs, annual and perennial flowers, vines and outdoor container plants.





# Why Use Drip Irrigation?

- In general, most vegetables require about one inch of irrigation per week to produce a crop
- Eliminates most water losses and assures reasonably uniform distribution.
- Allows close control of the amount of water applied and reduces evaporation losses, **it uses less water!**
- Foliage stays dry and is **less prone to disease issues**
- Can be fully automated, **less time and effort on your part!**



# System Components

## Head assembly:

- Water filter
- Pressure Regulator
- Backflow Preventer
- Hose to Tubing Adapter

## Tubing:

- Header/Mainline
- Lateral tubing (optional)
- Dripline/Drip Tape



# System Components

## Fittings:

- Elbows
- Tees
- Coupling Valves
- Couplings
- Adapters
- Goof Plugs
- End Caps





# Considerations Before Purchasing a Drip System

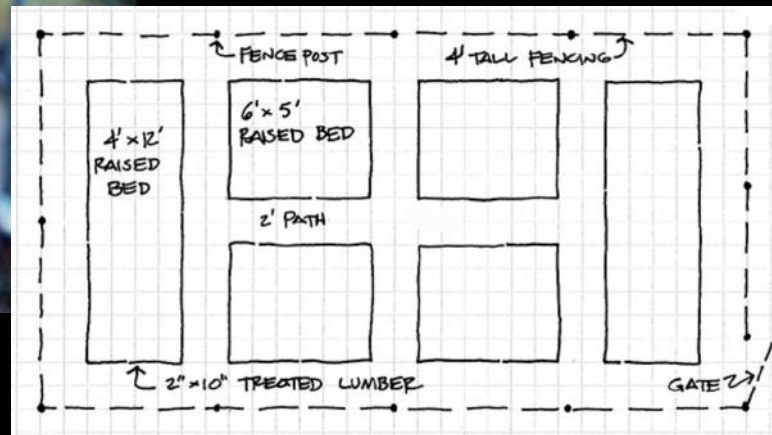


- If you are a beginner, the kits may be a good place to start.
- These kits contain the proper components, hose sizes, and pressure capacities for the area they are intended to cover.



# Considerations before Purchasing a Drip System

You may choose to purchase the components separately and buy only what you think you need.



- You will need to know:
  - The size of your garden
  - Distance from water source to garden
  - How many gallons your water source puts out per hour
  - The length of the header pipe you plan to run
  - Water demands of your plants





# Calculating Water Source Output

## Determining Flow Rate:

1. Get a bucket of known volume (ex: 2 gallon bucket)
2. Use a timer to determine how long it takes to fill the bucket at hose bib
3.  $60 \times (\text{Bucket Volume} / \text{Time to fill in seconds}) = \text{GPM}$
4.  $\text{GPM} \times 60 = \text{GPH}$

The diagram illustrates the calculation of flow rate in two steps. The first step shows the calculation of Gallons Per Minute (GPM) by multiplying 60 by the ratio of bucket volume to fill time. The second step shows the calculation of Gallons Per Hour (GPH) by multiplying the GPM result by 60.

$$60 \times \frac{2 \text{ gal}}{45.6 \text{ seconds}} = \text{Gallons Per Minute}$$
$$\text{Gallons Per Minute} \times 60 = \text{Gallons Per Hour}$$



# Is Your System Compatible with Source GPH?

Your irrigation drip system will only deliver water based on the pressure and supply you have available. If the area to irrigate is too big for your system, you will lack water pressure

It is important to design your system to meet the needs of your plants.

One solution is to divide the garden area into sections, or **water zones**, to which you can send water at different times.

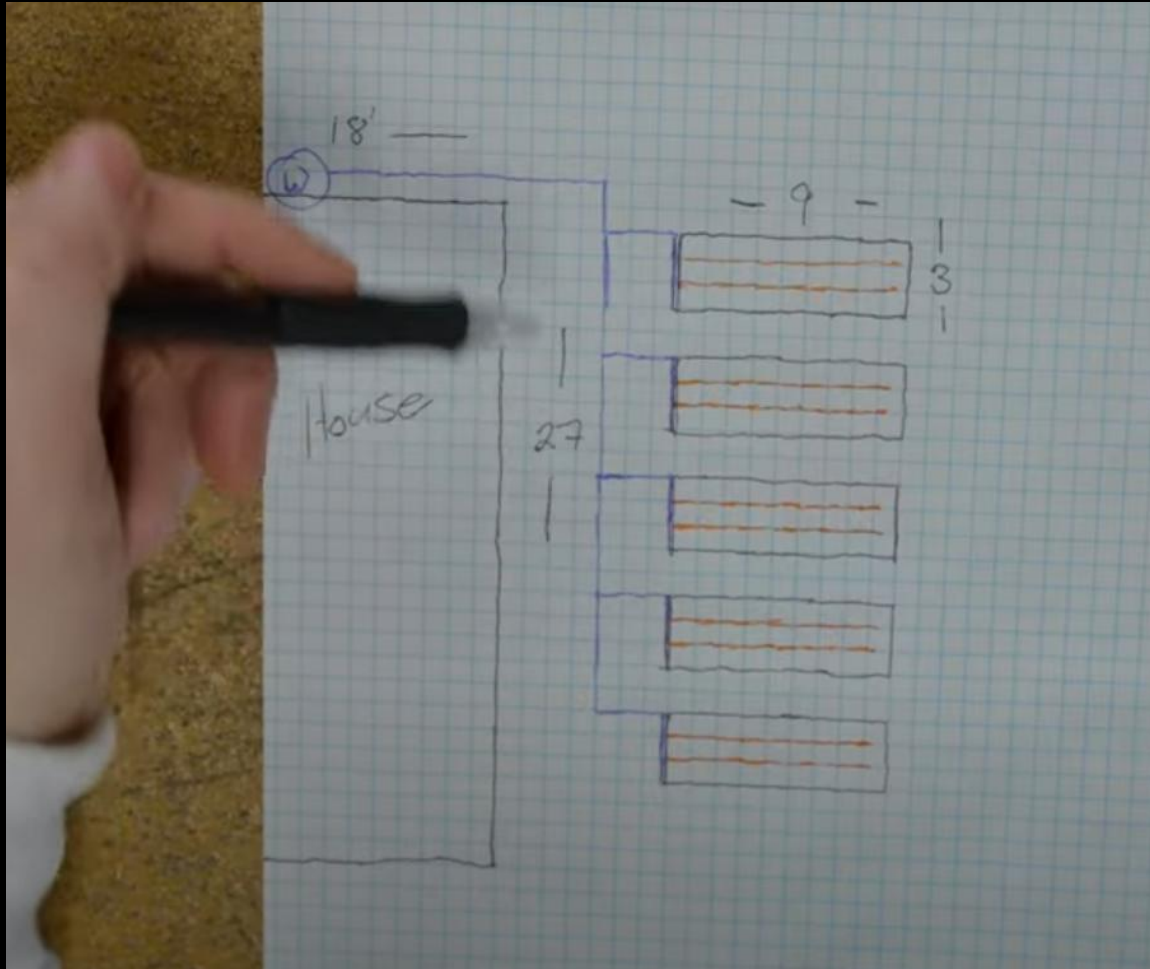


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# Map Out Your Irrigation Zones

## Raised Bed Example



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# Map Out Your Irrigation Zones

In the ground vegetable garden

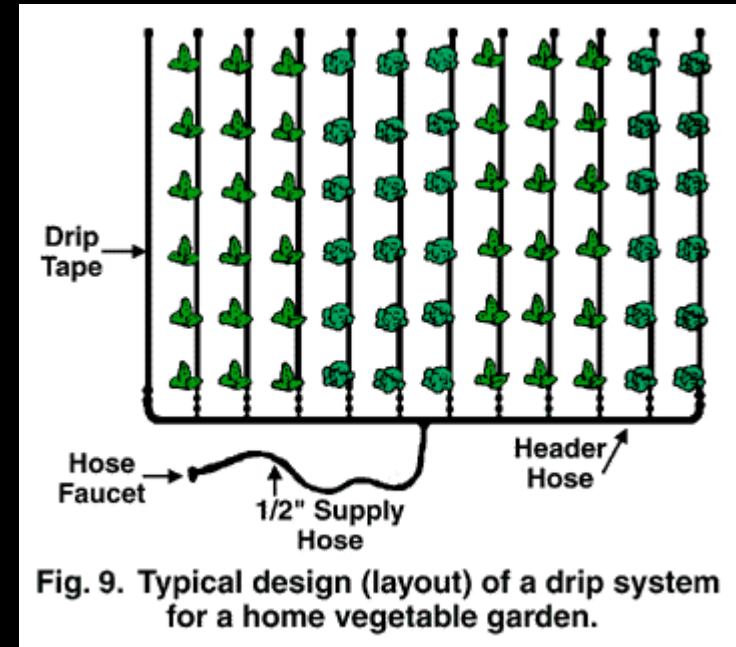
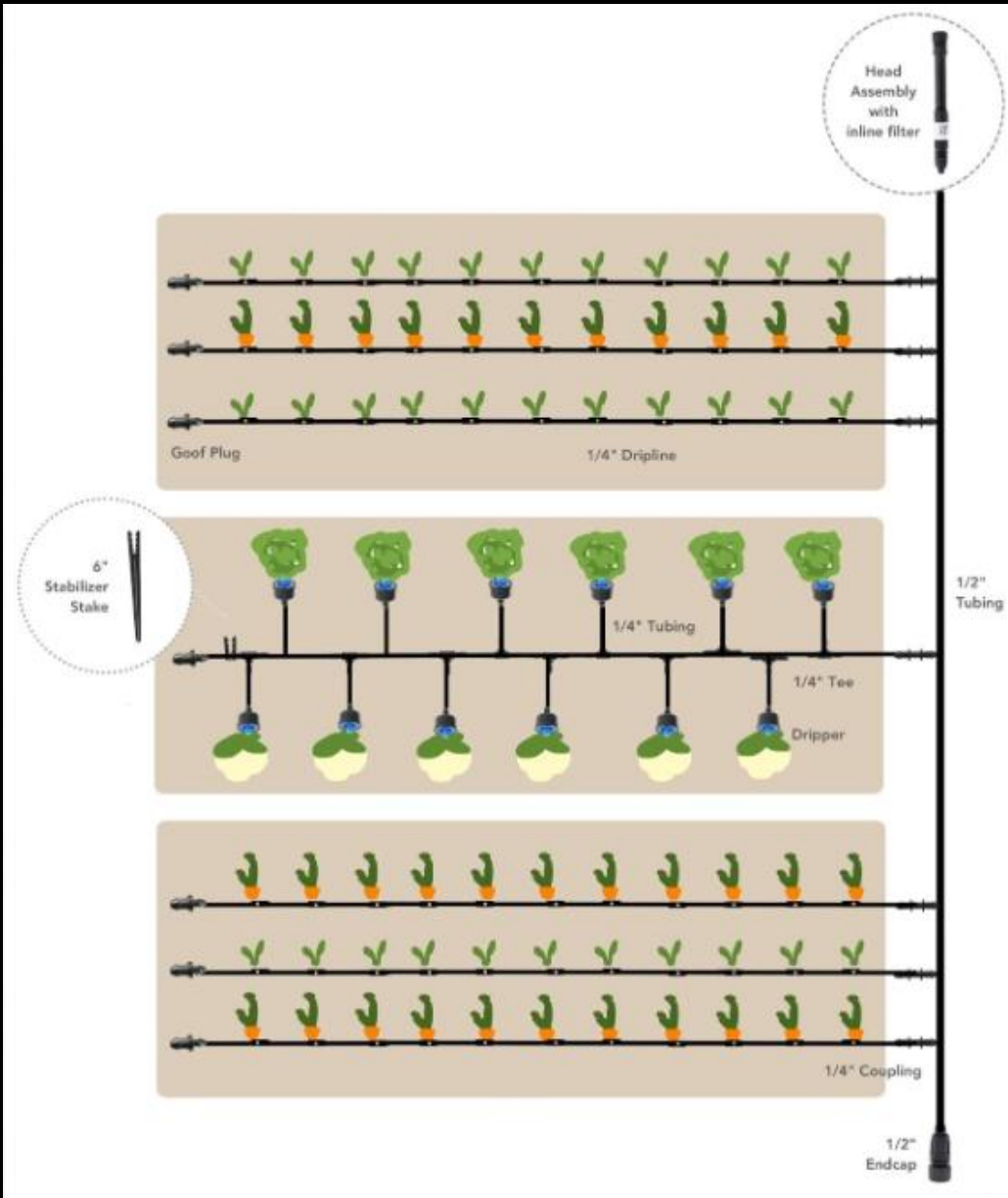
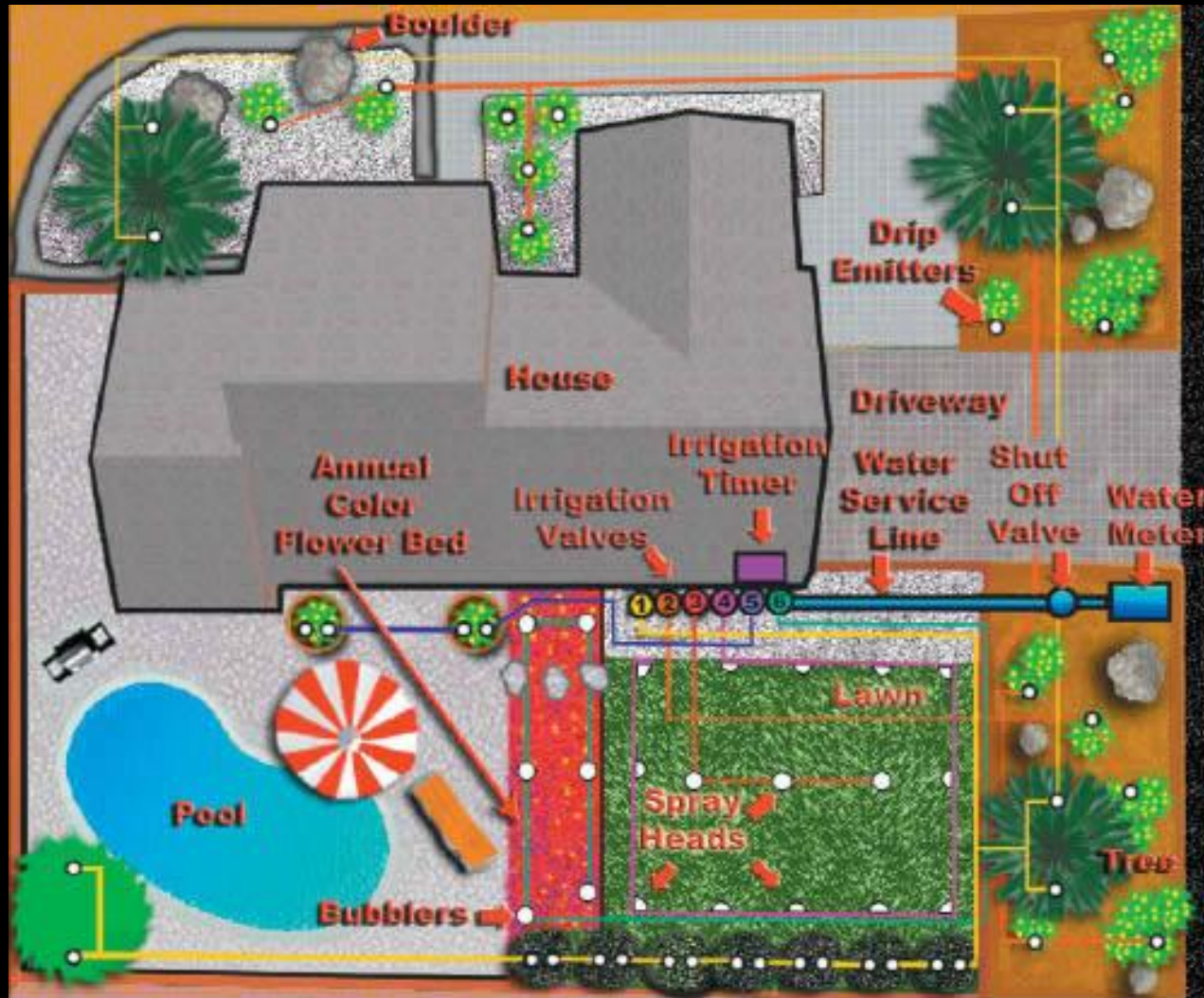


Fig. 9. Typical design (layout) of a drip system for a home vegetable garden.



# Map Out Your Irrigation Zones



Ornamentals

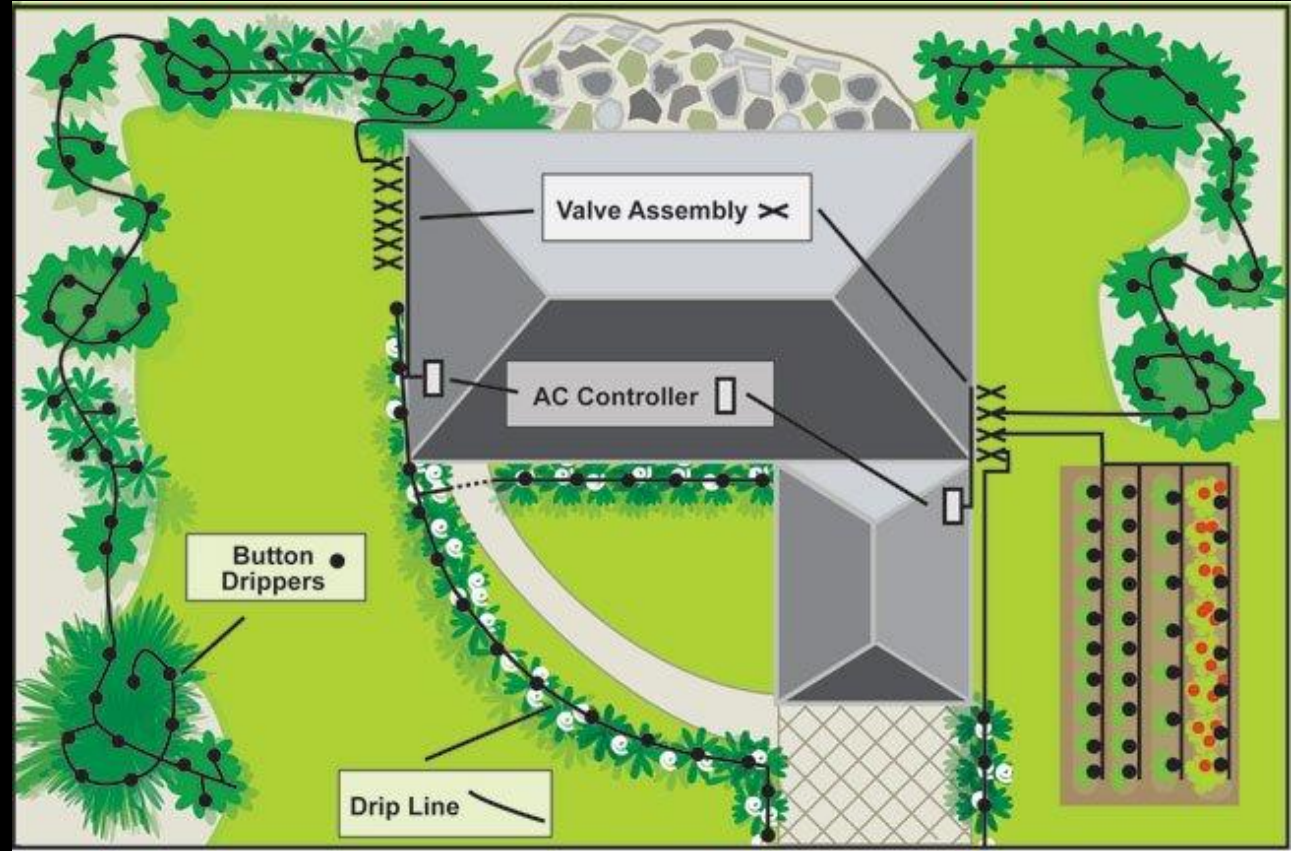
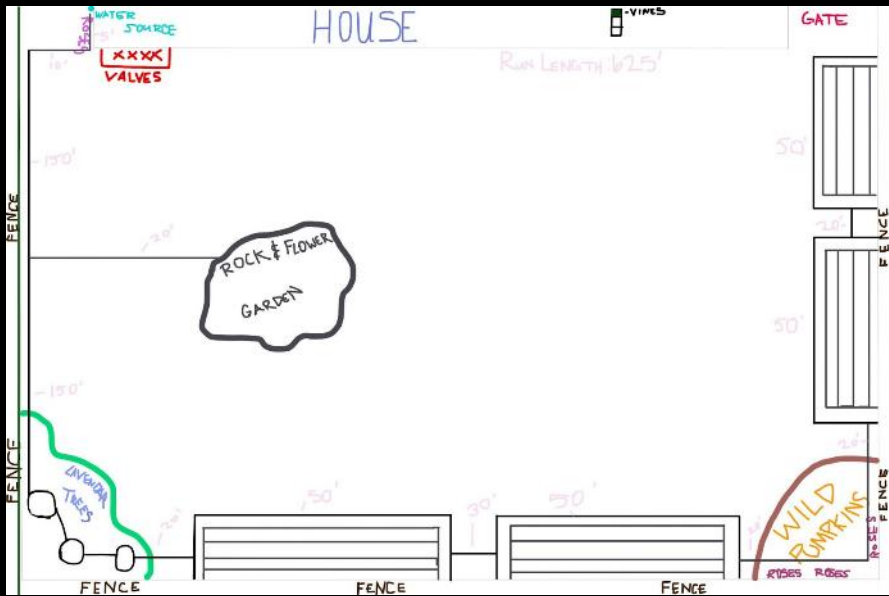


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# Map Out Your Irrigation Zones

## Ornamentals and Vegetables





# Calculating Water Needs

Plant	Flow rate (gph)	Number of emitters or orifices	Placement of emitters or orifices
Low shrubs (2-3 feet)	1.0	1	at plant
Shrubs and trees (3-5 feet)	1.0	2	6-12 inches either side
Shrubs and trees (5-10 feet)	2.0	2-3	2 feet from tree equally spaced
Shrubs and trees (10-20 feet)	2.0	3-4	3 feet apart equally spaced
Shrubs and trees (20 feet or higher)	2.0	6 or more	4 feet apart equally spaced
Containers (Potted plants)	0.5-1.0	1	at plant
Flower beds	1.0	1	at plant
Ground cover	1.0	1	at plant
Vegetables (closely spaced)	0.5-1.0	1	every 16-24 inches
Vegetables (widely spaced)	1.0-2.0	one per plant	at plant



# Calculating Zone Flow Demand

## Determining Flow Demand:

1. How many emitters?
2. How many GPH (Gallons Per Hour) of water does each emitter release?
3. #Emitters x GPH=System Flow

## Example:

90ft of dripline with 0.5GPH emitters spaced every 12 inches

$$90\text{Emitters} \times 0.5\text{GPH} = 45\text{GPH}$$

$$60 \times \frac{2\text{gal}}{45.6\text{seconds}} = \text{Gallons Per Minute}$$

$$\text{Gallons Per Minute} \times 60 = \text{Gallons Per Hour}$$



# Header Pipe/ Mainline Tubing

## How many feet of mainline do you need?

- Mainline can start at head assembly or at end of garden hose
- This tubing connects dripline to head assembly
- You will need to measure garden width and distance from garden to water source





# Header Pipe/ Mainline Tubing

What diameter of mainline do you need?

Tubing Size	Maximum Run Length	Maximum GPH Supplied
1/4"	30 feet	30 GPH
1/2"	200 feet	200 GPH
3/4"	480 feet	480 GPH
1"	960 feet	960 GPH



# Timers

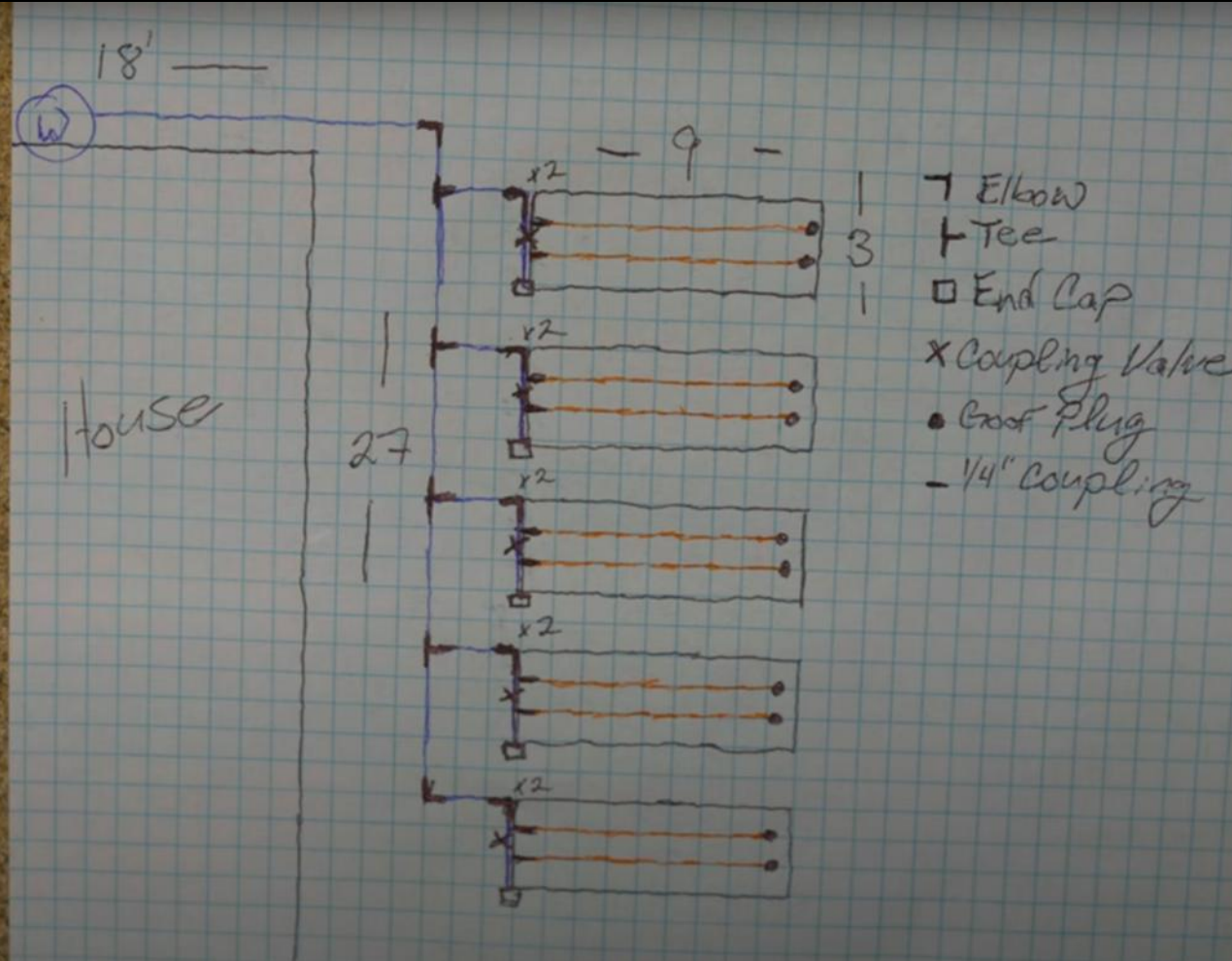
## Types of Programmable Water Timers:

- Mechanical
- Digital Battery Powered
- Smart Wi-Fi with Bluetooth (Battery Powered)



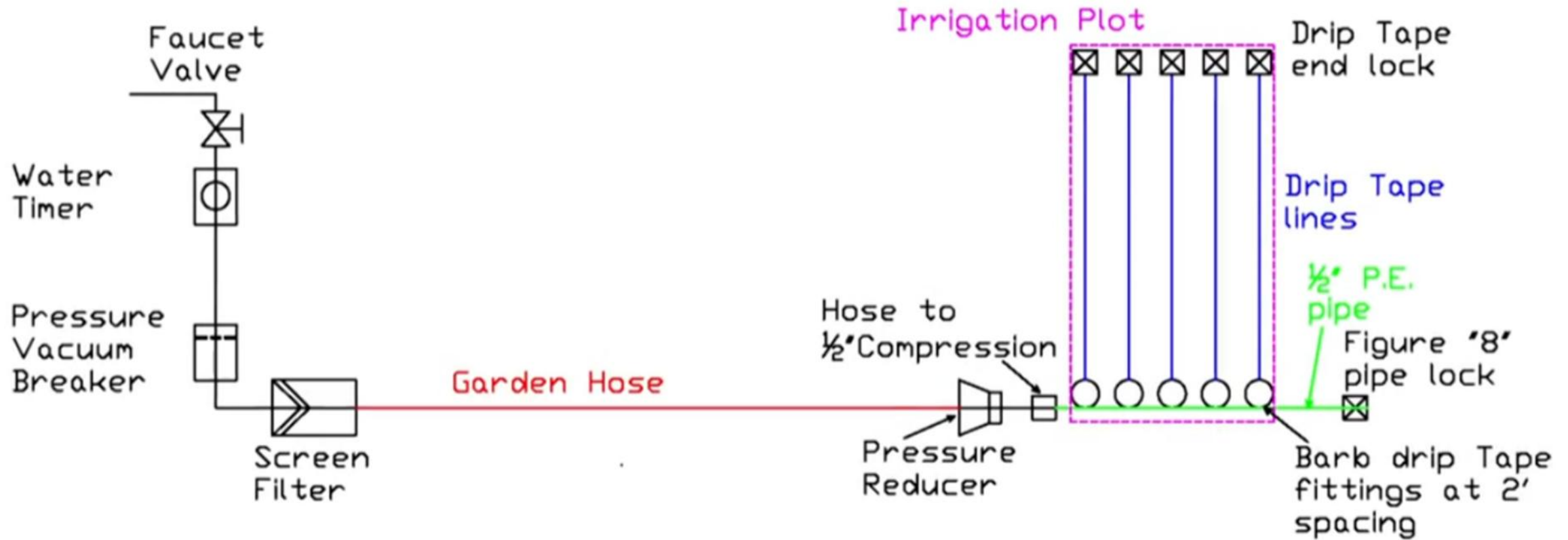
# Make a List of Materials

- TUBING**
- 70ft 1/2" Mainline
  - 90ft 1/4" Dripline
- FITTINGS**
- 12 1/2" Elbows
  - 4 1/2" Tees
  - 5 1/2" Coupling Valves
  - 5 1/2" End Caps
  - 2 1/2" Couplings
  - 10 1/4" Couplings
  - 10 1/4" Goof Plugs
- HEAD ASSEMBLY**
- 1 Backflow Preventer
  - 1 Filter
  - 1 Pressure Regulator
  - 1 Hose by Tubing Adapter
  - 1 Hose End Timer

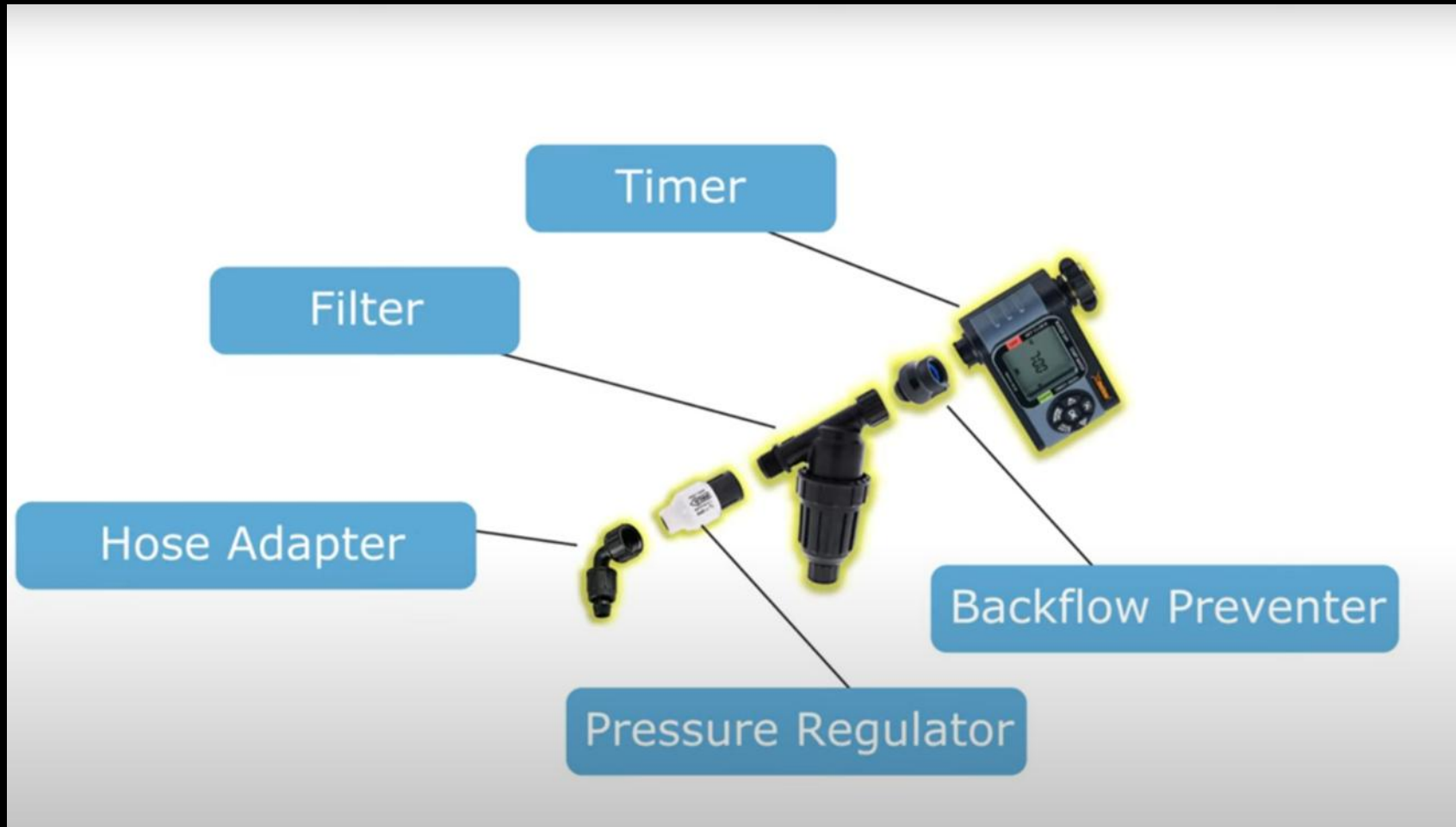




# Typical Simple Home Irrigation Schematic



# Put it together! Start with Head Assembly





# Next, connect mainline and drip tape with fittings





# Don't forget to check all your connections!



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# Mulch over top of drip tape if you can



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# Enjoy!



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Enjoy!



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**Contact us at**  
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770-267-1324

**Walton County Extension**  
1258 Criswell Rd, SE  
Monroe, GA 30655

Office hours: **Monday - Friday**  
8:00 am-Noon & 1:00-5:00 pm

MG Help Desk hours:  
**Tuesdays 1:00-4:00**



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Master Gardener Program

Save the dates

# 2-Day Plant Sale

Ag Center, 1208 Criswell Road, Monroe

April 11 and 12, 10-2

Rain or shine





# Support our Two Fundraisers



Scan the QR Code to buy a brick



**Walton County Master Gardener Fundraiser**  
**It's Gardening Season!**

Is your garden soil tired and unproductive? Are you thinking of creating raised beds? If so, Soil<sup>3</sup> Organic products may just be the ticket for you.

Great news! Through February 2025, save \$30 plus an extra \$5 on 1 cubic yard Soil<sup>3</sup> product by using the discount code WaltonMG2025 at checkout. Delivery is included.

Order online at <https://shop.soil3.com/discount/WaltonMG2025>.

Thanks for your support!

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Use Fundraising Code  
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Walton County Master Gardeners invite you to

## Free Spring 2025 Garden Talks

Mondays 2:00–3:00 p.m.

O’Kelly Memorial Library

363 Conyers Road, Loganville GA

**Feb 24: Basic Flower Arranging**

**Mar 3: Sowing Success: A Guide to Seed Starting**

**Mar 10: Growing a Pollinator Garden**

**Mar 17: Smart Watering: DIY Drip Irrigation**



Scan the code to sign up for our monthly newsletter



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*Walton County Master Gardeners invite you to*  
**Free Spring 2025 Garden Talks**

**Wednesdays 2:00–3:00 p.m.**

**UGA Extension Office**

**1258 Criswell Rd SE, Monroe GA**

**Feb 26: Basic Flower Arranging**

**Mar 5: Sowing Success: A Guide  
to Seed Starting**

**Mar 12: Growing a Pollinator  
Garden**

**Mar 19: Smart Watering: DIY  
Drip Irrigation**



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# Interested in being a Master Gardener?



Go to our website at [www.waltonmastergardeners.com](http://www.waltonmastergardeners.com)  
and click on *Become a Master Gardener* to learn more!



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