

Urban Farming and Irrigation

Produced through The Northern Rhode Island Conservation District 's ***Providence County Urban Growers Leadership Program***, in partnership with Southside Community Land Trust.



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Soil & Water:

A good first step to managing your plants' water uptake and water conservation is knowing your soil. The soil quality determines how much water the soil can retain.

- Soil with higher quantities of organic matter (leaves, grass, compost, plant matter etc.) helps the soil retain more water.
- When the soil is able to retain more water, you do not have to use as much water or be as attentive with watering.

**Healthy Soil High in Organic Material,
Holds More Water**



Water Conservation:

The practice of using water efficiently to reduce unnecessary water usage.

Temperature:

- Water helps cool plants down
- Do NOT water with hot water

Mulching:

The first thing can do to conserve water on your farm or garden is to cover the soil with mulch.

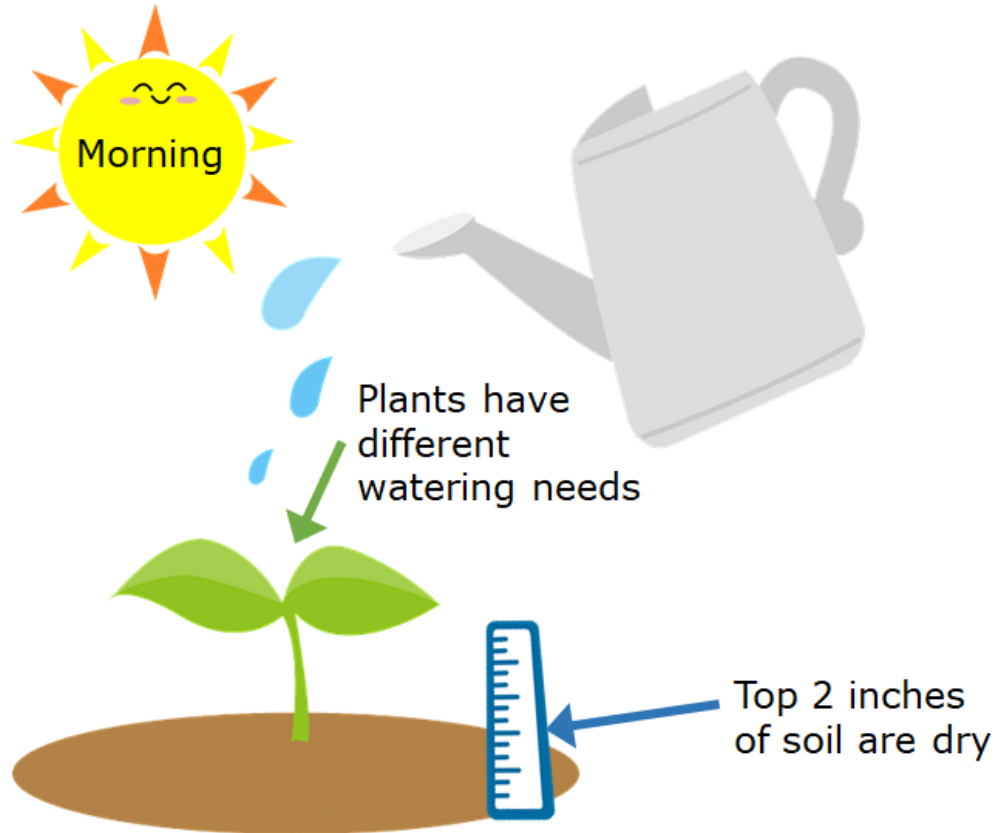
- Mulch helps hold moisture, cools plants, helps continue growing roots, reduces **soil erosion (the wearing away of topsoil typically due to wind and water)**, and reduces weeds.
- If you do not have mulch, you can use cardboard, stones, wood chips, or plastic mulch.
- Plastic mulch can come in a roll at home depot, lows, nurseries, garden centers, etc.

Protecting Top Soil by Covering Beds With:

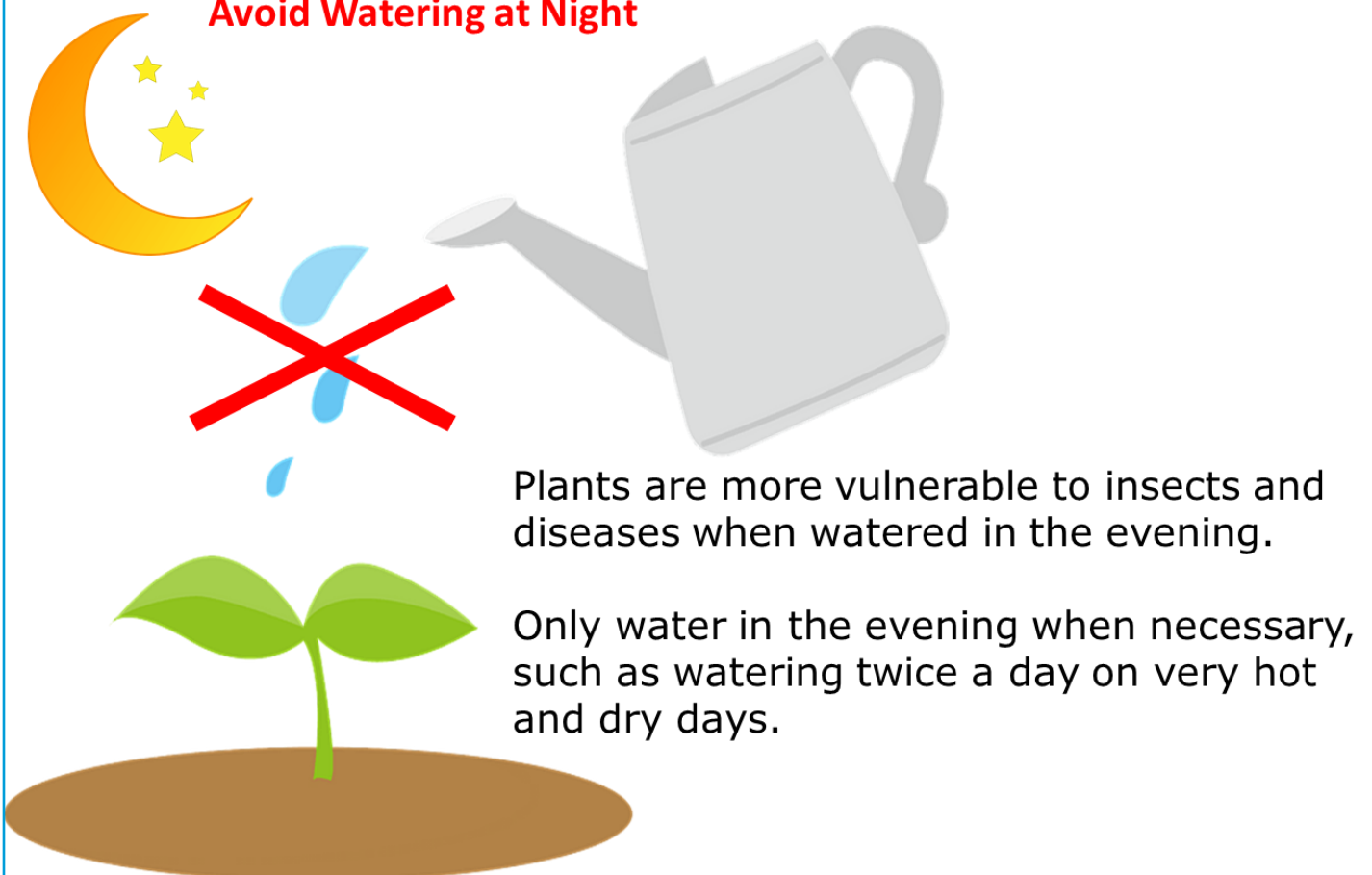


When to Water?

- Morning
- When the top 2 inches of soil are dry
- Irrigation Season (July, August, September)
- Water based on the type of plants you are growing – some may need more or less water



Avoid Watering at Night



Plants are more vulnerable to insects and diseases when watered in the evening.

Only water in the evening when necessary, such as watering twice a day on very hot and dry days.

When to Water:

- Watering in the early morning is ideal - giving the plants a long drink.
- Depending on the watering system and the plant's watering needs, you should water approximately for 1 hour on a hot/dry day to help plants grow and produce.
- DO NOT water if your plant does not need water.
 - If the soil is wet approximately 2 inches down, the plant does not need water.
 - If the soil is dry approximately 2 inches down, then the plant might need water.
- Irrigation Season (July, August, September) is when you need to water almost every day, while the rest of the year is based on the weather.
- Depending on the type of plants you are growing, how much water the plants need and how much you need to water them will vary.
 - For example: tomatoes and fruiting plants need more water, while some plants have deeper root systems and need less water (drought tolerant plants).
- Watering in the evening can lead to mold, fungus, plant diseases, slugs, snails, rats, and other diseases and insects impacting the plants.
 - Only water in the evenings on very hot days when the plants need the extra water.



Hose Watering Systems:

Sprinklers:

- Sprinklers could be useful for smaller gardens, but can be difficult with larger gardens because you need more water pressure.
- The strength of the sprinkler is dependent on the amount of water pressure. Less water pressure means that the sprinkler may not reach the entire garden or give enough water to all of the plants.

Timer:

- A timer is connected to your hose or sprinkler system to set a time and length it will automatically water your plants for.
- A timer saves you time spent watering.



Drip Irrigation:

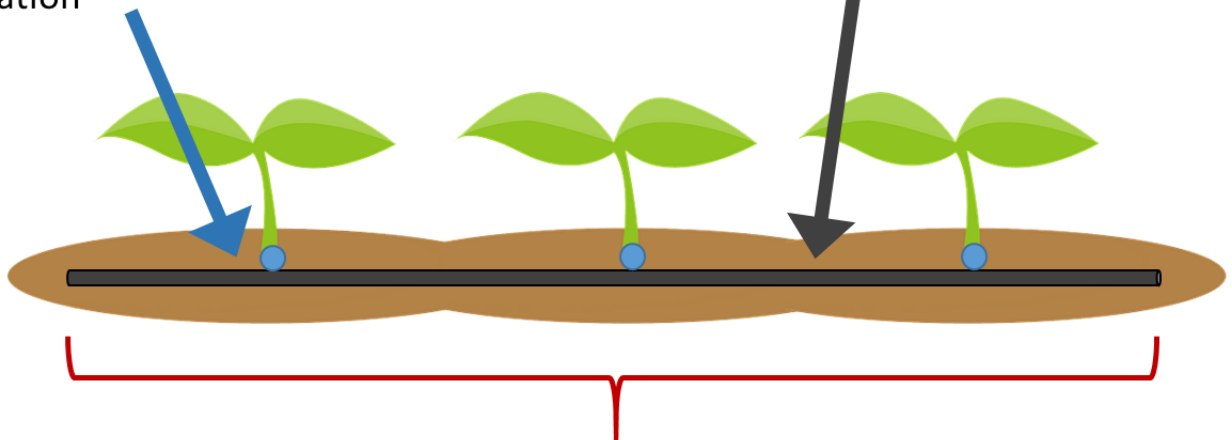
Drip Irrigation: is the practice of applying small amounts of water across a specific area. Drip irrigation uses a drip tape with holes in it that is engineered to put out as little as 1/2 gallon and up to 4 gallons of water per hour. Drip irrigation is recommended in raised beds.

Pros. Of Drip Irrigation:	Cons. Of Drip Irrigation:
<ul style="list-style-type: none"> • Uniformly distributes water to plants • Delivers water directly to the plants/ soil and saves water from running off the top soil and getting evaporated • Maximizes water usage • Save you time, energy, and money • System is good for up to 2 acres of farm land • Stops spraying water all over the plants and reduces potential increase in fungus, diseases, and insets • Does not require high water pressure 	<ul style="list-style-type: none"> • On a large farm, drip irrigation can be expensive and hard to use with tractors because it can get in the way a break • Can be challenging to set-up but can last a long time once it is set-up

Drip Irrigation:



- Uniformly distributes water to plants directly at the base of roots of the plants
- Slowly lets water out of the tape, maximizing water usage, and reducing water runoff and water evaporation
- Drip tape only needs low water pressure to run smoothly



Drip irrigation is the practice of applying small amounts of water across a specific area. Drip irrigation uses a drip tape with holes in it that is engineered to put out as little as 1/2 gallon and up to 4 gallons of water per hour. Drip irrigation is recommended in raised beds or less than 2 acres of land.



Setting up Drip Irrigation on your Farm:

1. Timer

- A timer can save you more time by setting when and how long you want to water your plants.

2. Backflow

- Prevents water from flowing back into the pipes and allowing contaminants to enter the water system.

3. Pressure Regulator

- Helps regulate the water pressure coming out of your hose spigot into the drip tape. This is helpful if you have high or moderate water pressure. If you have low water pressure, a regulator will only reduce the water pressure, NOT increase it.

4. Plastic Filter

- A plastic filter helps prolong the life of your system by stopping sediment from collecting and clogging the system
- In the city a filter on your drip irrigation system is optional, but recommended. It is necessary if you are getting your water from a well or pond.

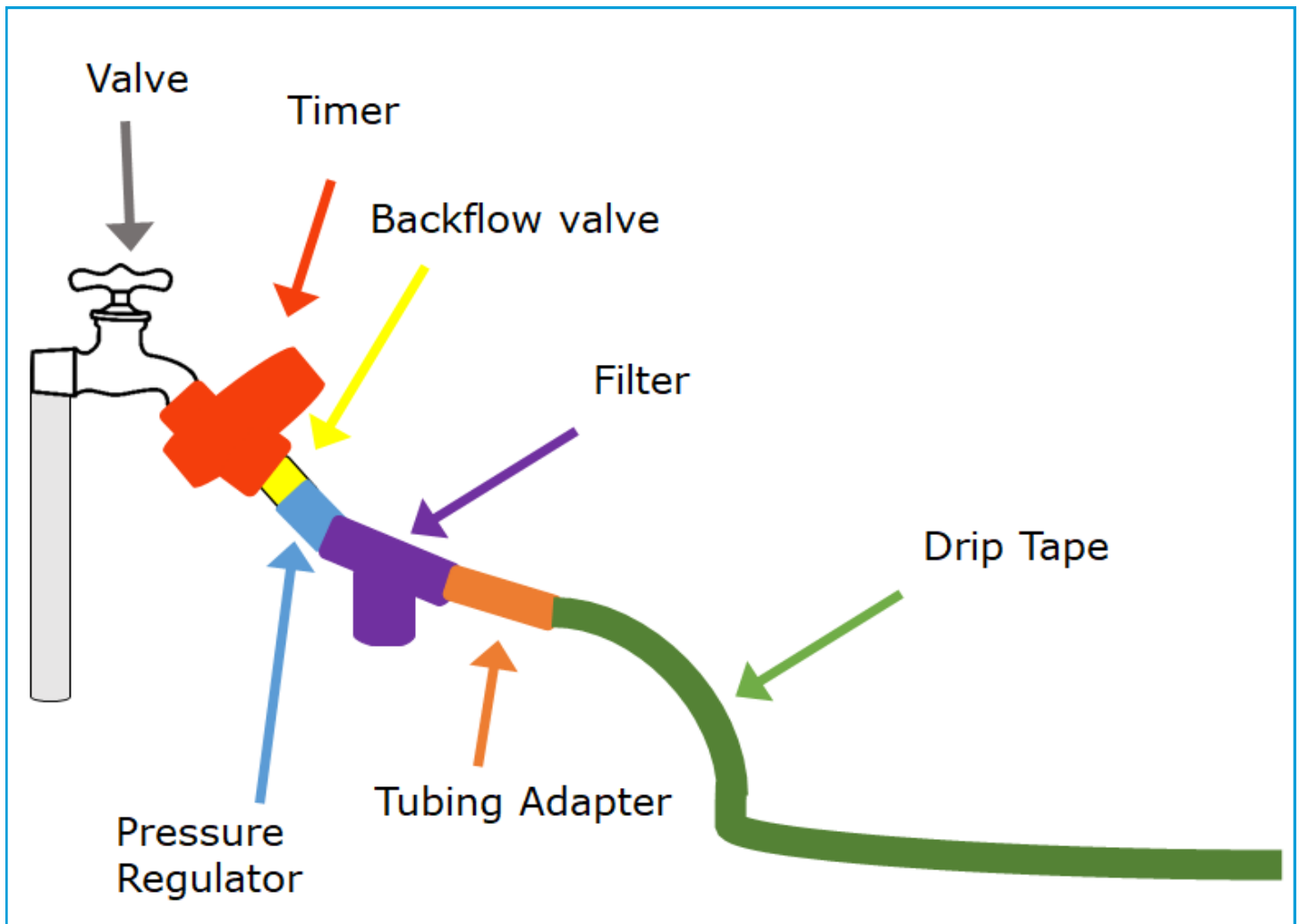
5. Tube Adapter

- Allows you to connect the system to the drip irrigation tape.

Setting up Drip Irrigation on Your Farm:

6. Drip Irrigation System (Drip Tape)

- The upfront costs can be expensive but can save you time and money in the long-term.
- Drip irrigation is meant to be replaced every year but you can reuse it. You can leave it over the winter, but it should be bundled up each season to stop it from freezing, cracking, and being damaged by rodents.



Rain Water

Using rain water on your farm or garden can help you conserve water and have a back up watering system on your farm or garden.

Challenges:

- If you are using a rain barrel catchment system as your primary source of water you need to have a catchment area large enough for the amount of water you need. This is especially difficult for large scale farming. Catchment areas can include roofs and gutters that divert the flow of water into barrel(s).

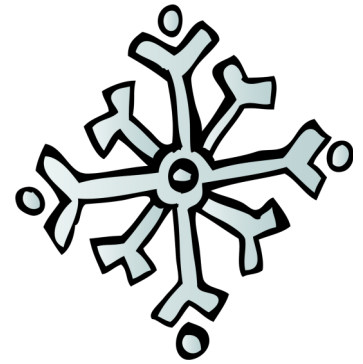
Rain barrels

- When using a rain catchment system year round, it is important to use a flexible plastic container to prevent damage to the container from freezing. You could use a livestock watering heater in the rain barrel to reduce freezing.
- If the holding tank is not covered, you must treat the water so it does not grow algae or become a breeding ground for pests.
- Use gravity or pump to disperse water from a holding tank (you can use a camping pump).

How long can you keep the water?

- Forever, you just need a clean holding tank.

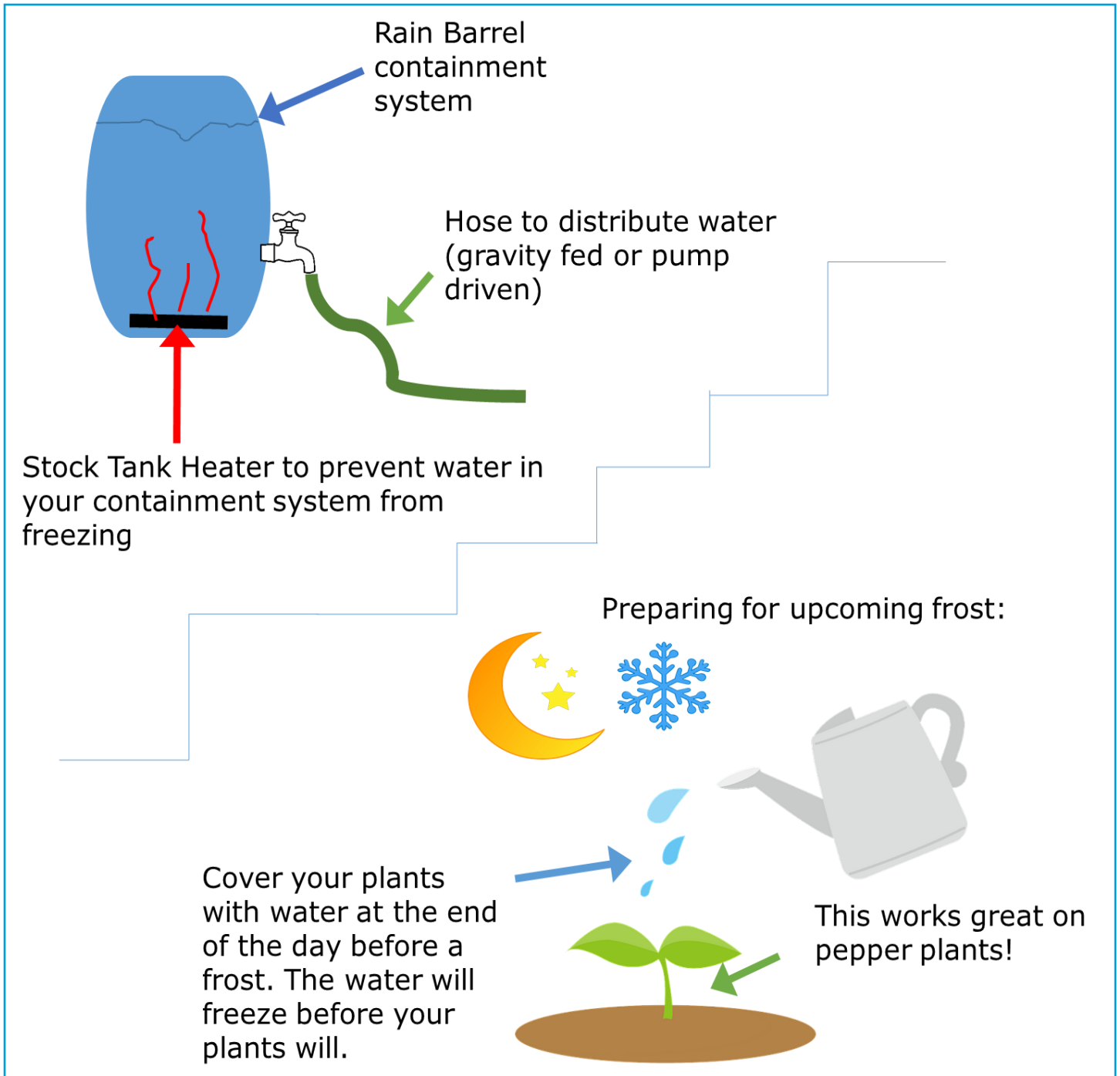
Winter Watering:



- Saving plants from a frost:
 - Spray garden at the end of the day if there is to be a frost. The water will absorb the lack of thermal cold and freeze before the plant will freeze
 - This method does not work on all plants, but works well on chili peppers.
- Frost tape can help keep pipes from freezing.
- Water holding tank, rain water, pick up truck with 50 gallon tank of water, etc.
 - You do not need a lot of water in the winter. Plants in the winter growing seasons need less water because there is enough moisture in the atmosphere.
 - You can use a stock tank heater, or horse watering heater in the water storage tank to prevent it from freezing.



Winter Watering



Lead in Water:

- Plants can continue to grow even if there is lead in the water.
- In some plants, lead can build up in the plants leaves and does not get into the fruit
- You can put a filter on the water source if you would like
- It is **ALWAYS** recommended that you check fact and research your local water and the plants you are watering and follow the safety measures recommended by the state



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