



Gardening Workshop for Teachers

Mayfair Laboratory School

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School Garden Irrigation

Presented by

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Overview

- Understanding the fundamentals
- Irrigation basics
- Smart technologies

Irrigation

- Irrigation is a balancing act whereby we try to manage the soil moisture content keeping it at a level optimum for plant growth.
- Too much – displaces air (C, H₂ and O₂)
- Too little – wilt, stunt growth

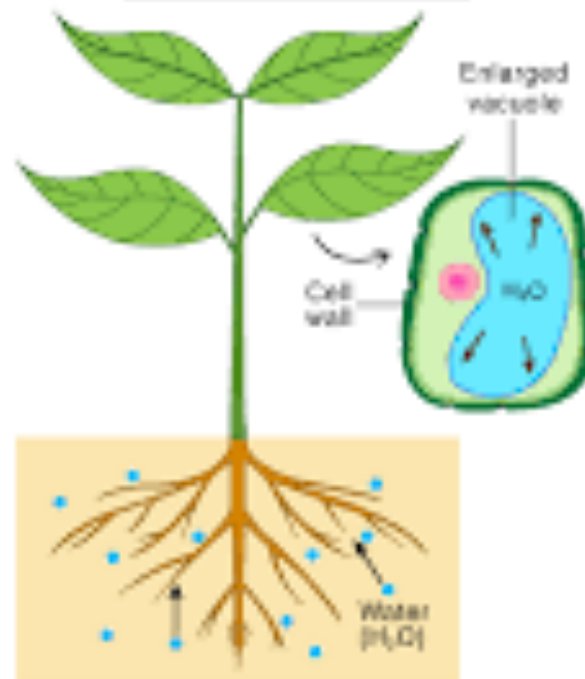
Turgor Pressure

Turgor Pressure

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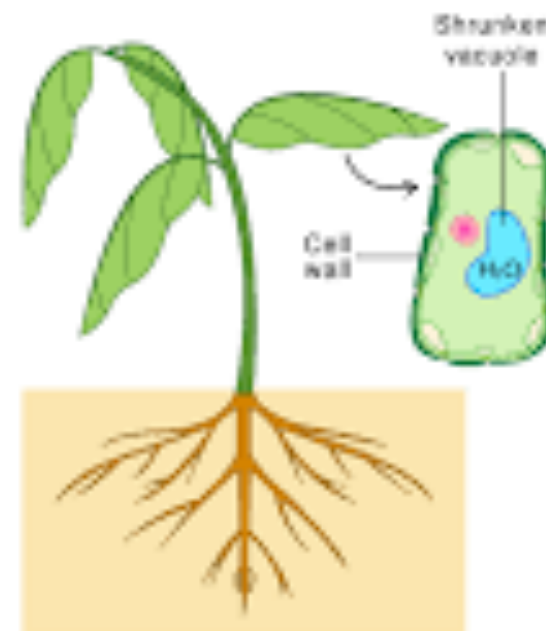
The pressure exerted by the cell's fluid content against the cell wall

High Turgor Pressure



Turgid State

Low Turgor Pressure



Flaccid State

Survey

- In ground gardening?
 - Number of rows?
 - Length?
- Raised gardening?
 - Number of containers?
 - Container dimensions?

Fundamentals - Water

- Plant's weight: 80 – 90% water
- Soil is the water source
- Water absorbed through root hairs
- Transported through the xylem
- Carries nutrients

Water Changes

Addition

- Precipitation
- Run-on
- Irrigation

Subtraction

- Run-off
- Evaporation
- Leaching/percolation
- Transpiration

Fundamentals – Native Soils

- Composition by volume:
 - 50% inorganic; sand, silt & clay
 - 1 – 5% organic materials
 - 45 – 49% pore space (voids)
- Composition very stable

Fundamentals - Substrates

- aka - potting mixes, alternative soils, soilless media
- Usually, tree bark or peat moss
- Contain less than 20% native soil
- Composition unstable, decays
- 70 – 90% pore spaces (voids)

Substrates

Advantages & Benefits

- Water efficiency & economy
- Favorable root zone environment
- Reduced diseases & weeds
- Versatility & ease of installation

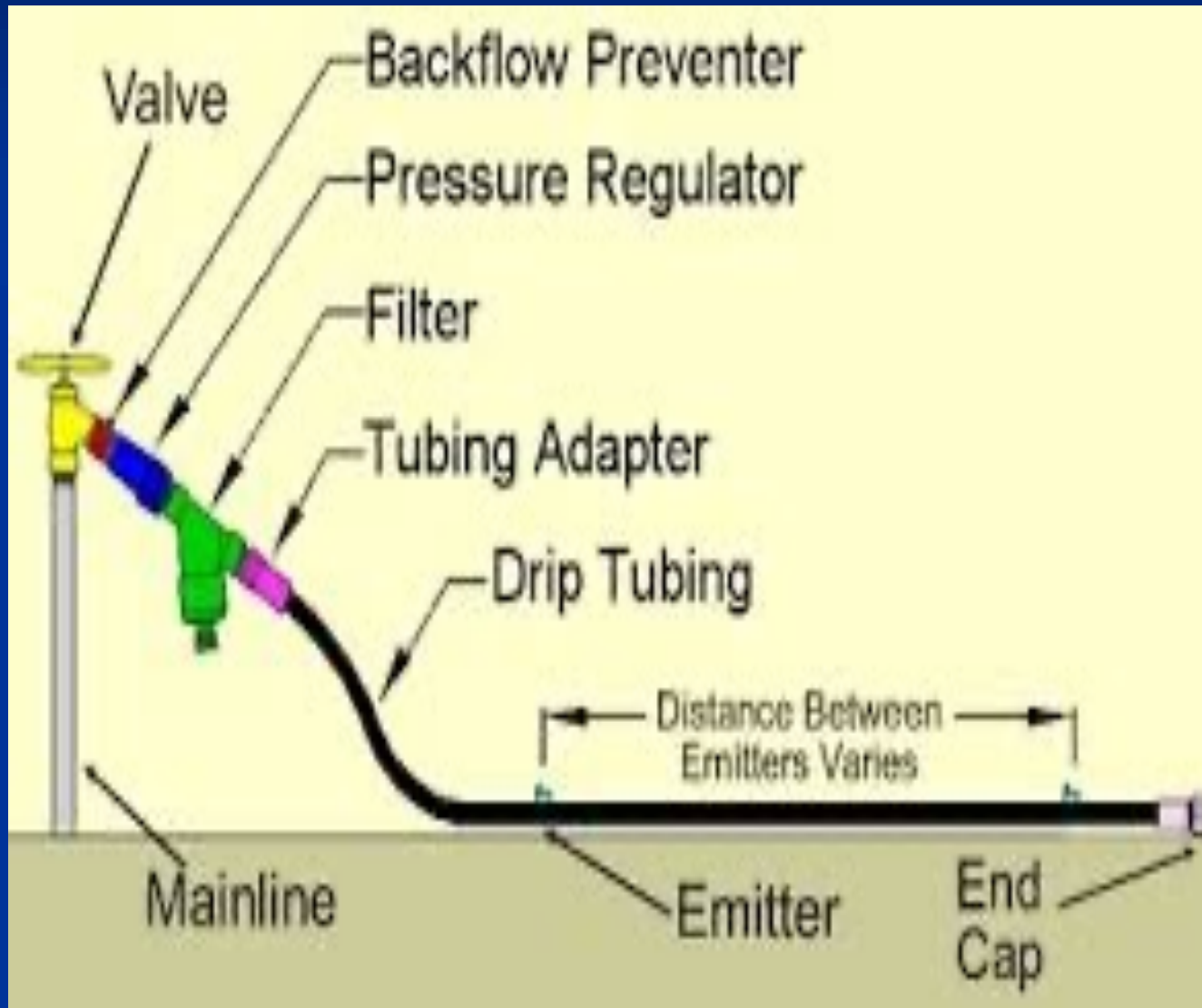
Getting Started

- Small area – keep it simple, hand water.
 - Morning inspection for turgor, insects, disease, moisture and weeds
 - Stick finger in the soil to a depth of three or four inches. Interpret moisture content.

Low Volume Irrigation

- The slow and precise delivery of water directly to the plant roots
- Sometime referred to as micro irrigation, drip irrigation, low-flow irrigation or trickle irrigation

The Basic Equipment



Container Irrigation



Raised Bed Irrigation



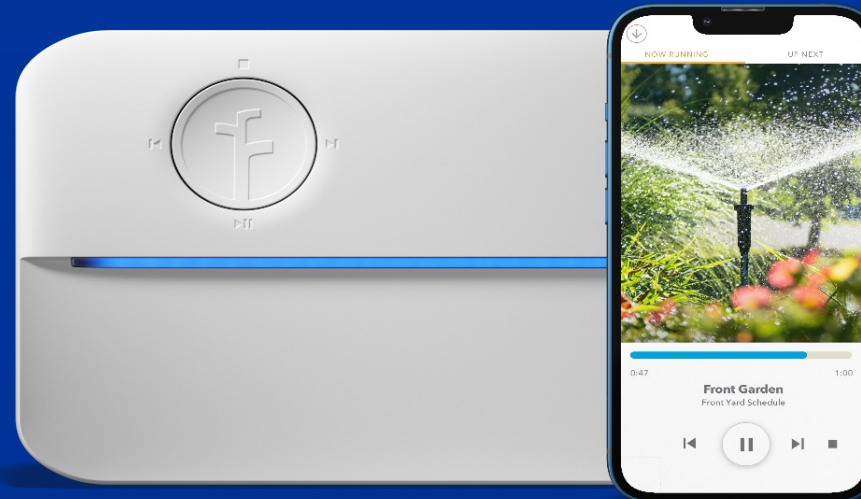
Water Emmiter



Irrigation Timer



Weather-Based Irrigation Controller



Soil Moisture Sensor



Reference

- <https://www.digcorp.com/residential/>

Review

- Plants and Water Relationship
- Fundamentals of Substrates
- Irrigation Basics



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Want to Become a Master Gardener?

For more information on the
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