Water Usage in a Changing Climate
Crop Usage

- Vegetable row crops loss approximately 5400 gals of H₂O/acre/day.
- Approximately 27,160 gals of H₂O to provide an inch of water/acre.
- Evaporation loss in Maine = approximately 0.18”-0.21”/day in July (Very weather dependent).
- Approximately 1”-2” of water per week
Water loss in production systems

- Water lose through evapotranspiration, soil infiltration, surface evaporation
Factors affecting water loss

- Bare vs covered soil
- Time to canopy closure
- Leave structure

- Cultivation: tillage
- Soil Health: organic matter
Water Stress

- Reduces yield and quality of crops.

- Stress Caused From:
  - Inconsistent watering
  - Too much
  - Too little
  - Shallow watering
    - Root formation

Blossom End Rot: caused by inconsistent watering
How do you know when to irrigate?

- Everyday?
- Set and forget it?
- Every 5 or 7 days?
- Whenever the plants look like this?
When do you irrigate?

- **Plants as indicators**
  - Good rule of thumb-
    - “If the plants are wilted in the morning, time to water”

- **Check the soil**
  - Dig down in the soil profile

- **Environmental conditions:**
  - Evapotranspiration
    - Heat
    - Wind
    - Plant size
Tools to help determine irrigation timing:

- Rain gauge
- Soil Tensiometer
- Moisture meters
- Shovel
- Knowledge
Irrigation Methods

- High Pressure
- High volume
- Low pressure
- Low volume
**Water Source**

- **Type**
  - Domestic:
    - private well/public
  - Water Body
    - Pond/lake
    - Stream

- **Amount**

- **Distance:**
  - from water source to water use
Overhead Irrigation
Jamaica
Hose reel
Ditch Irrigation: Idaho
Center Pivot Drip
Center Pivot

Photo: UF, IFS Extension Florida
Drip Irrigation

- Applies water slowly and evenly to the root zone
- Crops grow evenly
- Reduces weed emergence
- Keeps the foliage dry
  - Which prevents many diseases
- Less fertilizer

- Use 30-70% less water than overhead

Bacterial Spot
Lateral emitters

Header Pipe

SubMain Pipe
Drip Irrigation

- Uniform wetting pattern
- Targeted
- Consistent
Disadvantages

- Salts may accumulate in the containers or beds
- Insect and rodent damage
- Emission holes may become clogged
- Initial investment
Emitters

- **Adjustable drippers**
  - 1-10 gph

- **Button drippers (1/2-4 gph)**
  - Pressure compensating
  - Working pressure

- **Micro-sprinklers**
  - 10-40 gph
Low tech/low cost methods

- Bucket method
- Milk jug
- Soaker hose
Water is a must!
Ways to Conserve Water

- Mulch
- Weed free
- Hand weed
- Plant less
- Decrease the use of salt fertilizers

- Increase soil organic matter
- Loosen the soil surface
- Irrigation method and timing
Questions?