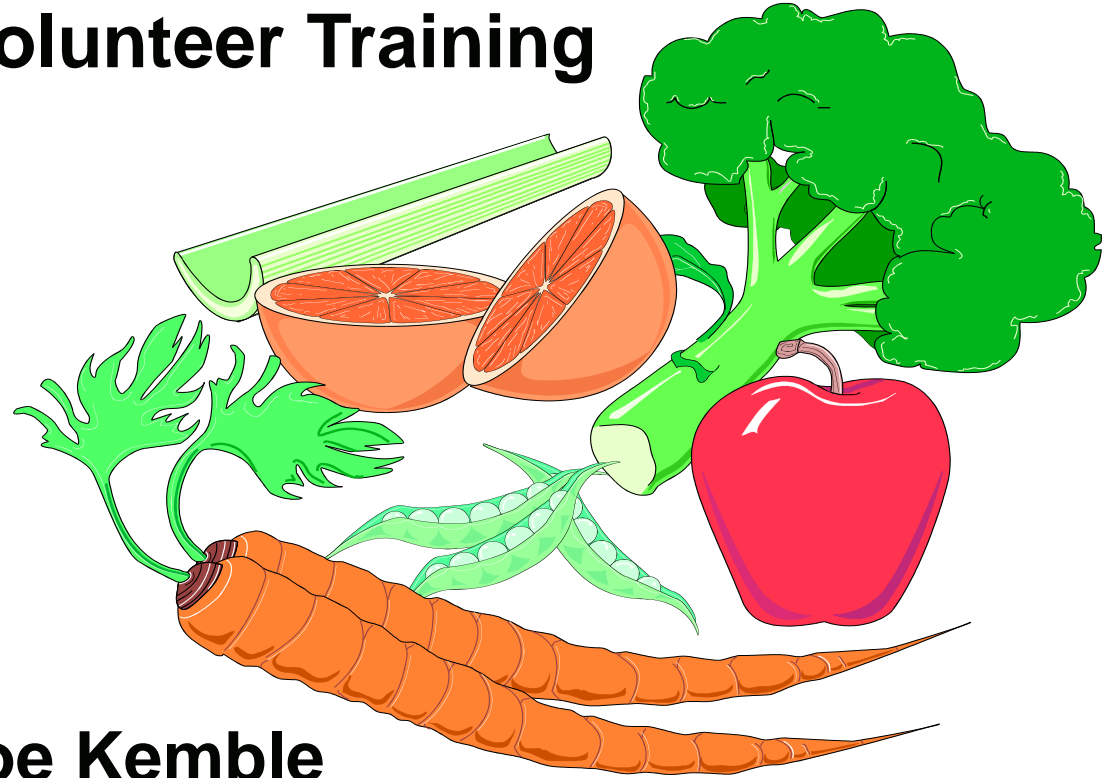


# BACKYARD GARDENING.....

## Master Gardener Volunteer Training



**Dr. Joe Kemble**

**Department of Horticulture  
Auburn University**

# Planning for Success.....

- What will your family eat?
  - Choose by personal preference and personal resistance
- Site orientation
  - Maximize light
- Know your soil
  - Weeds & fertility
- Record maturity dates
  - Group similar; plan for secondary
- Practice crop rotation
  - Two feet



# Selecting a Site.....

- Full Sun
  - 6 - 8 hr direct sun
- Away from trees, shrubs, walls, buildings
- Convenient – ease the gardener



# Selecting a Site.....



- Well Drained
  - dig a small hole & fill with water
    - >1 hr to drain
    - <1 hr to drain
- Raised beds
- Water Source



Site selection





Raised beds



# Know Your Soil.....



- Improve soil by adding organic matter
  - compost
    - leaf mold
    - well-rotted sawdust
    - grass clippings
    - manure
- Well decomposed
  - apply and incorporate in late fall/winter

# Soil Amendments.....

- Apply evenly across area
- Improves fertility & over-all soil health
- ***Never*** use fresh or partially decomposed compost
  - steals nutrients from crop
  - source of weed seeds





# Benefits of Organic Matter.....

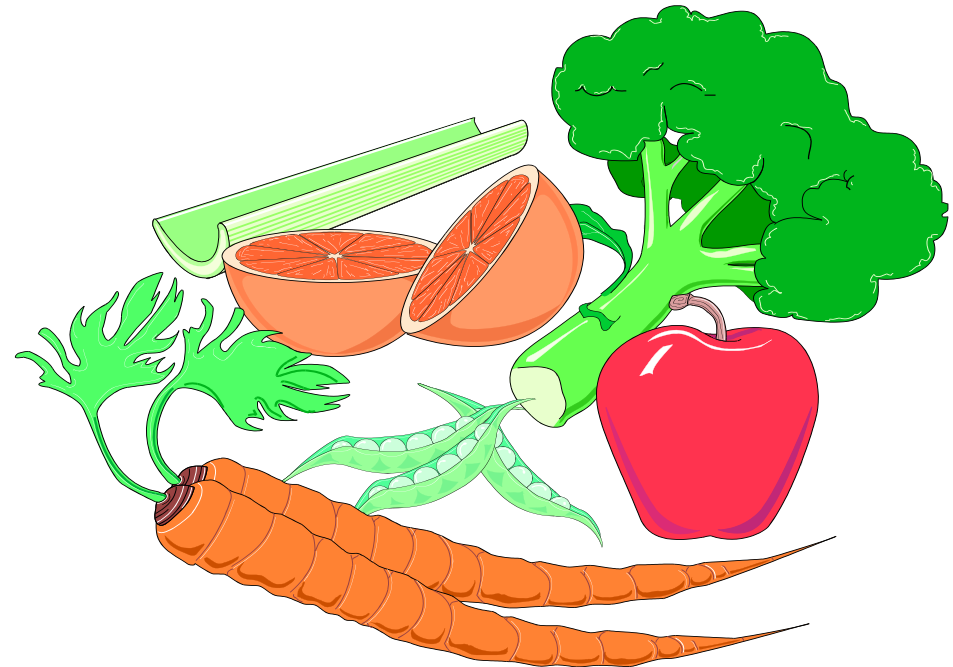


- Soil aggregation
- Increases aeration
- Increases water penetration
- Increases moisture holding capacity
- Helps to “hold” nutrients
- Source of nutrients



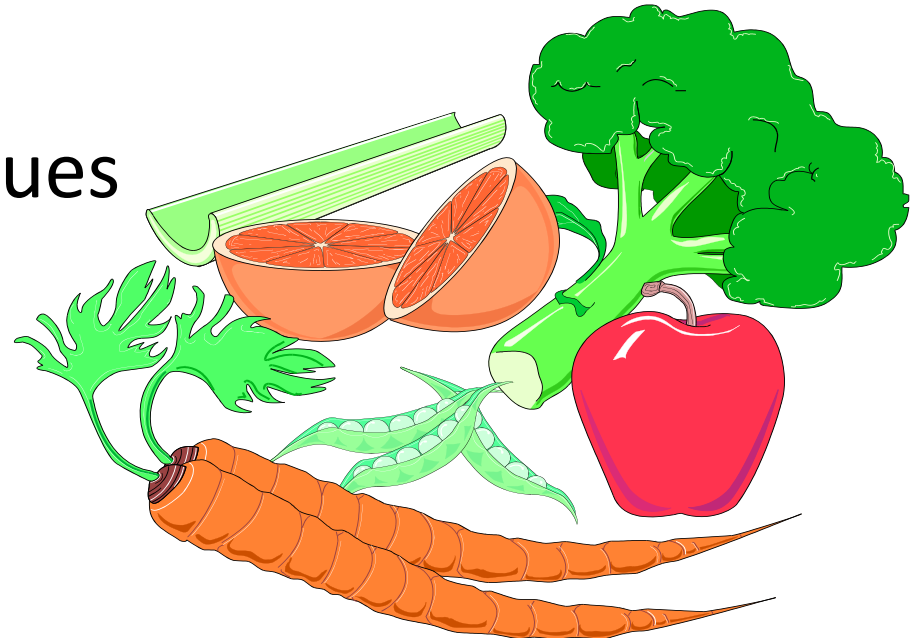
# Selecting Varieties.....

- Ultimate use
  - Roma/plum tomato vs. large-fruited tomato
- Pest Resistance
  - V, F, N, T, PM
- Environment
  - Hot set tomatoes
  - Slow bolting broccoli



# Selecting Varieties.....

- Recommended Varieties
  - reports from AU  
<http://www.ag.auburn.edu/resinfo/publications/fruitsnutsvegs.html>
- All-American Selections
  - highlighted in seed catalogues
- Experience
  - keep a journal; ask friends



# What do those letters mean???

- Pest Resistance
  - “V” Verticillium resistance
  - “F” Fusarium resistance
  - “N” Nematode resistance
  - “T” Tobacco mosaic virus resistance
- CONTROL THE CONTROLABLE DISEASES

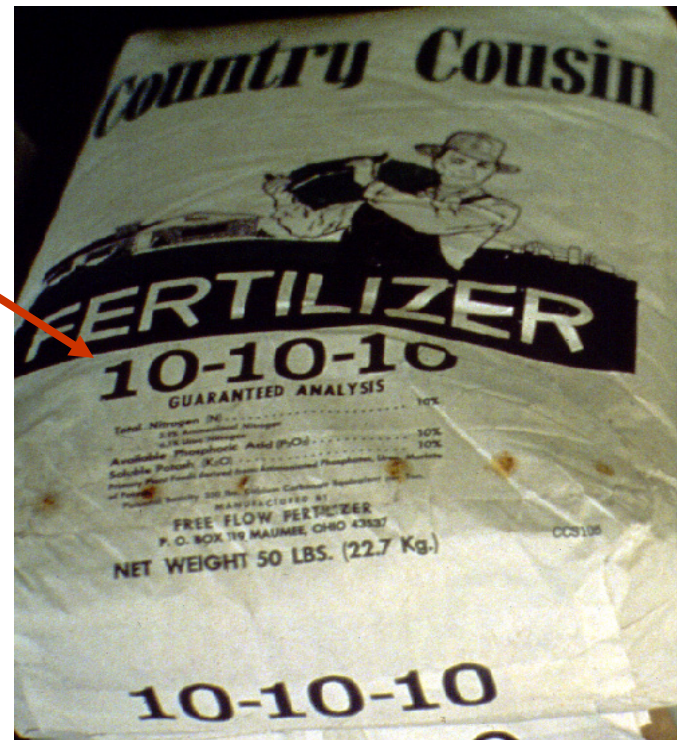
# Soil Testing.....

- Lab testing
  - Most accurate measure
  - Only accurate pH measure
- Most vegetables need
  - 6.0 – 6.5 pH
- Home kits are *not* dependable measures of fertility and pH



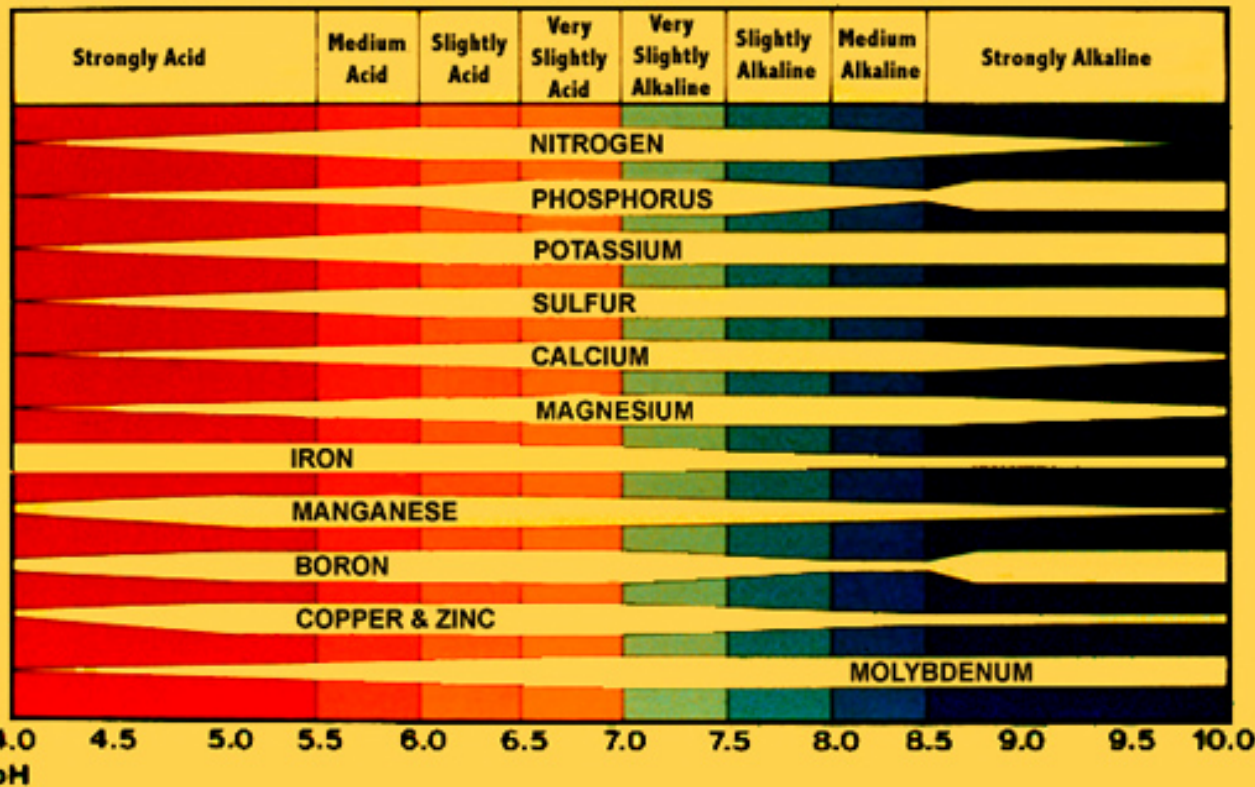
# Soil Testing.....

- N
  - 100 LB. 10-10-10
  - 10 LB. N
- $P_2O_5$ 
  - 10%  $P_2O_5$ , or 10 LB.
  - 10 LB. x 0.44 = 4.4 LB. P
- $K_2O$ 
  - 10%  $K_2O$ , or 10 LB.
  - 10 LB. x 0.83 = 8.3 LB. K



# Soil Testing..... Why?

## How Soil pH Affects Availability of Plant Nutrients



- Fertilizer Recommendation
- pH
  - liming requirement
  - 6.0 - 6.5 for vegetables





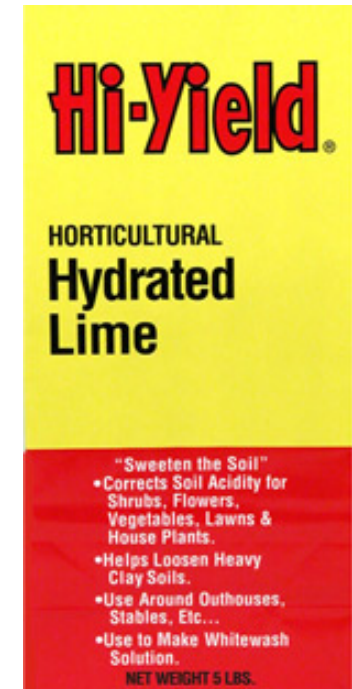
# Blossom-end Rot

- *water-calcium-soil pH*
  - too much rain/too little rain
  - low or high pH (< 6.0)
  - insufficient calcium in soil



# Adding Lime....

- Dolomitic lime
  - Adds Mg
  - Many Alabama soils deficient
- Many Alabama soils are acidic
  - Safe to add 50# per 1,000 ft<sup>2</sup>
- Apply early
  - Lime is slow to react
  - 6 – 8 months prior



# Fertilizer Recommendations

- ***On an acre basis...***

- 120 lb. of N, P<sub>2</sub>O<sub>5</sub> & K<sub>2</sub>O per acre

- ***On a square foot basis...***

- 3 lb. N per 1,000 sq. ft.

- ***One Recipe...***

- 25 lb. 4-12-12 (~1 lb. N)

- 6 lb. NH<sub>4</sub>NO<sub>3</sub> (~2 lb. N)

- ***Side-dressing...***

- long season crops need more nutrients

- tomatoes, peppers, cabbage

- **Place 3-4 inches away from stem**

- **Place 1/3 to 1/2 of requirement at planting; remainder as side-dress through “season”**

# Preparing the Soil.....

- Incorporate fertilizer & lime
- Don't work soil when too wet or very dry
  - cause soil compaction
  - “soil clods”
- Don't over cultivate or rototill



# Crop Rotation .....

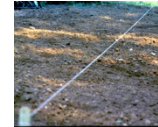
- Reduces problems with soil-borne pests
- Some soil-borne pests have longevity
  - 10 to 20 years without host present
- Rotate vegetables of non-related families
- Rotate a minimum of 2 feet
- May be only management tool for some pests
- Clean crop residues also



Root-knot nematode on corn  
(Clemson University, USDA)

# Planting.....

- Use a planting line
  - optimize space in small gardens
  - looks neater
- Seeds are cheap
  - buy quality seed
  - avoid bargain seed
    - last years not stored properly



# Direct Seeding.....

- Don't sow seeds thickly
- Small seeds
  - carrots, turnips, cabbage
  - 1/4 to 1/2 inch deep
- Large seeds
  - beans, corn, peas
  - 1-2 inches deep
- Rule of Thumb
  - planting depth equivalent to 2 to 3x's seeds diameter





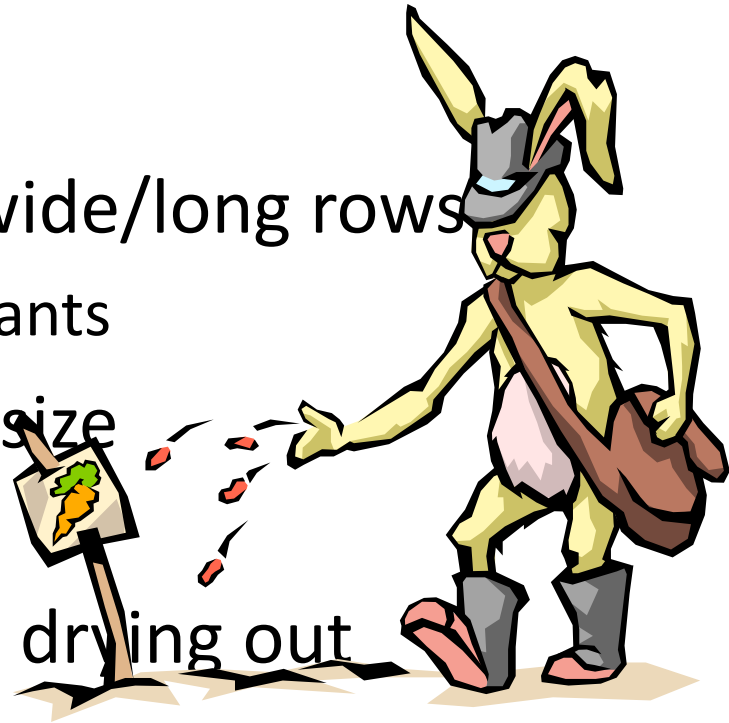
# Thinning Seedlings.....

- Just do it!
  - too close will decrease yields
- Too much competition for several plants
- Save extra seed for subsequent plantings or for next year



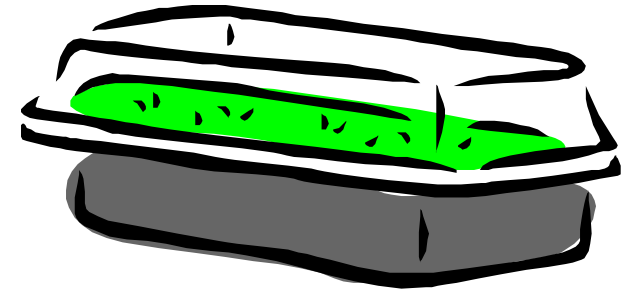
# Transplants.....

- Buy/raise quality transplants
  - Stocky, healthy, fresh
- Large vegetable plants need wide/long rows
  - 3 feet wide, 12-30" between plants
- Plant seeds 2-3x deeper than size
  - Beans –  $\frac{3}{4}$  to  $1\frac{1}{2}$  " deep
- Sandy soils – deeper prevents drying out



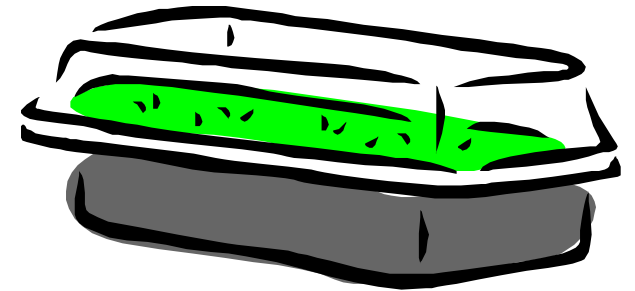
# Starting Seedlings Early .....

- Best for smaller seeds and those w/longer maturity
- Containers
  - Flats
  - Peat pellets/cubes
  - Cell trays
- Sterile, germination mix
- Wet before seeding – warm water
- Constant temperature – 75-80 °F
- Bottom heat
- Cover – moisture



# Starting Seedlings Early .....

- Transplanting – “pricking”
  - Loosen germination mix from beneath
  - Hold the leaves, *not* the stem
  - Pot in cell trays
  - Water gently
  - Fertilize weakly
- Prepare for the garden
  - Weather dependant



# Transplants.....

- Easy-Moderate

- tomato
- eggplant
- pepper
- broccoli
- Brussels sprouts
- lettuce
- onion

- Difficult (direct seed)

- cucumber
- watermelon
- cantaloupe
- summer squash
- Irish potato
- sweet corn

# Into the Garden.....

- “Harden off”
  - Less water
  - Adjust to more sun
  - Four to five days
- Plant same depth – exception = tomato
- Water deeply once per week
- Starter solutions – water soluble
- Proper spacing



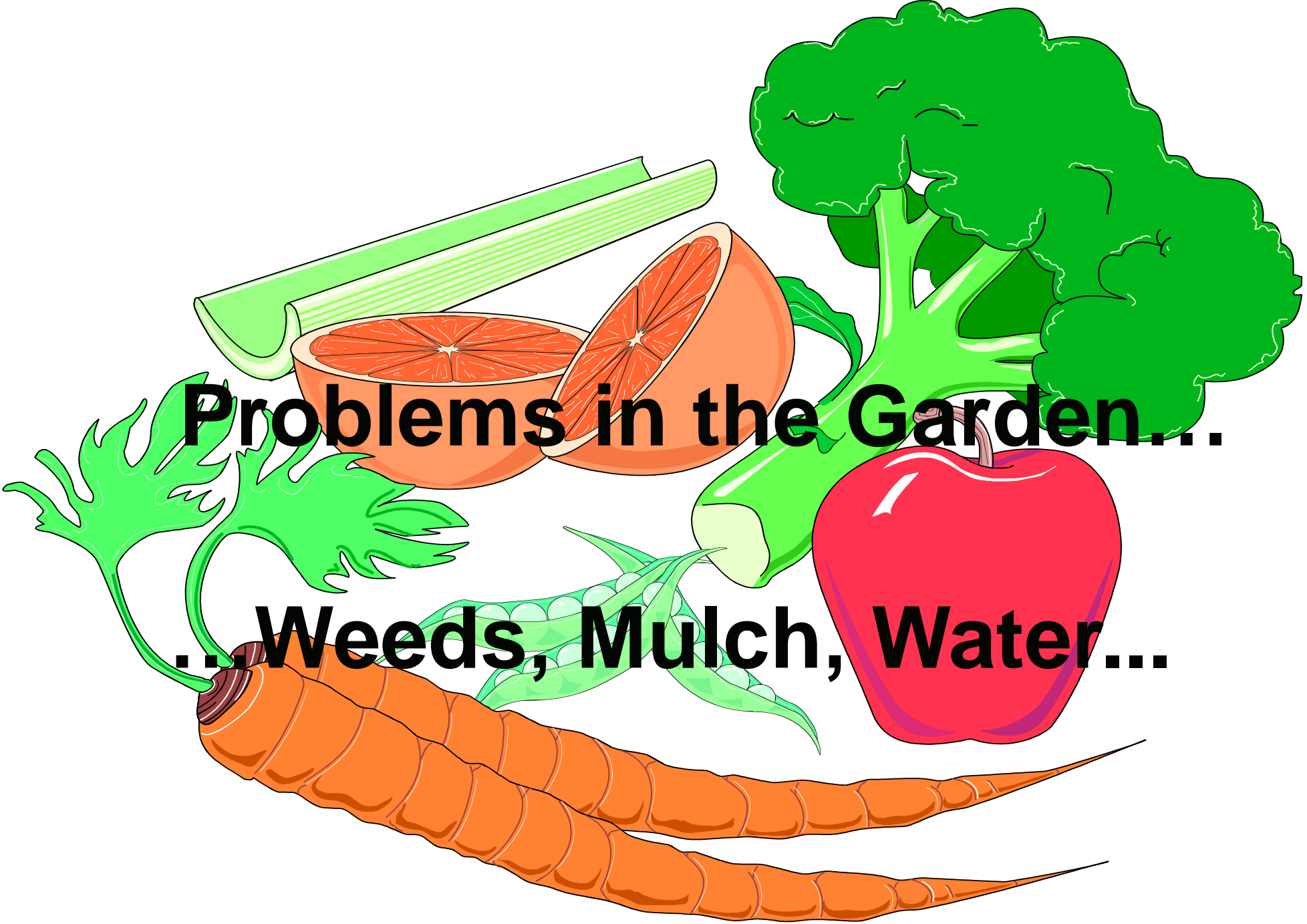
# When to Plant.....Cool & Warm Season

- Cool-season (spring/fall)
  - asparagus
  - broccoli, cauliflower
  - Brussels sprouts
  - cabbage
  - collards, turnips, mustard
  - English pea
  - radish, beet, carrot, onion
  - garlic, chives, Irish potato
- Warm-season (summer)
  - cowpea
  - bell, sweet, hot pepper
  - tomato, eggplant
  - cucumber, watermelon, cantaloupe, pumpkin
  - winter squash
  - okra, sweetpotato
  - snap bean, lima bean

# Cool Season vs. Warm Season.....

- Cool-season are generally:
  - hardy, frost-tolerant
  - seeds germinate at soil cooler temperatures
    - see ANR-1061 for optimal soil temperatures
  - shallower root systems
  - plant size is smaller
  - fruit/product can be stored at or near 32°F





**Problems in the Garden...**

**...Weeds, Mulch, Water...**



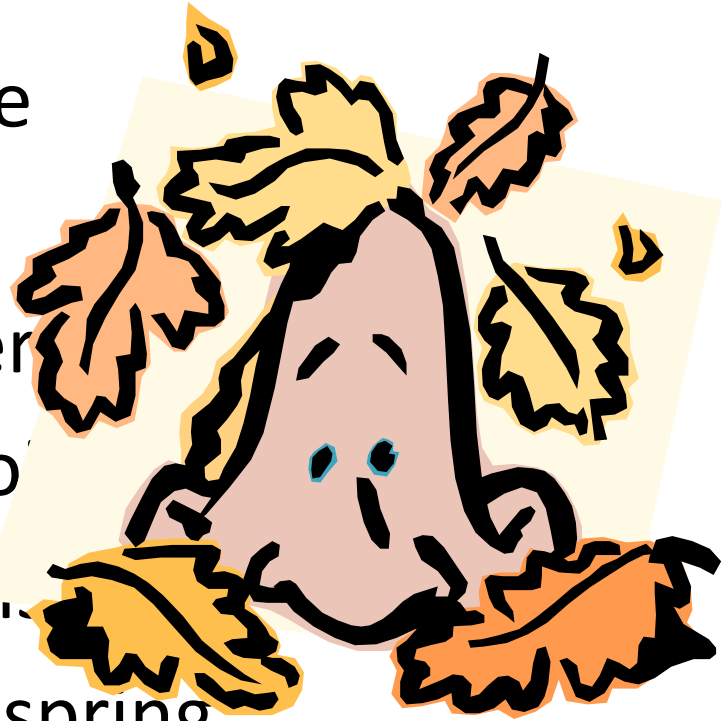






# Benefits of Mulching.....

- Conserves soil moisture
- Moderates soil temperature
- Suppresses weed growth
- Prevents soil crusting and erosion
- Decomposition improves soil
- More reliable than chemicals
- Beware early season – late spring







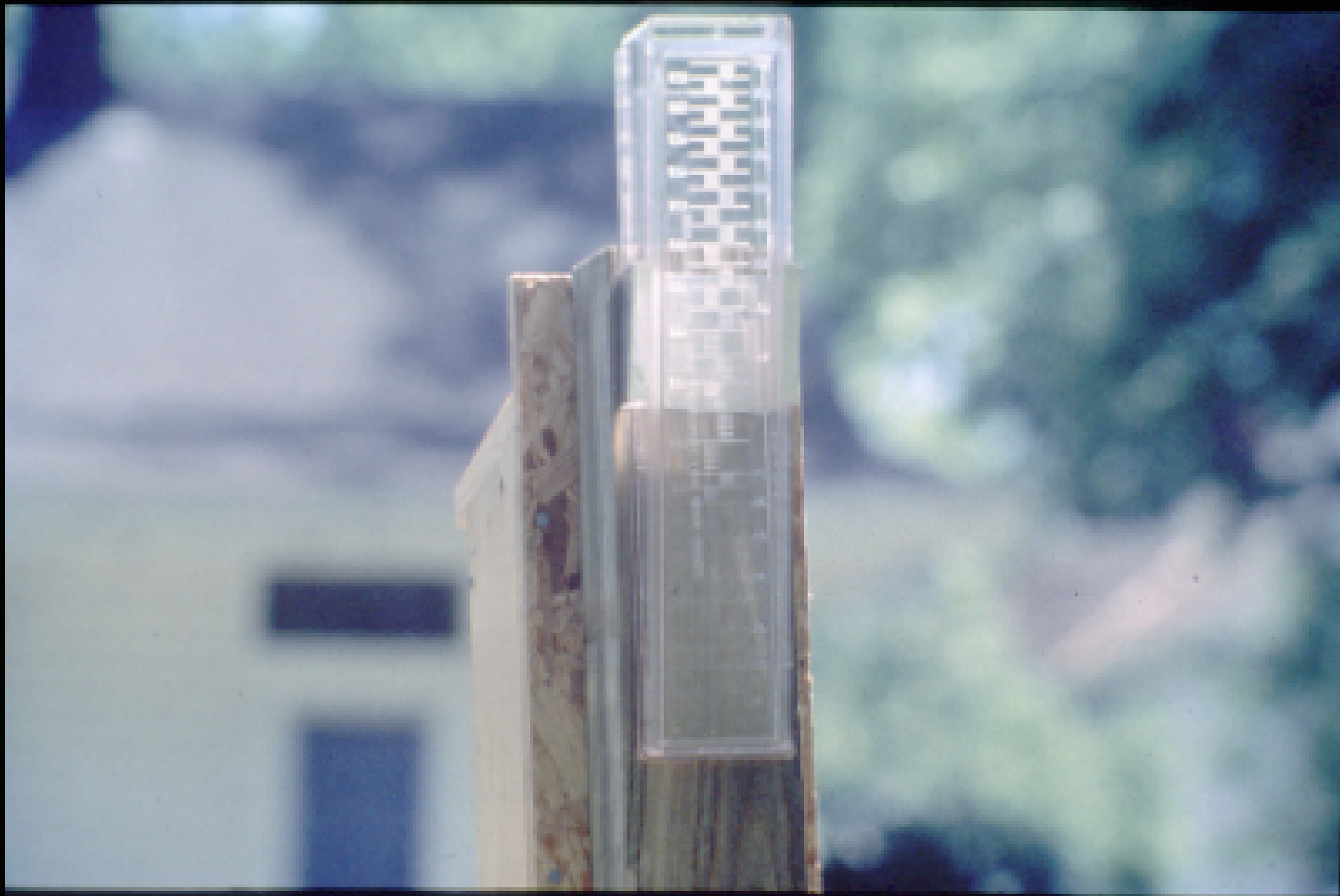






# Irrigation.....

- Critical times
  - First two weeks of growth
  - During bloom
  - During fruit set
  - Fruit development
- Equal to one inch per week
- Water deeply
- Drip/trickle most efficient









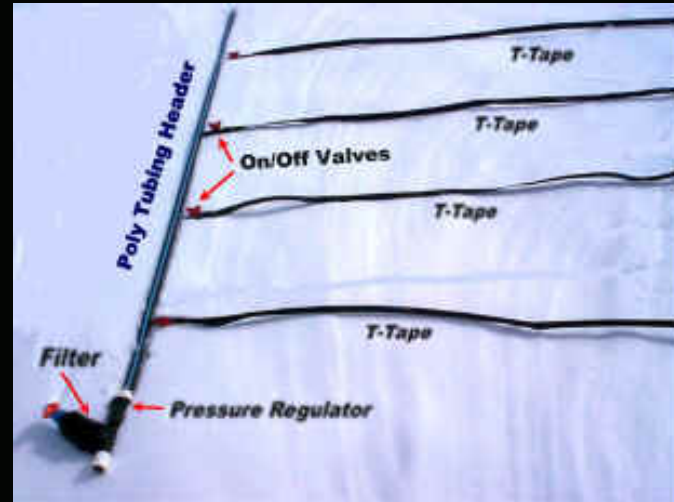
# Drip Irrigation.....





# Drip Irrigation.....

- Conserves water
  - uses only 15-20% water used by overhead watering
- More efficient use of water
  - places water where needed
  - do not water as many weeds/aisles
- Does not wet foliage
- Gardener can work in garden while watering
- Easy to automate





# **Drip Irrigation Suppliers on the Web**

**<http://www.berryhilldrip.com/index.htm>**

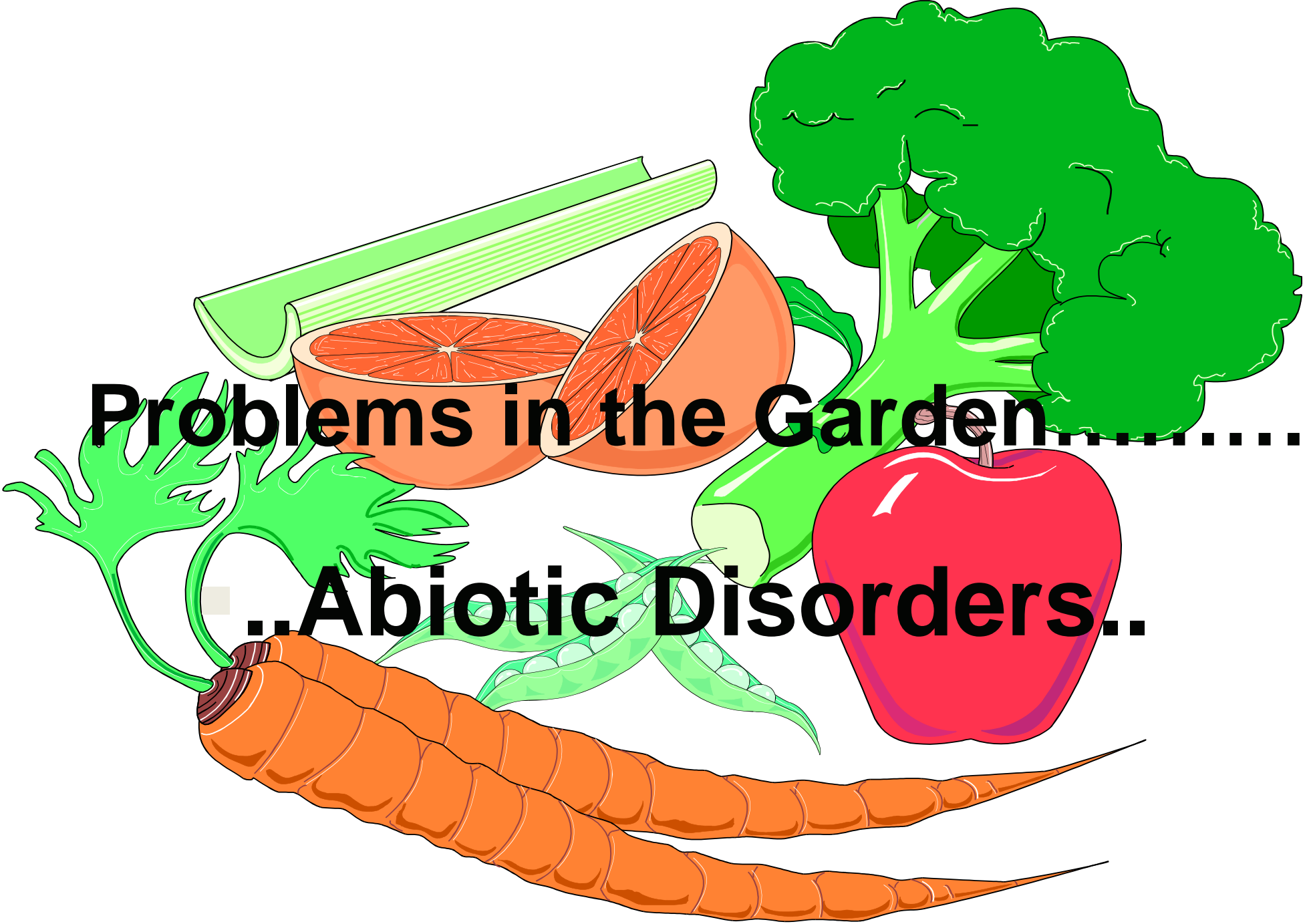
**<http://www.dripworksusa.com/>**

**<http://www.waterrite.com/index-drip.html>**

**<http://www.mrdrip.com/>**

**<http://www.dripirrigation.com/>**

**<http://www.dripirr.com/>**



**Problems in the Garden.....**

**...Abiotic Disorders..**

Cantaloupe –  
herbicide damage



Luffa gourd –  
ozone damage





Melon –  
blossom-end rot





Pepper –  
blossom-end rot



Tomato –  
blossom scars



# Squash and pepper – genetic mutants



Peppers – N  
deficiency



N deficiency



Pepper – sun scald



Cabbage – Mg  
deficiency?



Corn – P deficiency





Collards – Mg  
deficiency



Cantaloupe – herbicide  
injury?



Watermelon –  
weeds after rain



